

Safe Driving Driver Engagement

Protocol

Implementation January 2026

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PREFACE

During the test preparation, vehicle manufacturers are encouraged to liaise with the laboratory and to check that they are satisfied with the way cars are set up for testing. Where a manufacturer feels that a particular item should be altered, they should ask the laboratory staff to make any necessary changes. Manufacturers are forbidden from making changes to any parameter that will influence the test, such as vehicle setting, laboratory environment etc.

It is the responsibility of the test laboratory to ensure that any requested changes satisfy the requirements of Euro NCAP. Where a disagreement exists between the laboratory and manufacturer, the Euro NCAP Secretariat should be informed immediately to pass final judgment. Where the laboratory staff suspect that a manufacturer has interfered with any of the set-up, the manufacturer's representative should be warned that they are not allowed to do so themselves. They should also be informed that if another incident occurs, they will be asked to leave the test site.

Where there is a recurrence of the problem, the manufacturer's representative will be told to leave the test site and the Euro NCAP Secretariat should be immediately informed. Any such incident may be reported by the Euro NCAP Secretariat to the manufacturer and the person concerned may not be allowed to attend further Euro NCAP tests.

DISCLAIMER: Euro NCAP has taken all reasonable care to ensure that the information published in this protocol is accurate and reflects the technical decisions taken by the organisation. In the unlikely event that this protocol contains a typographical error or any other inaccuracy, Euro NCAP reserves the right to make corrections and determine the assessment and subsequent result of the affected requirement(s).

NOTE: All 2026 protocols with a version number 0.9 are under final review of the Working Group and might undergo minor changes

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DEFINITIONS

Throughout this protocol the following terms are used:

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

Lane Centering (LC) – a function which assists the driver in keeping the vehicle within the chosen lane, by influencing the lateral movement of the vehicle.

Driver State Monitoring (DSM) – Driver State Monitoring system that can to determine the state of the driver.

Direct Monitoring – Where driver state determination is supported by sensor(s) directly observing the driver.

Indirect Monitoring – Where driver state determination is achieved indirectly through means other than sensor(s) directly observing the driver (e.g. steering input).

Transient state – A state during which the driver's focus on the primary task of driving/controlling the vehicle is temporarily reduced, but can be immediately reversed (e.g. visual inattentiveness due to engaging in secondary tasks).

- **Long Distraction** – A single long duration distraction which takes the driver's gaze away from the forward road view.
- **Short Distraction / Visual Attention Time Sharing (VATS)** – Repeated short duration gazes away from the forward road view, which cumulatively reduce the driver's awareness of the driving situation, until their attention returns to the driving task for long enough for them to fully assess the driving situation.
- **Phone Use** – A subset of short distraction (VATS) where the object the driver's attention is shared with is their mobile phone.

Non-transient state – A state that partially or fully reduces the driver's capability to maintain focus and properly perform the driving task and that cannot be reversed without appropriate recovery time outside of the driving session.

- **Impairment** – Impaired driving negatively impacts driving performance, resulting in an increased crash risk. Impairment may either build up over time (typically drowsiness/sleepiness), or present itself from the start of the journey (non-fatigue related, e.g., from the use of licit/illicit drugs).
- **Microsleep** – A microsleep is a temporary episode of sleep after fatigue builds-up, which may last up to several seconds.
- **Sleep** – In this assessment sleep is considered as when a driver has been in a state of unconsciousness due to fatigue for a period of greater than a few seconds.
- **Unresponsive Driver** – Where a driver becomes unresponsive during driving, likely due to an onset of sudden sickness or extreme fatigue.

Impaired driving vehicle response – Warning and/or intervention vehicle response after a driver has been classified as impaired.

- **Impaired driving warning** – Warning issued in case the system determines an impaired driver

- **High sensitivity mode** – A more sensitive and earlier warning and/or intervention of Safety Assist systems to compensate for the driver state

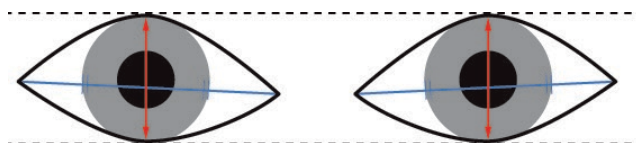
Owl type movement – A shift of visual attention away from the road and forward-facing position that is primarily achieved by head rotation followed by the eyes.

Lizard type movement – A movement in which the driver focuses on a task by moving primarily their eyeline away from the road with their head/face remaining in the forward-facing position.

Degraded system – A direct driver monitoring system is considered to be degraded in this assessment when a subsystem becomes fully unavailable. E.g. a direct driver monitoring system which uses head pose tracking and eye tracking would be considered degraded if eye tracking became fully unavailable therefore preventing the system identifying any lizard type movements.

Non-functional system – A direct driver monitoring system is considered to be not functional in this assessment when the entire system becomes fully unavailable.

Eye lid aperture – Distance between the point where the straight line drawn in the y-axis direction from the midpoint of line segment connecting the outer and inner corners of the driver's eye overlaps the lower edge of the upper eyelid and upper edge of the lower eyelid. Measured when driver is awake and attentive.



In-vehicle infotainment (IVI) system – The area containing the infotainment system and/or vehicle controls, typically located centrally ahead of the front row seating in the conventional passenger car layout.

Emergency Function (EF) – Function which, in the event that a driver becomes unresponsive, can automatically decelerate and divert the vehicle to a safe stop or speed of <10km/h whilst maintaining the distance to vehicles travelling ahead and maintaining its lane. The targeted stop area may be the original lane, a slower moving lane, the hard shoulder, or an emergency area.

SCORING

Driver engagement assessment	Total points 30
Driver Monitoring	25
Transient	15
Non-Transient	10
Driving Controls	5

1 DRIVER MONITORING

Driver Monitoring assessment	Total points 25
Transient driver states	15
Long distraction	5
Short distraction	5
Phone Use	5
Non-Transient driver states	10
Impairment	4
Microsleep	2
Sleep	2
Unresponsive	2

The Euro NCAP Secretariat will review the DSM dossier provided by the OEM and will ask the test laboratory to spot check several Transient, Non-Transient, and Unresponsive Driver situations before awarding the points. The provisions for spot tests will be available over the course of 2025 in an updated TB 039.

1.1 General Requirements

To be eligible for scoring points in Driver Monitoring, the following conditions shall be met:

- The DSM system shall be default ON at the start of every journey and deactivation of the system shall not be possible with a momentary single push on a button.
- The driver state detection sensitivity shall not be manually adjustable.
- The DSM system shall continuously monitor the driver state. For the system to start measuring the driver state, a total of 1 minute of driving at forward speed of at least 10 km/h is allowed.
- For the distraction, microsleep, sleep and unresponsive driver states, the vehicle shall warn and/or intervene at forward speed of at least 20 km/h or for lateral support at the lowest operational speed. For the impairment driver states, when the vehicle is moving forward at a speed of at least 50 km/h and for detection of these impairment states, a learning period of up to 10 minutes is permitted from the start of every journey.
- Where the vehicle offers an assisted driving system as option or standard, the system shall meet a minimum score of 50% of Driving Collaboration and Driver Monitoring respectively, in accordance to the 2026 Assisted Driving Grading Protocol, to prevent overreliance.
- For any driver state where the OEM is expecting to score points, the TPR of these transient and non-transient types and scenarios shall be shown to be within or over the thresholds specified in APPENDIX A.

- The DSM system shall meet a minimum level of user acceptance during day-to-day real world driving situations. This aspect shall be evaluated as described in Euro NCAP VSSTR guidelines.

1.1.1 Noise Variables

A robust DSM system is expected to cover a wide variety of drivers, occlusions and driver behaviours to provide the highest societal safety benefit. To receive points in the DSM assessment, the whole range of each driver, occlusion and behaviour listed below shall be covered.

The OEM shall demonstrate, by means of a dossier, that the DSM system meets the performance requirements.

1.1.1.1 Drivers

Category	Noise Variables	Ranges / Elements	Performance Requirement
Driver	Age	Youthful [16-18] – aged [80]	Functional
	Sex	Male, Female	Functional
	Stature	AF05 – AM95 (in all suitable seating positions*)	Functional
	Skin complexion	Fitzpatrick Skin Type 1 – 6 (or other suitable scales)	Functional
	Eye lid aperture	From 6.0mm up to 12.0mm	Functional

* Any seating position enabling any driver to correctly perform the driving task i.e., reaching the pedals and steering wheel, and able to see the forward road view.

1.1.1.2 Occlusion

Category	Noise Variables	Ranges / Elements	Performance Requirement
Occlusion	Lighting	Daytime (100,000 lux) – night-time (1 lux)*	Functional
	Eyewear	Clear sunglasses with >70% transmittance ** including those with thick rims.	Functional
		Sunglasses with a <15% transmittance**	Inform if not functional
	Facial hair	Short facial hair (<20mm in length)	Functional
		Long facial hair (>150mm in length)	Functional
	Hand on wheel	One hand on wheel at 12 o'clock position	Inform if not functional
	Facial occlusion	Face-mask (Protective equipment guarding the airways)	Functional
		Hats	Inform if not functional

		Long head hair fringe obscuring eyes	Inform if not functional
	Eyelash makeup	Thick eyelash makeup	Inform if not functional

* [Reference to illumination measurement method in CA protocol, when measured outside of the vehicle]

** Referred to light in the wavelength operated by the camera (Transmittance of sunglasses shall correlate to the light used by the sensor).

"Inform if not functional" means that when performance is compromised to the point where the system is non-functional or inactive, the driver is notified with visual and/or auditory cues within ten seconds of the occlusion being present. The auditory information regarding non-functional condition may only be shown up once every journey. For as long as the system is non-functional, a visual information shall be displayed either permanently or every [10] minutes .

1.1.1.3 Driver Behaviours

Category	Driver behaviour	Performance Requirement
Driver behaviours	Eating	N/A
	Talking	Functional
	Laughing	N/A
	Singing	N/A
	Smoking / Vaping	N/A
	Eye scratching / rubbing	N/A
	Sneezing	N/A

For monitoring purpose, the OEM shall describe whether and how that driving behaviour affects the DSM performance.

1.2 Transient Driver States

Transient driver states	Total points 15
Long distraction	5
Non-driving task related	3
Driving task related	2
Short distractions (VATS)	5
Non-driving task related	2
Driving task related	2
Away from road (multiple locations)	1
Phone Use	5
Basic	2.5
Advanced	2.5

Where applicable, Owl (head movement), Lizard (eye movement) and body lean looking behaviours are used to assess the detection of driver distraction.

1.2.1 Long Distraction

A long distraction is defined as a single long duration driver gaze away from the forward road between 3 and 4 seconds. During the verification, it shall be ensured that the distraction is preceded by a four second on-road gaze. The gaze locations for Long Distraction are:

Long distraction scenarios	Movement Type	Gaze Location
Non-Driving task	Owl	Driver side window
		Passenger side window
		Passenger footwell
		Passenger face
		In-vehicle infotainment system
	Lizard	In-vehicle infotainment system
		Glovebox
	Body Lean	Passenger footwell
		Rear passenger
Driving task	Owl	Rear view mirror
		Passenger side mirror
		Driver side mirror
	Lizard	Instrument Cluster
		Driver side mirror
		Rear view mirror

For the assessment of Long Distraction, PASS / FAIL is assessed per movement type; all gaze locations listed per movement type shall be covered to be awarded a PASS.

1.2.2 Short Distraction (VATS)

A short distraction (or VATS – visual attention time sharing) event is a build-up of repeated glances away from the forward road view and ends when the driver’s attention returns to the forward road view for a period long enough for the driver to fully interpret the road situation.

It is defined as a driver who glances away from the forward road view for a cumulative 10 seconds within a 30 second time period.

It is permissible for the OEM to implement different detection strategies for driving related and non-driving related tasks.

Short distraction scenarios	Movement Type	Gaze Location
Non-Driving task	Owl	In-vehicle infotainment system
		Passenger side window
		Passenger footwell
	Lizard	Driver side window
		Passenger footwell
		In-vehicle infotainment system
Driving task	Owl	Rear view mirror
		Passenger side mirror
		Driver side mirror
	Lizard	Instrument Cluster
		Driver side mirror
		Rear view mirror
Multi-location	Lizard	Combination of non-driving task locations

For the assessment of Short Distraction, PASS / FAIL is assessed per movement type; all gaze locations listed per movement type shall be covered to be awarded a PASS.

For the assessment of Phone use, PASS / FAIL is assessed per distraction scenario; all movement types and gaze locations listed per distraction scenario shall be covered to be awarded a PASS.

1.2.3 Phone Use

Phone use is a specific type of short distraction (or visual attention time sharing) event where the driver’s repeated gaze is towards their mobile phone.

Short distraction scenarios	Movement Type	Gaze Location
Basic phone use	Owl	Driver knee outboard
		Driver knee inboard
		Driver lap
		Phone mounted on dashboard outboard
		Phone in OEM designed charge port or dedicated phone holding position
	Lizard	Driver knee outboard
		Driver knee inboard
		Driver lap
		Phone held centre of steering wheel (below cluster view)
		Phone in OEM designed charge port or dedicated phone holding position
Advanced phone use	Lizard	Phone mounted on dashboard outboard
		Phone held in 9-11 or 13-15 o'clock region on wheel (uppermost position below windscreen view and outside of cluster view)
		Phone held in view of windscreen (excluding central area within the driver’s horizontal field of view, e.g., offset right or left)
		Phone held in view of instrument cluster

1.3 Non-Transient Driver States

This assessment includes different impairment elements covering drowsiness and non-fatigue related states, which are rewarded separately.

Non-transient driver states	Total points 10
Impairment	4
Non-fatigue related	2
Drowsiness	2
Microsleep	2
Sleep	2
Unresponsive	2

1.3.1 Non-fatigue related

Systems capable of detecting impairment unrelated to fatigue, such as that resulting from alcohol use or the use of other legal or illicit drugs are eligible to score points. This does not include interlock interfaces.

This may be compared against a driver-specific baseline of safe driving behaviour built from previous driving sessions

1.3.2 Drowsiness

A driver reaching a KSS level ≥ 7 , or an equivalent metric appropriate to assess risky levels of drowsiness is awarded. The system shall be functional from 50 km/h.

1.3.3 Microsleep

A driver is considered to be undergoing a microsleep event when displaying a short duration eye closure (1-2 seconds). The OEM may use additional inputs that are considered necessary to enhance microsleep detection.

1.3.4 Sleep

A driver is deemed asleep when displaying a continued eye closure ≥ 3 seconds. The OEM may use additional inputs that are considered necessary to enhance sleep detection.

1.3.5 Unresponsive Driver

A driver may be classified as unresponsive when their gaze does not return to the forward road view within 3 seconds after a distraction warning being issued or when the eyes have been closed for ≥ 6 seconds.

Other means to determine an unresponsive driver at an earlier timing may also be used.

1.4 Vehicle Response

Driver State	Distraction Type	Glance Target Type	Movement Type	Maximum available points					
				Warning	Intervention		Sub Total	Total	
					Forward Support	Lane Support	Total		
Transient	Long Distraction	Non-Driving Task	Owl	0,5	0,4	0,1	0,5	1	5
			Lizard	0,5	0,4	0,1	0,5	1	
			Body Lean	0,5	0,4	0,1	0,5	1	
		Driving Task	Owl	-	0,8	0,2	1	1	
			Lizard	-	0,8	0,2	1	1	
	Short Distraction (VATS)	Non-Driving Task	Owl	0,5	0,4	0,1	0,5	1	5
			Lizard	0,5	0,4	0,1	0,5	1	
		Driving Task	Owl	-	0,8	0,2	1	1	
			Lizard	-	0,8	0,2	1	1	
		Multi-target	Lizard	0,5	0,4	0,1	0,5	1	
	Phone Use	Basic	Owl + Lizard	1,25	1	0,25	1,25	2,5	5
Advanced		Lizard	1,25	1	0,25	1,25	2,5		
Non-transient	Impairment	Fatigue	0,5	1,5		2	4		
		Non-fatigue	0,5	1,5		2			
	Microsleep			0,5	1,5		2	2	
	Sleep			0,5	1,5		2	2	
	Unresponsive driver			-	2		2	2	
Total								25	

When the system can detect certain Driver State(s) specified in 1.2, a vehicle response in terms of warning and/or intervention is required to score points.

1.4.1 Transient state warning requirements

When the vehicle is travelling at $\geq 20\text{km/h}$, a visual and (haptic and/or audible) warning shall be issued immediately after the driver is classified as distracted.

1.4.2 Non-Transient state warning requirements

A visual and (haptic and/or audible) warning shall be issued immediately after driver is classified as impaired, sleeping or unresponsive.

Microsleep and sleep warnings shall be distinct and deliver a higher perceived level of urgency than the distraction and impairment warnings.

Alternatively, countermeasures that might mitigate the impairment are allowed (e.g. lowering the climate control temperature, prompting rest areas in the navigation system). When this type of countermeasures is utilised, the OEM shall provide compelling evidence demonstrating the effectiveness on the impairment.

1.4.3 Intervention requirements

For detected transient and non-transient states, the intervention strategy shall be a change in Forward Support Sensitivity which can, or in some cases shall be accompanied with a change in Lane Support Sensitivity.

End of state in impaired cases is allowed to cover for false detections. The OEM shall provide compelling information how the vehicle can determine that the impaired state is not present. End of state is allowed as an intervention end strategy if the driver state monitoring system continues to measure the driver's state and determines the driver's attentiveness has been restored. It is not allowed for the driver to manually override the system and restore sensitivity level to baseline levels.

Behaviour	Intervention type	Intervention end
All transient states	Forward Support w/wo Lane Support	$\geq 2s$ after end of state
All transient states with $< 1s$ off-road glances	Forward Support w/wo Lane Support	$\geq 1s$ after continuous gaze towards forward road view
None-fatigue related	Forward Support & Lane Support	End of journey or end of state
Drowsiness	Forward Support & Lane Support	End of journey or end of state*
Microsleep	Forward Support & Lane Support or Combined lateral and longitudinal control	End of journey or end of state
Sleep	Forward Support & Lane Support or Combined lateral and longitudinal control	End of journey or end of state
Unresponsive	Emergency Function	Driver response

* End of state for drowsiness only allowed if the DSM system offers microsleep and sleep functionality

For forward support sensitivity, the intervention strategy shall be activated ≤ 1 second of any continuous gaze away from forward road view.

For lateral support sensitivity, the intervention strategy shall be activated:

- At the latest when the driver state has been classified as transient.
- ≤ 1 second of any continuous gaze away from forward road view if the estimated time to LKA intervention is shorter than the long distraction time ($T_{LKA} < T_{Long\ distraction}$)

The intervention strategy for forward and/or lateral support sensitivity shall continue after the driver's glance has returned to the forward road view:

- For at least 2 seconds if the driver state has previously been classified as long distraction or VATS,
- For at least 1 second for previous gaze away from the road view shorter than the long distraction time.

1.4.3.1 Forward support sensitivity

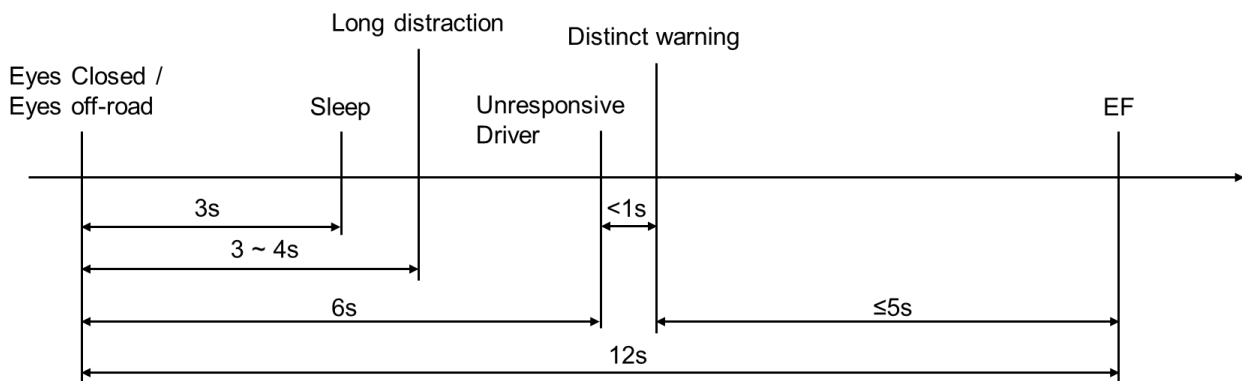
As a minimum requirement, FCW and/or AEB systems shall differ at least 200ms between a distracted and/or impaired driver and an attentive driver, to account for longer driver reaction times. The performance of the more sensitive FCW and/or AEB system shall be awarded in Crash Avoidance.

1.4.3.2 Lane support sensitivity

As a minimum requirement, Lane Support Systems shall be coupled to the driver state so that the LKA and LDW are always active (not suppressed) for distracted and/or impaired drivers and sensitivity is reduced (down to LKA and/or LDW suppression) for attentive drivers. The coupling strategy shall be awarded when it meets the performance criteria as described in Crash Avoidance protocol.

1.4.3.3 Emergency Function

The EF intervention shall start soon enough so that the vehicle provides lateral and longitudinal control, and no later than 5 seconds after the distinct warning phase has started.



2 DRIVING CONTROLS

The Test and Assessment procedures for Driver Controls are currently under development by Euro NCAP and expected to be incorporated into this document in the first quarter of 2025.

APPENDIX A TPR THRESHOLDS

Transient Type	Glance Target Type	Glance Behaviour	True Positive Rate (%) Average Across Subjects and Glance Targets		
			85% Point Threshold	100% Point Threshold	Reported performance
Long Distraction	Non-Driving Task	Owl	80	90	
		Lizard	80	90	
		Body Lean	80	90	
	Driving Task	Owl	80	90	
		Lizard	60	80	
	Short Distraction (VATS)	Driving Task	Owl	60	70
Lizard			60	70	
Non-Driving Task		Owl	60	80	
		Lizard	60	70	
Multi-target		Lizard	60	70	
Phone Use		Basic	Owl	60	70

		Lizard			
	Advanced	Lizard	60	70	

Non-Transient Type	Sub-Category	Points Available	True Positive Rate (%) Average Across Subjects and Non-Transient types		
			85% Point Threshold	100% Point Threshold	Result
Impairment	Drowsiness	2	40	60	70
	Non-Fatigue	2	Not Defined	Not Defined	22
Microsleep	-	2	40	50	45
Sleep	-	2	40	50	50
Unresponsive Driver	-	2	80	90	90