Advanced Driver Assistance Systems
Practical Driver Testing Guideline

Austroads

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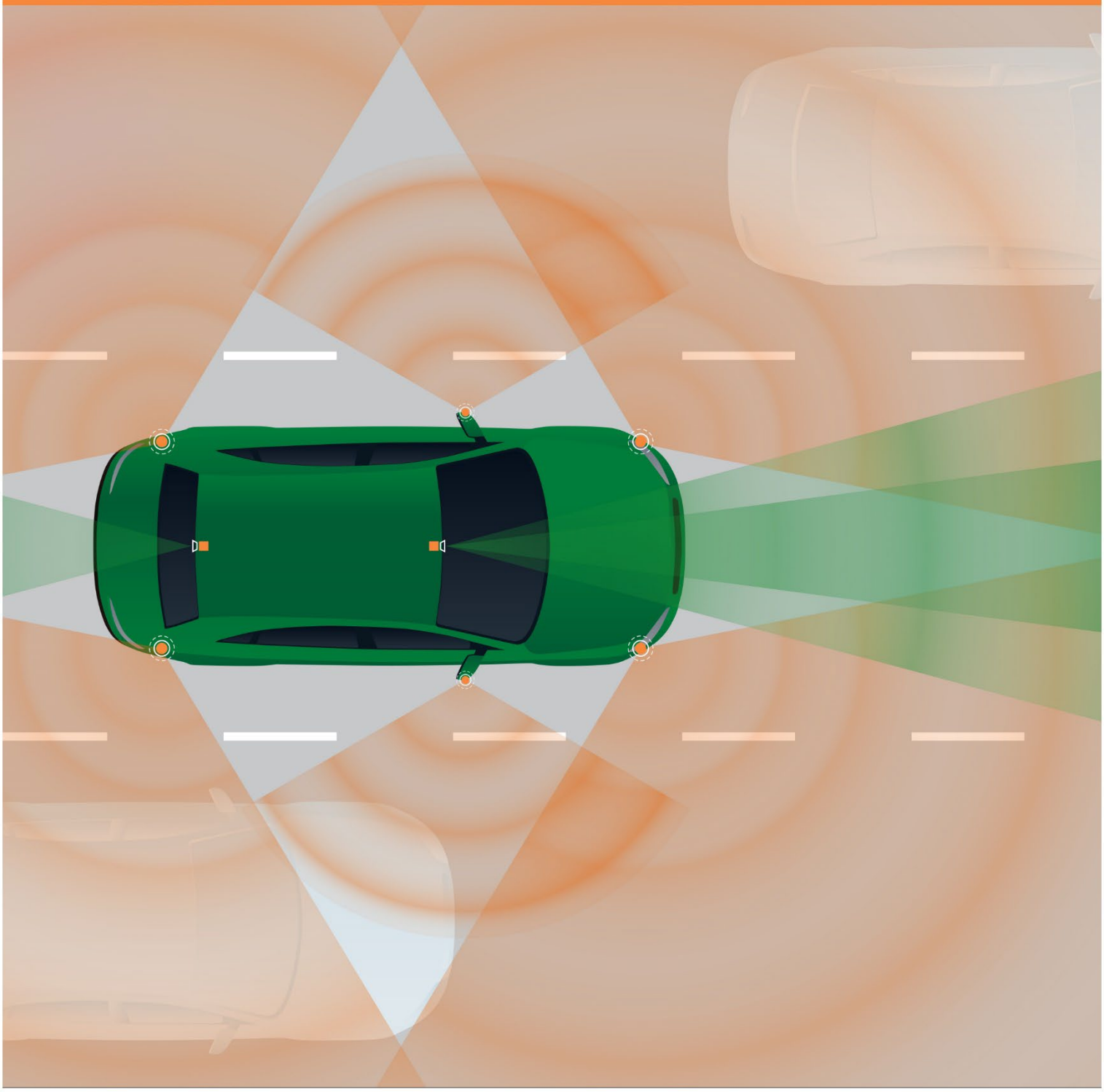

Advanced Driver Assistance Systems: Practical Driver Testing Guideline

Prepared by

Paul Rajan and Bindi Öther-Gee

Project Manager

Steven Patch and Nicholas Mackay

Publisher

Austroads Ltd.
Level 9, 570 George Street
Sydney NSW 2000 Australia
Phone: +61 2 8265 3300
austroads@austroads.com.au
www.austroads.com.au

Abstract

This Guideline describes common Advanced Driver Assistance Systems (ADAS) functions and their operational characteristics, including their limitations, and the conditions under which they may be allowed during on-road driver testing.

The Guideline has been designed to help licensing regulators and driver assessors respond to the increased presence of ADAS in the vehicle fleet. It may also be of use to learner drivers and people supervising driving practice such as parents and driver instructors.

Given that ADAS functions cannot be disabled, they present a new and unique challenges for on-road driver testing. Whatever ADAS are in operation during testing, drivers must still demonstrate, and examiners must still assess, the ability to operate a vehicle safely and show a maintained awareness of other road users and hazards in the road environment.

This Guideline focuses on ADAS functions classified by the Society of Automotive Engineers (SAE) as levels 0, 1 and 2. While self-driving or fully automated vehicles may have some ADAS functions, systems classified by SAE as Levels 3, 4 or 5 are not addressed.

While the Guideline has been designed to achieve the greatest level of national harmonisation, some jurisdictions may choose to implement driver testing processes that vary from those recommended in this Guideline.

Keywords

Advanced driver assistance systems, ADAS, hazard warning functions, vehicle control functions, driver competency, driver training, driver testing, driver licensing.

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About Austroads

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Austroads' purpose is to support our member organisations to deliver an improved Australasian road transport network. To succeed in this task, we undertake leading-edge road and transport research which underpins our input to policy development and published guidance on the design, construction and management of the road network and its associated infrastructure.

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Disclaimer

In view of the dynamic nature of the underlying technology and continuous advances in the design and sophistication of Advanced Driver Assistance Systems (ADAS) functions the material presented here will be subject to continuous review. While all efforts have been made to ensure this Guideline is accurate at the time of publication, Austroads takes no responsibility for misapplication or misappropriation of the content in the Guideline or for changes to ADAS functions or systems since its publication date.

Summary

The development and deployment of technology in vehicles is highly dynamic. There are many advanced driver assistance systems (ADAS) functions and combinations of functions which are rapidly changing and developing. This Guideline has not attempted to comprehensively catalogue all of them. It focuses on those which are most likely to be considered appropriate for use during driver on-road testing and are currently present in cars in the Australian light vehicle fleet. The Guideline will be required to be revised and updated from time to time as new ADAS functions become available.

This Guideline has been designed primarily for licensing regulators to assist the development of responses to driver testing with regard to increasing deployment of ADAS functions in the Australian vehicle fleet and for driver assessors who may need to consider how they respond to driver assessment with operational ADAS functions. Nonetheless, as a public document, it also acknowledges the likelihood of access by learner drivers and their parents or other driver practice supervisors.

This Guideline has been designed to provide a framework which describes common ADAS functions and their associated operational characteristics, including their limitations, and the conditions under which they may, or may not, be allowed to be operational during on-road driver testing. While this Guideline has been designed to achieve the greatest level of national harmonisation, it is acknowledged that some jurisdictions may choose to implement driver testing processes that vary from those recommended in this Guideline.

The Guideline maintains the standards required of drivers while acknowledging the impact of ADAS functions. Drivers remain required to demonstrate the ability to safely and competently manage the operation of a vehicle, detect and respond to hazards and other road users. Its purpose is to consider how ADAS functions, if operational, may impact the assessment of a driver's core competencies. It also provides guidance as to how these core competencies might be assessed while certain ADAS functions are operational.

The Guideline does not address the question of the delivery of training in the use of ADAS functions, nor does it propose testing a driver's ability to use them appropriately or effectively. Nonetheless, it may be helpful for driver trainers and assessors to suggest the value of education on ADAS functions and to direct learners to appropriate educational materials where they exist.

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1. Introduction

As vehicle technologies continue to evolve, jurisdictions will be faced with challenges regarding the operation of ADAS functions during on-road driver testing. Driver assessors will be challenged to determine a driver's ability to competently operate a vehicle based on the actions of the driver, rather than the capability of the ADAS technologies in the vehicle.

Driver assessors remain required to ensure that a driver has demonstrated the knowledge and skills necessary for the safe operation of a vehicle prior to them obtaining a licence. This component of the licensing system provides a critical pathway to improved road safety.

It is therefore important that assessors are informed about current technologies that may affect the scoring of an on-road driving test, so they are able to administer appropriate assessments.

This Guideline focuses on ADAS functions classified by the Society of Automotive Engineers (SAE) as Levels 0, 1 and 2. While vehicles known as self-driving or fully automated vehicles may also contain ADAS functions which operate in certain modes, the Guideline does not address systems classified by SAE as Levels 3, 4, and 5.

1.1 Purpose

Advanced Driver Assistance Systems (ADAS) are becoming increasingly common. While they do not perform the full driving function, ADAS can both warn and sometimes intervene to assist the driver. ADAS are designed to improve vehicle and road safety and help drivers with certain driving tasks.

While these technologies can perform elements of the driving task, the human driver always remains in control. The driver remains responsible for the entire driving task, including monitoring and responding to the ADAS.

The Society of Automotive Engineers International (SAE) defines levels of vehicle automation. ADAS may be included, for example:

- SAE Level 0 – A human provides the "dynamic driving task", although there may be functions in place to provide alerts to help the driver. Examples include Blind Spot, Collision, Proximity and Lane Departure Warnings. These technologies detect when another vehicle or obstacle is adjacent to, or near, the vehicle and provide a warning to the driver. In the case of collision warnings, they may also trigger an Automatic Emergency Braking (AEB) function which activates the brake to avoid a predicted crash (these systems often cannot be disabled).
- SAE Level 1 – The vehicle features a specific automated function for driver assistance, such as steering or accelerating. Examples may include Lane Centering or Adaptive Cruise Control (ACC).
- SAE Level 2 – The vehicle combines control of both steering and accelerating/decelerating. This level of automation is not self-driving. A human remains in control of the "dynamic driving task" and must be able to take control of the vehicle at any time. Such functions might include, for example, highway assist or autopilot – a combination of Lane Centering plus ACC at the same time.
- SAE Levels 3-5 – Vehicles include various levels of automation in which the vehicle may be driven by an Automated Driving System (ADS) under certain conditions. At Level 3 or 4, where the ADS is not in control and a human driver operates the vehicle, ADAS functions might still be available. Level 5 vehicles would be self-driving in all conditions.

The American Association of Moor Vehicle Administration (AAMVA) published the *Guidelines for Testing Drivers in Vehicles with Advanced Driver Assistance Systems* (August 2019). It forms the basis for the development of this Australian Guideline for specified ADAS functions to be active during on-road driver testing.

1.2 Terminology

Vehicle manufacturers use a wide variety of terms to describe and market ADAS functions in vehicles. These terms can be confusing for consumers and undermine the development of an understanding of the functions and limitations of the ADAS installed in a vehicle. In 2019, the American Automobile Association (AAA) published *Clearing the Confusion*. This document illustrates the wide variety of names used for ADAS features and provides brand neutral terms that could be used to advance standardisation. This taxonomy, contextualised for Australian audiences, has been used in the development of this Guideline.

ADAS technology, functions, terminology and deployment are constantly changing. This Guideline and its underlying terminology will be subject to those changes and will require constant review and updating.

1.3 Testing Driver Competency

Given that some ADAS functions cannot be disabled, ADAS functions present challenges for on-road driver testing.

The test should assess a driver's skill in operating a motor vehicle in common road situations. Whatever ADAS functions are functioning during testing, it remains critical that drivers demonstrate, and assessors evaluate, the ability to operate the vehicle safely on the road network while maintaining awareness of other road users and hazards in the road environment.

The assessor may question the driver to determine their awareness of ADAS functions present in the vehicle in which they are undertaking the test. This, however, should not form a part of the assessable component of the test. The assessor should inform the driver that it is their driving competence that will be assessed, not their capacity to use any ADAS functions.

The driver must, as now, demonstrate the ability to operate the vehicle safely, independent of ADAS technologies. This ensures that the driver is able to control the vehicle in the event that the functions are disengaged, become inoperable, or the driver operates another vehicle without ADAS. Assessors must continue to validate the driver's response to each situation.

1.4 Driver Assessor Training

The training for driver assessors should keep pace with the development and deployment of ADAS and will need to be updated on a regular basis as the technologies continue to evolve. While not being asked to assess a driver's competency in using ADAS functions, assessors should have awareness of the operational characteristics of those functions to determine the impact on driver competencies.

Assessor training materials and assessment protocols should be reviewed and updated as required to reflect the considerations for testing for each specific ADAS function as detailed in Section 5 of this Guideline.

The purpose and standards for driver assessment are not changed by this Guideline. Drivers should continue to be required to demonstrate all current driving competencies and safe vehicle and road use behaviours.

However, the operation of a number of ADAS functions during testing may require the assessor to determine the appropriateness of the actions of the driver in each particular circumstance.

1.5 ADAS Functions Permitted During Testing

ADAS functions which cannot be disengaged, primarily critical safety alerts and some emergency braking features, should remain active during the testing process. The very nature of these technologies means that they will be likely to react to a hazard before the driver. In some cases, this may mean that it is necessary for the driver to demonstrate proper responses to the ADAS rather than the hazard itself.

Figure 1.1: Breaking alert

It may be allowable for a driver to be assisted by safety functions such as cameras and alerts. However, assistance by technologies which take over control of the vehicle, such as Active Parking Assistance (APA) and ACC, would limit the opportunity for demonstration and assessment of a driver's skill in vehicle management and hazard awareness.

The following table summarises the recommended status of ADAS functions during on-road driver testing. As noted in the introduction, it is acknowledged that some jurisdictions may choose to implement driver testing processes that vary from those recommended in this Guideline. For example, those functions marked as OPTIONAL have been identified as having different levels of support from jurisdictions, where some may allow their operation while others do not.

Table 1.1 Recommended ADAS function testing status

ADAS Function	Permitted for Testing
Warning Functions	
Forward Collision Warning (FCW)	Yes
Pedestrian, Cyclist & Obstacle Warning (PCOW)	Yes
Rear Collision Warning (RCW)	Yes
Blind Spot Warning (BSW)	Yes
Rear Cross Traffic Warning (RCtW)	Yes
Lane Departure Warning (LDW)	Yes
Parking Warning (PW)	Yes
Intelligent Speed Assistance (ISA)- Warning	Optional
Primary Safety Vehicle Control Functions	
Hill Start Assist (HSA)	Yes
Automatic Emergency Braking (AEB)	Yes
Reverse Automatic Emergency Braking (RAEB)	Yes

ADAS Function	Permitted for Testing
Lane Keeping Assistance (LKA)	Optional
Lane Centering Assistance (LCA)	No
Automatic Emergency Steering (AES)	Optional
Intelligent Speed Assistance (ISA)- Adaptive	No
Convenience Vehicle Control Functions	
Cruise Control (CC) and Adaptive Cruise Control (ACC)	No
Active Parking Assistance (APA)	No
Active Driving Assistance (ADA)	No

2. Considerations for Driver Testing and Assessor Training

This section provides a framework which describes common ADAS functions and their associated operational characteristics, including their limitations, and the conditions under which they may, or may not, be allowed to be operational during on-road driver testing.

While this Guideline has been designed to achieve the greatest level of national harmonisation, it is acknowledged that some jurisdictions may choose to implement driver testing processes that vary from those recommended in this Guideline.

In all circumstances, as now, it is the driver response, not the vehicle systems operation which should be assessed. The driver must demonstrate to the assessor that they can safely operate the vehicle independent of any ADAS technologies.

- **Sensor operation** – In some cases this may be inoperable. For safety reasons, it is important for the driver to check vehicle sensors prior to the testing process to ensure they are in working order (e.g. cameras not covered with dirt or mud). Many vehicles carry out an automatic self-test each time they are started but a pre- test visual inspection is advised.

  An ADAS function being inoperable should not impact the ability to undertake on-road driver testing, provided the vehicle is otherwise safe to operate. It should be noted however, that future amendments to the Australian Design Rules may cause sensor failure to deem a vehicle unroadworthy.

- **Functionality** – ADAS functions may be named using proprietary titles. This document is based on an amended version of the ADAS terminology provided in Clearing the Confusion, to define such systems. Some ADAS perform similar functions but with slightly different characteristics depending on manufacturer and specific technology.

- **Scoring skills tests** – Jurisdictional driver test scoring templates and procedures may need to be updated to accommodate ADAS. This would be a matter for individual jurisdictions.

  The assessor will need to determine how a driver should be scored if a safety function is activated. Assessor discretion will be required to assess whether the driver is at fault. Assessors should base their decisions on an assessment of the actions of the driver, not the operation of the vehicle. It should be noted that some warnings may operate in advance of when a driver might be expected to respond. While not part of this Guideline, measures of the impact of the introduction of ADAS into the driver testing environment should inform future revisions to testing procedures and scoring protocols.

- **Automatic failures** – Jurisdictions should determine when activation of a safety function should be treated as an automatic failure. The assessor should evaluate the severity of each situation.

- **Assessor training materials** – Assessor training may need to be revised to include awareness of current ADAS functions and their limitations and indicate which will be permitted to be active during on-road driver testing. Such revisions are likely to be required at regular intervals or when significant advances in ADAS are introduced to market. While not part of this Guideline, measures of the impact of the introduction of ADAS into the driver testing environment should inform future revisions to assessment procedures and assessor training.

- **Updating testing materials** – Jurisdictions should determine how to incorporate additional material into their driver training and testing resources. They will need to determine the priorities for revisions and intervals or benchmarks for driver training manual updates. Measures of the impact of the introduction of ADAS into the driver testing environment should inform this process.

3. ADAS Technologies

ADAS functions employ a variety of technologies to map the environment and identify potential risks and hazards. While the technical aspects of these technologies do not need to be understood by both the assessor and the driver, awareness of their location in the vehicle and basic operating characteristics will provide an understanding of the operation and limitations of ADAS functions. This section describes key technologies used in commonly available ADAS functions.

Cameras

Cameras are located in the front, rear and sides of the vehicle, often behind the rear-view mirror in the side mirrors and in the front and rear vehicle panels. Some cameras show a wider or longer view than others and proximity may be shown by a range of different indicators. Images are usually displayed on the centre console. Cameras can assist drivers to park or position the vehicle more easily and identify hazards as their distance from the vehicle.

Cameras may also play a role in providing information to non-visual functions such as Automatic Emergency Braking (AEB), Forward Collision Warning (FCW) and Lane Keeping Assistance (LKA).

In some cases, a bird's-eye, or surround view of the vehicle is created by combining images from all cameras in the vehicle. This helps the driver confirm the vehicle's position relative to road markings and other objects in the surrounding environment.

Radar

Radar is often used to measure the speed and distance of objects from the vehicle. Radar sensors are most often located at the corners of a vehicle. Radars use microwaves which can travel much farther than light and can detect objects at a greater distance. Radar is not affected by weather or environmental conditions. Radar is often used in Blind Spot Warning (BSW), FCW, AEB, Adaptive Cruise Control (ACC) and LKA.

LiDAR

LiDAR fires a laser beam at an object to calculate how far away the object is. LiDAR can achieve high-resolution 3-D images and often operate at longer ranges than camera systems. LiDAR is usually located on the front of the vehicle. Like radar, LiDAR can be a component of FCW, AEB, ACC, and LKA.

Ultrasonic

Ultrasonic sensors use sound waves to measure the distance from the vehicle to an object and are mainly used at low speeds for detecting objects very close to the vehicle. These sensors are frequently located in or under the front and rear bumper of the vehicle and are used in collision avoidance, cross traffic alerts and parking assist functions.

Global Positioning System (GPS)

GPS is a satellite-based navigation system that provides geolocation to a GPS receiver which locates the vehicle on a digital map usually displayed on the centre console, the dashboard, or both. The location is continually updated as the position of the vehicle changes. Many GPS-based navigation systems also include speed limit information which may be presented on digital maps.

4. ADAS Limitations

This section describes ADAS function limitations of which drivers should be aware.

While ADAS functions offer significant road safety benefits, each ADAS function has a number of important operational limitations of which drivers should be aware. While these limitations are important to understand, they should not prevent drivers from using the functions and gaining the often-significant safety benefits they provide. Some drivers will have greater confidence in the reliability of the function than others and will be likely drive with a higher level of ADAS dependency than others. It is especially important that these drivers understand the operational limits of the functions and are prepared to take over control of the vehicle at the appropriate time. This section describes a number of the most common limitations.

The following limitations might apply to all ADAS functions:

- vehicle software failure (which may be indicated by the vehicle self-check program)
- vehicle systems limitations
- driver inattention
- driver confusion
- vehicle sensor failure
- driver hearing impairment
- driver operating assumption
- driver lack of knowledge
- vehicle differences.

Software Failure

ADAS systems are based on the application of complex technology. Technology is fallible and systems can fail or malfunction without warning.

System Limitations

Similar ADAS functions in different makes and models of motor vehicles do not always have the same operating characteristics or capabilities. Some systems may not detect or distinguish between cyclists and pedestrians and other roadside features while others can. Functions such as Adaptive Cruise Control do not take account of changes to, or driver adherence to, speed limits. Forward Collision Warning and Adaptive Cruise Control do not take account of aspects of road design such as intersections or roundabouts.

Inattention

Driver dependence on ADAS can create over-confidence which can, in turn, lead to a reduced level of attention and a lack of awareness applied to the driving task and maintaining control of the vehicle. Driving remains an exercise in multi-tasking which requires high levels of concentration and awareness of hazards which could be affected by ADAS-linked complacency.

Confusion

Vehicles with many ADAS functions can generate a wide range of audible alerts which could lead to driver confusion or an inability to distinguish the association of the sound, visual warning or vibration with the correct warning type.

Sensor Failure

Any ADAS functions that rely on or involve the use of cameras or sensors are vulnerable to the sensor being obscured or affected by road or weather conditions. The sensor may also be disabled due to vehicle damage or component failure.

Infrastructure

Some ADAS functions are designed to recognise and respond to particular road features, markings and/or signage. These may vary from the country of vehicle manufacture to the country in which the vehicle is driven. Signage and road marking can degrade over time, and this may affect the responsiveness of the vehicle's systems. Road markings and signage can also be obscured by vegetation, objects, stationary vehicles or weather conditions e.g. hail, rain or snow. Some ADAS systems, e.g. Forward Collision Warning and Adaptive Cruise Control, do not take account of aspects of road design such as intersections, curves or roundabouts.

Map Accuracy

ADAS functions which involve the use of GPS may rely on digital mapping and speed limit data that is inaccurate or out of date, particularly in vehicles with systems which do not allow continuous update of the mapping data. The Accuracy of GPS positioning data can be limited by tall buildings, dense trees and geography.

Temporary Signage

ADAS functions designed to respond to signage e.g. speed warning systems may not be able to respond to temporary signage such as roadworks or the presence of vegetation management teams.

Hearing Impairment

Current licensing procedures for private vehicle drivers do not include any requirements for drivers to have hearing aids or other devices to compensate for a hearing impairment. As a result, some drivers may be unable to hear, or less likely to hear, audible warnings generated by ADAS systems.

Operating Assumption

Drivers may assume some or all the ADAS systems in the vehicle are operational which may not necessarily be the case. Drivers may also over-estimate the accuracy and reliably of ADAS functions. Some ADAS will only operate under certain conditions, for example air bags are only deployed if the vehicle is travelling over a certain speed.

Lack of Awareness and Knowledge

It has been established that vehicle owners often do not read the Owner's Manual of their vehicle unless they are troubleshooting and may not have been otherwise briefed. This may mean that drivers are unaware of the details of the vehicle's systems and of the limitations of those systems.

Vehicle Differences

Drivers who are likely to drive a range of vehicles with different ADAS systems may associate particular sounds or alerts with particular warnings. These may vary from one vehicle to another. Further, different makes/models of vehicles may have different ADAS functions so the driver must familiarise themselves with what ADAS features exist in the car they drive and how they operate.

5. ADAS Functions

This section provides information on hazard warning and vehicle control ADAS functions. The section provides a description of each function, how the function works, its limitations, whether it should be allowed to be operational during on-road driver testing and considerations for testing, including how a driver assessor evaluates driver competency while the function is operational.

ADAS functions are divided into two main groupings:

1. **Hazard Warning Functions** notify the driver with a warning – by sound, light, or vibration – that a hazard is close to the vehicle, in its current pathway or a crash is likely to occur or provides an alert that there is a problem or malfunction. Most of these functions are passive, meaning they warn the driver of a potential issue but do not automatically intervene. Based on the warning, the driver may need to make changes to the operation of the vehicle to prevent a problem or crash. Hazard Warning Functions should be permitted for use during the testing process.
2. **Vehicle Control Functions** assist the driver in avoiding a hazard or crash often intervening in control of the vehicle. Some functions automatically make adjustments to the operation of the vehicle, and some assist the driver in making adjustments, such as braking or steering. The driver is still required to be in control and may still need to make changes to the operation of the vehicle to prevent a problem or crash.

   Vehicle Control Functions are divided into two categories:

   a. **Primary Safety Functions** may intervene in vehicle control to prevent or reduce the severity of a crash. Crash avoidance functions (e.g. AEB) should be permitted during testing. Lane Keeping Assist (LKA) function may be permitted optionally but, in some locations, may be considered an intervention which masks the demonstration of driver competency and not allowed. Versions of Intelligent Speed Assistance (ISA) which intervene to limit the speed of the vehicle and mask a test candidate's ability to demonstrate adherence to the signed speed limit should not be permitted, even though in normal use they have a primary safety role.

   b. **Convenience Functions** take a degree of control of the vehicle in assistance to the driver (e.g. Active Parking Assistance (APA), Adaptive Cruise Control (ACC), traffic jam assistance and autopilot like functions) and may prevent the full assessment of a driver's ability. Convenience Functions should not be permitted for use during the testing process. These functions typically require activation by a driver while driving.

The assessor should check the status of the vehicle's ADAS and inform the driver that they are not allowed to enable any prohibited functions. The assessor should be alert to any attempt the driver may make to engage ADAS functions to assist in their driving performance.

5.1 Hazard Warning Functions

Hazard Warning Functions inform the driver with a warning that a potential hazard is close to the vehicle, currently in the pathway in which the vehicle is travelling or will be travelling or the system assesses a crash is likely to occur. It may also indicate that there is a vehicle problem or malfunction. Most of these warnings are passive, meaning they warn the driver of a potential issue but do not otherwise intervene.

5.1.1 Forward Collision Warning (FCW)

Description

Forward Collision Warning (FCW) function scans the road ahead and alerts drivers of an impending crash with a slower moving or stationary vehicle or object to the front. The FCW may not always automatically apply the brake or alter the steering.

See also 5.2.3 Automatic Emergency Braking

How it works

Sensors located in the front of the vehicle detect the proximity of the vehicle to other vehicles or obstacles. Warnings might come in the form of sounds, visuals, vibrations or a quick brake pulse, or a mix of warnings. The warnings become faster and often louder as the vehicle moves closer to the obstacle. A crash is imminent when warnings become continuous.

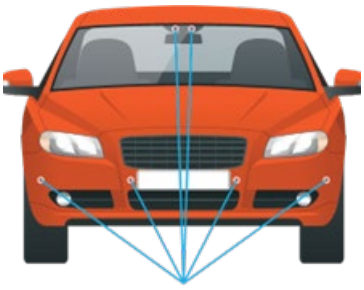
Permitted during testing

Limitations

Systems will vary in their ability to discriminate between various types of obstacles or hazards and their sensitivity to smaller objects. False alarms may also reduce driver confidence in the system and reduce driver responses to these warnings

The following limitations apply to FCW and are detailed in Section 4 of this Guideline.

Considerations for testing



Typical Sensor Locations

The operation of this ADAS function should be permitted during testing. Drivers should demonstrate all necessary behaviours for safely scanning and monitoring the driving environment ahead for hazards.

The driver should check traffic regularly and maintain a safe following distance from vehicles and other hazards.

Assessment should not differ from the current assessment process. If the warning device activates, the assessor should evaluate the situation and assess whether the driver had positioned the vehicle unsafely. Testing guidelines should include evaluation of following distances and guidance on assessment protocols if warnings are activated. The warning may also operate when an object or vehicle suddenly enters the path of travel. In this situation, the driver may not have made an error and should not be penalised.

If the FCW activates, the driver should demonstrate the required collision avoidance behaviour (e.g. braking or steering to avoid the hazard) and be scored appropriately.

5.1.2 Rear Collision Warning (RCW)

See also 5.2.5 Reverse Automatic Emergency Braking (RAEB)

Permitted during testing

Description

RCW uses sensors to scan for objects behind the vehicle and alerts the driver if an object is detected.

How it works

RCW scans behind the vehicle when the driver shifts into reverse. It will alert the driver, through a sound, vibration, or a mix of these, if there is an object or car directly behind the driver. Some vehicles may also activate braking.

Limitations

The following limitations apply to RCW and are detailed in Section 4 of this Guideline.

Drivers should be aware that dependent on the operational characteristics of the system, all potential hazards may not be detected. Sensors should be checked to be free of obstruction.

Considerations for testing

The operation of this ADAS function should be permitted during testing.

Drivers should demonstrate all necessary behaviours for safely monitoring and manoeuvring the vehicle while reversing. These include checking all of the following:

- side mirrors
- ear-view mirror
- head/shoulder checks
- camera(s), if equipped.

Using all methods together will allow the driver to safely monitor and manoeuvre the vehicle, gain better perception, and see anything the RCW does not detect.

Driver response to RCW alone does not demonstrate an ability to safely monitor and manoeuvre the vehicle during reversing. RCW is intended to provide an additional

monitoring resource to mirrors and head/shoulder checks. Drivers should not become complacent and dependent on RCW.

If the RCW activates while reversing, the assessor should assess the severity of the situation.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.1.3 Pedestrian, Cyclists and Obstacle Warning (PCOW)

See also
5.1.1 Forward Collision Warning (FCW)
5.1.2 Rear Collision Warning (RCW)
5.2.3 Automatic Emergency Braking (AEB)
5.2.5 Reverse Automatic Emergency Braking (RAEB)

Permitted during testing

Description

PCOW applies more sophisticated forms of Forward Collision Warning (FCW) and sometimes Rear Collision Warning (RCW) to provide alerts when a pedestrian, cyclist, slow-moving or stationary obstacle has been detected when driving at low speeds (usually around 40 km/h) in built up areas. Some systems are limited to detecting cyclists, pedestrians, or obstacles when traveling directly in front of the vehicle and when moving in the same direction. In some vehicles the system will apply the brake automatically.

How it works

Sensors located in the front and/or rear of the vehicle detect the proximity of the vehicle to a bicycle, pedestrian, or obstacle in front or to the rear. Warnings can come in the form of sounds, visuals, vibrations, a quick brake pulse, or a mix of warnings. The warnings become faster as the vehicle moves closer to the bicycle, pedestrian, or obstacle. A crash is imminent when the warnings become continuous.

Limitations

Drivers should be aware that dependent on the operational characteristics of the system, all potential hazards may not be detected. Sensors should be checked to be free of obstruction.

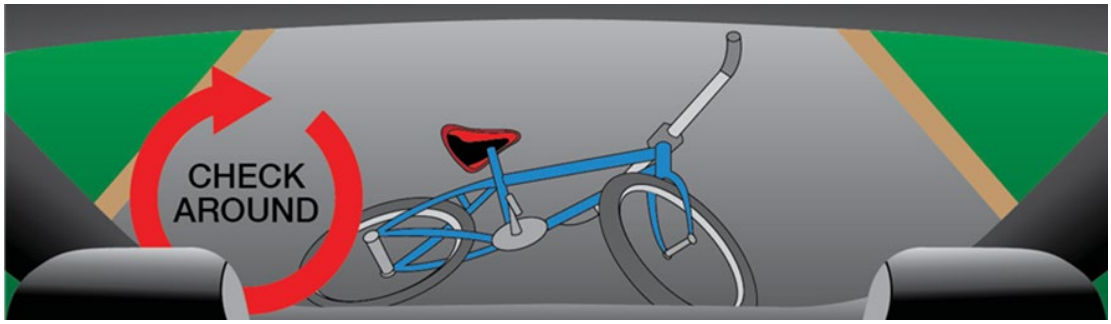
The following limitations apply to RCW and are detailed in Section 4 of this Guideline.

Considerations for testing

The operation of this ADAS function should be permitted during testing. Drivers should demonstrate all necessary behaviours for safely scanning and monitoring the driving environment ahead for hazards.

The driver should check traffic regularly and maintain a safe following distance from vehicles and other hazards.

Assessment should not differ from the current assessment process. If the warning device activates, the assessor should evaluate the situation. Testing guidelines should include evaluation of following distances and guidance on assessment protocols if warnings are activated.



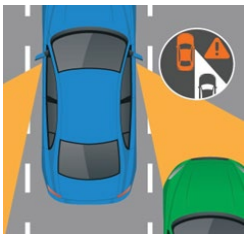
The warning may also operate when an object or vehicle suddenly enters the path of travel. In this situation, the driver may not have made an error and should not be penalised.

If the warning system activates, the driver should demonstrate the required crash avoidance behaviour (e.g. braking or steering to avoid the hazard) and be scored appropriately.

In all circumstances it is the driver response, not the vehicle systems operation which should be assessed.

5.1.4 Blind Spot Warning (BSW)

Description



BSW warns the driver of other vehicles driving in their blind spots through display of a symbol, sound, symbol on the side mirror or dashboard, or vibration. It may provide an additional warning if a driver uses their indicator when there are other vehicles in another lane.

How it works

Permitted during testing

BSW helps the driver be more aware of other traffic. The warnings provided by the BSW provides an additional layer of safety by alerting the driver to the presence of other vehicles when changing lanes. The driver should still complete mirror and head/shoulder checks before preparing to change lanes.

Limitations

Warnings that are dependent on cameras are subject to the limitations of the technology and the impact of environmental conditions, for example the camera view obscured by rain or mud. In some vehicles the system's sensitivity may result in a warning being activated when it is safe to change lanes. Driver complacency and dependence on the warning is also a limitation.

The following limitations apply to RCW and are detailed in Section 4 of this Guideline.

Considerations for testing

The operation of this ADAS function should be permitted during testing.

Drivers should demonstrate all necessary behaviours for safely monitoring and manoeuvring their vehicles while changing lanes. These include frequently scanning:

- side mirrors
- rear-view mirror
- head/shoulder checks.

Monitoring for alerts from the BSW does not demonstrate the driver's ability to safely monitor and manoeuvre the vehicle when changing lanes. The absence of a BSW alert alone does not indicate that it is safe to move.

If the driver changes lanes and the BSW activates, the assessor must determine if the other vehicle presents a danger and score the activity appropriately according to current scoring procedures. The assessor must evaluate the severity of the situation.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.1.5 Rear Cross-Traffic Warning (RCtW)

See also 5.2.5 Reverse Automatic Emergency Braking (RAEB)

Permitted during testing

Description

RCtW warns the driver if vehicles, or sometimes pedestrians and cyclists, are about to enter the reversing path. Dependent on the design of this function, these may not be visible to drivers executing mirror and head/shoulder checks. This warning function may be linked to Reverse Automatic Emergency Braking (RAEB) in some vehicles which may deploy when a collision warning is activated.

How it works

Sensors around the rear of the vehicle detect other vehicles approaching from the left or right. The driver may be alerted by a warning tone or flashing lights on the mirrors or dashboard alerting the driver to stop.

Limitations

The field of scan and level of sensitivity of this function may differ between vehicles. It should not be assumed that all possible hazards have been detected. When reversing, traditional physical checks should always be deployed and caution exercised.

The following limitations apply to RCtW and are detailed in Section 4 of this Guideline.

Considerations for testing

The operation of this ADAS function should be permitted during testing.

Drivers should demonstrate all required safety and scanning behaviours to the rear of the vehicle. Relying on RCtWs alone does not demonstrate the driver's ability to safely monitor the surrounding area while reversing the vehicle.

Drivers should be required to remain aware of their surroundings through use of mirrors, head/shoulder checks, and reversing cameras while reversing or parking.

It should be noted that, using wide angle cameras, some RCtW systems can scan a greater

area than drivers are able to see and may be activated even when drivers are scanning appropriately. The activation of RCtW does not in itself indicate a failure on the part of the driver.

Assessment should not differ from current assessment processes. If the warning device activates, the assessor needs to evaluate the actions of the driver and assess their appropriateness.

In all circumstances it is the driver response, not the vehicle systems operation which should be assessed.

5.1.6 Lane Departure Warning (LDW)

See also
5.2.6 Lane Keeping Assistance (LKA)
5.2.7 Lane Centring Assistance (LCA)

Permitted during testing

Description

LDW alerts the driver when they are drifting out of their lane using visual, vibration, or sound warnings. This function is designed to alert a driver to steer back to the centre of their lane and prevent a crash where that departure is unintentional.

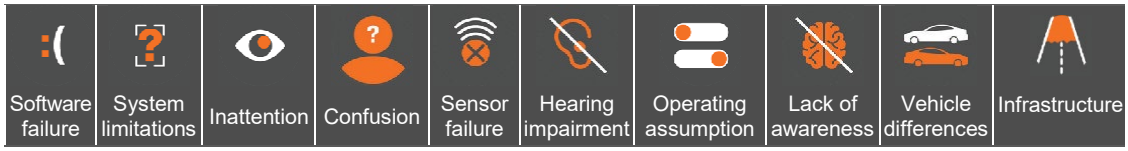
How it works

This function relies on detection of road lane markings to operate. It is designed to alert the driver if the car begins to drift out of a lane with one or more types of warnings.

Limitations

This function is critically dependent on road markings for its operation and may not operate effectively, or at all, where road markings are absent, obscured or degraded.

The following limitations apply to LDW and are detailed in Section 4 of this Guideline.



Considerations for testing

The operation of this ADAS function should be permitted during testing.

The driver should always be aware of their surroundings and the traffic in the lanes around them. The driver should check traffic and their mirrors regularly. They should stay within their lane of travel.

Drivers should demonstrate all necessary behaviours for maintaining their lane position. The driver should demonstrate proper steering control and ability to stay within their lane of travel. The driver should be assessed, as now, on their ability to competently and safely control the vehicle. This includes positioning it correctly with regard to road and traffic conditions and manoeuvring requirements.

Assessment should not be based on the operation of the warning indicator. The assessor should observe the proximity of the vehicle to lane lines to determine if the driver has positioned the vehicle incorrectly or unsafely consistent with current scoring practices.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.1.7 Parking Warnings (PW)

Description

PWs alert the driver to the position of objects around the vehicle as they park. The driver should listen for the rate of the warning sounds which increase in speed and sometimes volume as the vehicle approaches the obstacle. These audible warnings are often overlayed on images provided by front and rear cameras.

Permitted during testing

How it works

The vehicle may provide audible warnings that there are objects close in front or behind it. The intervals between beeps may become shorter the closer the vehicle is to an object. A constant tone means the vehicle is close to an object and a crash may be imminent.

Limitations

Parking sensors may not detect objects that are flat on the ground or below the vehicle, too close to the vehicle, or too far from it.

The following limitations apply to PW and are detailed in Section 4 of this Guideline.

Considerations for testing

The operation of this ADAS function should be permitted during testing.

Drivers should not rely solely on parking sensors to detect all objects in their parking path. Drivers should remain aware of their surroundings through the use of mirrors, head/ shoulder checks, and reversing cameras while parking, including awareness of people or objects that are in or may enter the parking path.

Drivers should demonstrate all necessary behaviours for safely parking the vehicle. These include checking:

- side mirrors
- rear-view mirror;
- head/shoulder checks
- camera(s), if equipped.

Parking sensors alone do not demonstrate the basic skills to park a vehicle correctly or safely within the parking space.

If the PW activates while parking, the assessor must determine if they are being used correctly in association with the required physical checks and control of the vehicle.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.1.8 Intelligent Speed Assistance (ISA) – Passive

See also 5.2.2 Intelligent Speed Assistance (ISA) – Active

Optionally permitted during testing

Description

ISA functions use GPS mapping systems and, in some cases, cameras reading speed signs, to alert the driver to the speed limit on the road on which they are driving and changes to that speed limit.

There are 3 levels of ISA which can be either passive or active systems. Passive systems provide only speed limit information via a visual alert or a visual alert and an audible alert or display the current speed limit either on the instrument panel or central console. Active systems are described in Section 5.2.2 Intelligent Speed Assistance (ISA) – Active.

How it works

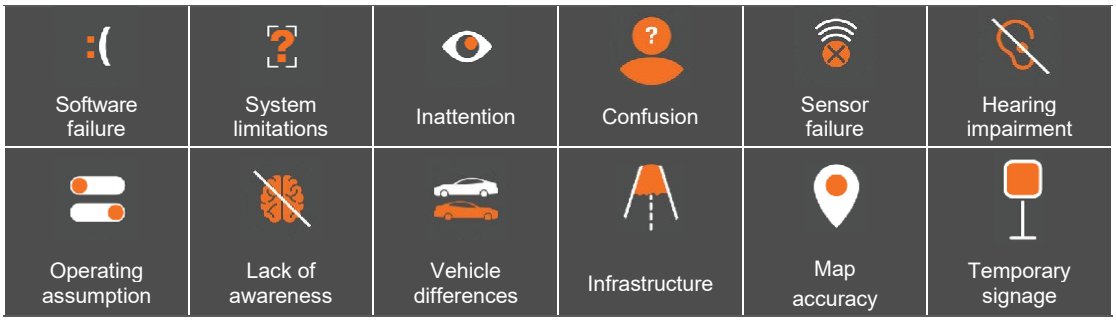
ISA uses GPS and sometimes camera technology to show the current speed limit and the changes to the speed limit.

Limitations

ISA systems are dependent either on the accuracy of digital maps, which may or may not include speed limit data and may be out of date, or the ability of cameras to read speed limit signs. The latter may be limited by the condition of speed signs and vegetation or other obstacles which may obscure them.

Other limitations to accuracy include temporary speed limits, such as those at roadside work sites, variable speed limits and school zone limits which may change according to the time of day and the school calendar.

The following limitations apply to all ISA – Passive and are detailed in section 4 of this Guideline.



Considerations for testing

The operation of this ADAS may be permitted optionally but, in some locations, may be considered an intervention which masks the demonstration of driver competency and not allowed.

The driver should be assessed on their demonstration of awareness of their speed and compliance with the current speed limit at all times. This awareness will be demonstrated by checking road signage and their current speed regularly. The ISA should be seen as another form of information provided to drivers. Drivers should not depend on the ISA to inform them of the speed limit or their own current speed.

Assessment should not differ from current assessment practices requiring the driver to demonstrate active and regular monitoring of the road signage and their current speed and speed limit compliance. A speed infringement may be treated as a failure according to current assessment practices.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.2 Vehicle Control Functions – Primary Safety

The main purpose of these ADAS functions is to intervene in the primary driving task in specific circumstances.

These functions assist drivers in avoiding hazards and crashes. Some automatically make adjustments to the vehicle, and some assist the driver in making adjustments, such as braking or steering. The driver is still responsible for making changes to the operation of the vehicle to prevent a problem or crash.

It should be noted that ADAS functions may respond quicker than a human driver if another vehicle or object appears suddenly in front of the driver's vehicle. In this case, the assessor should use their discretion to determine if the driver should be penalised for not reacting before the system.

5.2.1 Hill Start Assist (HAS) (Permitted for Testing)

Permitted during testing

Description

HSA prevents the vehicle rolling back when starting on a hill.

How it works

Sensors detect when the vehicle is on an incline. HSA works by maintaining the brakes for a short time when the driver takes their foot off the brake pedal, to ensure the vehicle does not roll back. As the driver presses the accelerator the brake is automatically released. In cars with manual transmission HAS maintains brake pressure until the driver releases the clutch.

Limitations

HSA is dependent on the operation of a number of systems which, like all mechanisms, are subject to occasional failure. Different vehicles may respond in slightly different ways and with varying tolerances. Some vehicles may be able to switch off the system, others may not. Older vehicles may not have this feature.

The following limitations apply to all ISA – Passive and are detailed in section 4 of this Guideline.

Considerations for testing

HSA is a primary safety feature which may or may not be able to be disabled in any particular vehicle. While available for use during testing, assessors should take steps to assure that drivers are able to demonstrate appropriate control of the vehicle when starting on a hill.

5.2.2 Intelligent Speed Assistance (ISA) – Active

See also 5.1.8 Intelligent Speed Assistance (ISA) – Passive

Not permitted during testing

Description

All ISA functions alert the driver to the speed limit on the road on which they are driving and changes to that speed limit. Some systems provide a visual alert on the dashboard and others provide both a visual alert and an audible alert. Others will only display the current speed limit either on the instrument panel or central console.

In addition to the advisory function, ISA - Active systems intervene in control of the vehicle to limit the speed of the vehicle actively restricting acceleration past the speed limit.

ISA Adaptive - functions should not be allowed during driver testing.

How it works

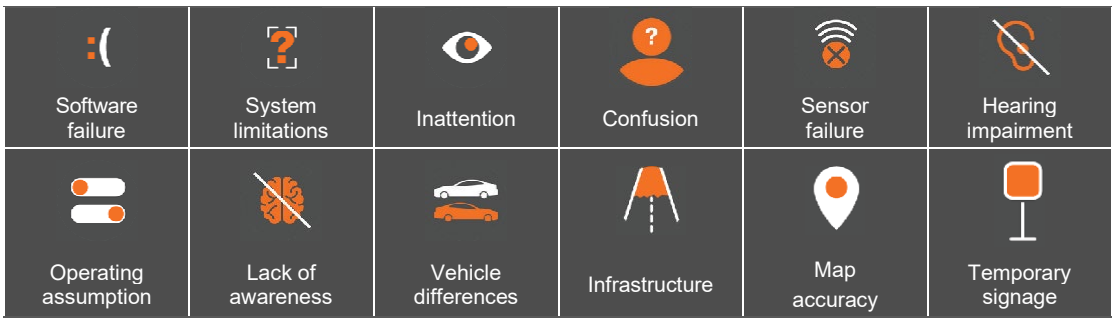
ISA uses GPS mapping and sometimes camera technology to show the current speed limit and the changes to the speed limit. ISA – Adaptive restricts the speed of the vehicle either by requiring a driver to press harder on the accelerator to move beyond the speed limit or by preventing the vehicle from proceeding beyond the speed limit.

Limitations

ISA systems are dependent either on the accuracy of digital maps, which may or may not include speed limit data and may be out of date, or the ability of cameras to read speed limit signs. The latter may be limited by the condition of speed signs and vegetation or other obstacles which may obscure them.

Other limitations to accuracy include temporary speed limits, such as those at roadside work sites, variable speed limits and school zone limits which may change according to the time of day and the school calendar.

The following limitations apply to all ISA – Active and are detailed in section 4 of this Guideline.



Considerations for testing

The use of this ADAS function should not be permitted during testing and the driver should be made aware of this before commencement of the test.

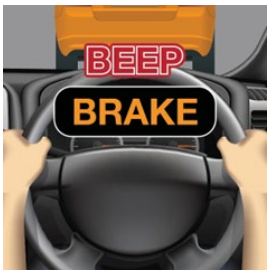
If the driver attempts to activate the function, the assessor must require them to turn it off and not proceed with the test should the driver not comply.

Drivers should be required to demonstrate all necessary behaviours for safely controlling vehicle speed and distance from other road users. ISA – Adaptive does not allow the driver to demonstrate the ability to control the speed of the vehicle.

5.2.3 Automatic Emergency Braking (AEB)

Description

AEB senses slowing or stopped traffic or a stationery object ahead and applies the brakes if it assesses a crash is likely.



How it works

If sensors detect a potential hazard ahead and assesses a crash likely in the context of the current speed and path of the vehicle, it will slow down rapidly or stop the vehicle to avoid a possible crash.

Permitted during testing

Limitations

Systems will vary in their ability to discriminate between various types of obstacles or hazards and their sensitivity to smaller objects. False alarms may also reduce confidence in the system and reduce driver responses to these alerts.

AEB functions assess the likelihood of a crash using varying levels of sensitivity and will therefore operate differently across vehicle types. This variation in operational characteristics may mean an AEB operates sooner than a typical human driver in any particular circumstance.

The following limitations apply to AEB and are detailed in Section 4 of this Guideline.

Considerations for testing

The operation of this ADAS function should be permitted during testing. This ADAS function cannot usually be disabled.

Drivers should be required to demonstrate all appropriate behaviours in managing their speed, distance between their vehicle and those ahead and scanning the road environment for potential hazards.

If the driver fails to identify a hazard and therefore fails to reduce speed or stop appropriately, they should be penalised for not doing so.

If the AEB function activates, the assessor should determine whether the driver:

- failed to scan the road ahead or appropriately identify potential hazard(s)
- was driving too fast for the conditions
- positioned the vehicle too close (insufficient following distance)
- did not give way to other road users as required
- exhibited a lack of vehicle control, and/or
- exhibited other unsafe behaviour.

It should be noted that the AEB may respond more quickly than a human driver if another

vehicle or object appears suddenly in the path of the driver's vehicle. In this case, the assessor should use discretion to determine if the driver should be scored for not stopping before the automatic braking activated.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.2.4 Automatic Emergency Steering (AES)

Description

AES can steer the vehicle away from a potential collision.

How it works

If the CAW function senses a hazard which is considered likely to result in a collision and the driver does not respond to the alert, AES can steer the vehicle away from the hazard avoiding a collision. It may combine with AEB to bring the vehicle to a stop once the hazard has been avoided.

Optionally permitted during testing

Limitations

Systems will vary in their ability to tell the difference between various types of obstacles and how well they detect smaller objects. False alarms may also reduce confidence in the system and reduce driver responses to these warnings.

Collision avoidance functions assess the likelihood of a collision using varying levels of sensitivity and will therefore operate differently across vehicle types.

Drivers are required to maintain control of the vehicle and awareness of the road environment at all times.

The following limitations apply to AES and are detailed in Section 4 of this Guideline.

Considerations for testing

AES may be permitted optionally but, in some locations, may be considered an intervention which masks the demonstration of driver competency and not allowed.

The driver should always be aware of their surroundings and the traffic in the lanes around them. The driver should check traffic and their mirrors regularly. They should be able to position and maintain their vehicle within the travel lane unless turning or changing lanes.

Drivers should demonstrate all necessary behaviours for maintaining their lane position. AES functions do not demonstrate the driver's ability to maintain control of the vehicle on the roadway and remain within the driving lane. The driver should maintain control of the vehicle at all times and demonstrate proper visual scanning and steering control to maintain the vehicle within the lane of travel.

The driver should not depend on AES. If AES activates, the assessor should determine if the driver was not appropriately controlling the vehicle.

Assessment should not be based on activation of this function. Consistent with current scoring practices the assessor should observe the proximity of the vehicle to hazards and determine if the driver has not responded appropriately.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.2.5 Reverse Automatic Emergency Braking (RAEB) (Approved for Testing)

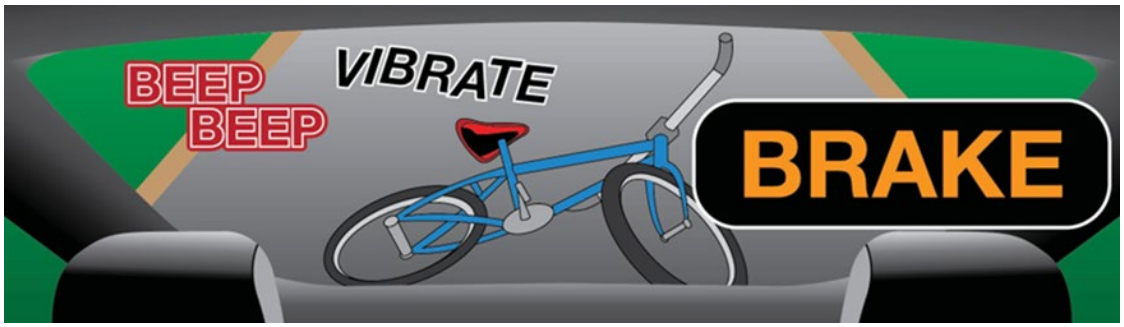
Description

RAEB senses the existence of an obstacle or hazard and can apply the brakes if it assesses a crash is likely.

How it works

If an object is detected while the vehicle is reversing, the driver may hear a series of beeps or see visual indicators to alert them an object is to the rear (Rear Collision Warning RCW). If the driver does not respond to reduce the crash risk, the RAEB activates, and the brakes are applied to avoid a potential crash.

Permitted during testing



Limitations

Drivers should be aware that, dependent on the operational characteristics of the system, all potential hazards may not be detected. Sensors should be checked to be free of obstruction.

RAEB functions assess the likelihood of a crash using varying levels of sensitivity and will therefore operate differently across vehicle types. This variation in operational characteristics may mean RAEB operates sooner than a typical human driver in any particular circumstance.

The following limitations apply to RAEB and are detailed in Section 4 of this Guideline.

Considerations for testing

The operation of this ADAS function should be permitted during testing. This ADAS function may not be able to be disabled.

Drivers should demonstrate all necessary behaviours for safely reversing the vehicle using mirrors, head/shoulder checks and, where available, rear camera images to scan the environment for hazards behind the vehicle.

If the driver fails to identify a hazard while reversing and the RAEB activates, the assessor should determine if the driver should be penalised for not recognising the hazard.

It should be noted that RAEB may respond more quickly than a person can react if another vehicle or object appears suddenly behind the driver's vehicle without any warning. In this case, the assessor will have to use their discretion to determine if the driver should be penalised for not stopping before the automatic braking activates.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.2.6 Lane Keeping Assistance (LKA)

See also 5.1.6 Lane Departure Warning (LDW)

Optionally permitted during testing

Description

LKA can help return the vehicle to its lane if it drifts out.

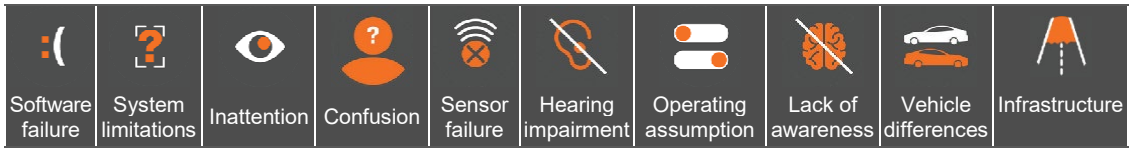
How it works

The driver may receive an alert via a sound, flashing light, or vibration of the steering if the vehicle drifts out of the lane (LDW). The driver should return to their lane. If they do not take action, this function may gently steer the driver into their lane. It is easily cancelled by nudging the wheel. In some vehicles LKA may only function when the indicator has not been operated.

Limitations

This function is critically dependent on sensing road markings for its operation and may not operate where road markings are absent, obscured or degraded.

The following limitations apply to LKA and are detailed in Section 4 of this Guideline.



Considerations for testing

LKA may be permitted optionally but, in some locations, may be considered an intervention which masks the demonstration of driver competency and not allowed.

The driver should always be aware of their surroundings and the traffic in the lanes around them. The driver should check traffic and their mirrors regularly. They should be able to position and maintain their vehicle within the travel lane unless turning or changing lanes. However, if they do unintentionally begin to drift out of the lane, the LKA will return them within the lane.

Drivers should demonstrate all necessary behaviours for maintaining their lane position. LKA functions do not demonstrate the driver's ability to maintain control of the vehicle on the roadway and remain within the driving lane. The driver should maintain control of the vehicle at all times and demonstrate proper visual scanning and steering control to maintain the vehicle within the lane of travel.

The driver should not depend on LKA. If LKA activates, the assessor should determine if the driver was not appropriately controlling the vehicle.

Assessment should not be based on an audible or visual indicator. Consistent with current scoring practices the assessor should observe the proximity of the vehicle to lane lines to determine if the driver has crossed or touched the lane line. This ADAS function may provide assistance to assessors in monitoring the driver's lane position.

In all circumstances it is the driver response, not the vehicle systems operation, which should be assessed.

5.2.7 Lane Centering Assistance (LCA)

See also 5.1.6 Lane Departure Warning (LDW)

Not permitted during testing

Description

LCA helps a driver keep a vehicle centred in the middle of the lane of travel.

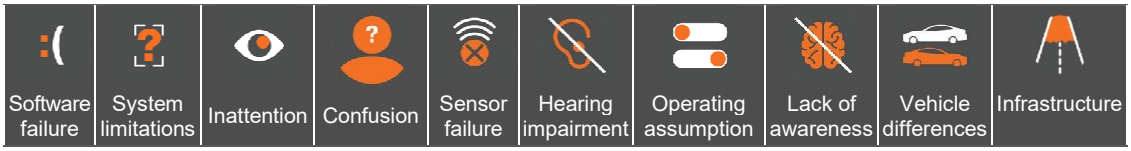
How it works

If the Lane Departure sensors detects a drift of the vehicle out of position, LCA can gently steer the vehicle back into the centre of the lane of travel.

Limitations

This function is critically dependent on sensing road markings for its operation and may not operate where road markings are absent, obscured or degraded.

The following limitations apply to LCA and are detailed in Section 4 of this Guideline.



Considerations for testing

The use of this ADAS function should not be permitted during testing and the driver should be made aware of this before commencement of the test.

If the driver attempts to activate the function, the assessor must require them to turn it off and not proceed with the test should the driver not comply.

Drivers should be required to demonstrate all necessary behaviours for safely controlling vehicle speed and distance from other road users. LCA does not demonstrate the driver's ability to control the position of the vehicle.

5.3 Vehicle Control Functions – Convenience

The following combine ADAS functions to take control of a vehicle and do not require the driver to demonstrate a core driving competency. Convenience functions should not be permitted for use during on-road driver testing.

5.3.1 Cruise Control (CC) and Adaptive Cruise Control (ACC)

Not permitted during testing

Description

CC can maintain a vehicle's speed at a maximum level set by the driver. ACC can increase or decrease the vehicle's speed and maintain a following distance to the vehicle in front as set by the driver.

Some systems are able to slow and stop the vehicle in slow moving traffic and then accelerate automatically. While providing an embedded safety advantage, CC and ACC are considered "convenience" functions.

How it works

The driver accelerates to their set speed or sets the required speed and then turns on the CC or ACC. Traditional CC will only maintain a chosen speed and the driver must maintain control of the distance from vehicles ahead and other changing road conditions, such as approaching bends, intersections, traffic lights and roundabouts. The ACC function can be programmed to a chosen safe following distance and activated.

When ACC is active, sensors on the vehicle scan the road ahead for traffic and maintain a safe speed and the chosen following distance. While the system maintains speed and following distance, the driver is required to remain aware of their surroundings scanning the road and other road users for hazards and steering the vehicle to maintain lane position.

The driver also needs to remain alert to take control of the vehicle.

Limitations

ACC is not an autonomous driving function and, while in some more advanced systems it may be paired with limited automated steering capacity (see ADA S 6.33), continued driver control of the vehicle and preparedness to take over control from this function is required at all times.

While most ACC systems use radar which is not subject to the limitations of weather, care should be taken in using the function in severe weather or challenging environments.

ACC maintains control of the speed of the vehicle in response to traffic on the road ahead and will not respond to changes in the road environment such as traffic lights, intersections, roundabouts and areas where speed reductions are necessary such as corners. ACC does not sense changes to the speed limit nor maintain a speed consistent with speed limits for which the driver remains responsible.

Drivers are required to be in control of the vehicle in all circumstances.

The following limitations apply to CC and ACC and are detailed in Section 4 of this Guideline.

Considerations for testing

The use of this ADAS function should not be permitted during testing and the driver should be made aware of this before commencement of the test.

If the driver attempts to activate the function, the assessor must require them to turn it off and not proceed with the test should the driver not comply.

Drivers should be required to demonstrate all necessary behaviours for safely controlling vehicle speed and distance from other road users. ACC does not demonstrate the driver's ability to control the speed of the vehicle.

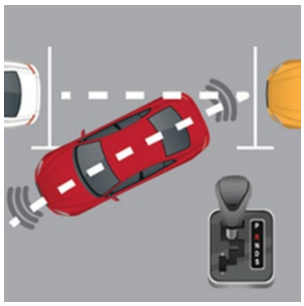
5.3.2 Active Parking Assistance (APA)

Not permitted during testing

Description

APA guides the vehicle into a parking space. The driver may still be responsible for braking and monitoring the environment. While providing an embedded safety advantage APA is considered a “convenience” function

It should be noted that in some Australian jurisdictions the use of APA might be deemed to constitute an offence due to rendering the driver not in control of the vehicle when their hands and feet are not in contact with the controls. Local regulations should be consulted to ensure compliance.



How it works

The driver can activate APA when ready to park.

The driver should follow any prompts provided by the APA. These may include positioning the vehicle relative to the space, shifting into reverse, and taking hands off the steering wheel. The driver may remain responsible for braking.

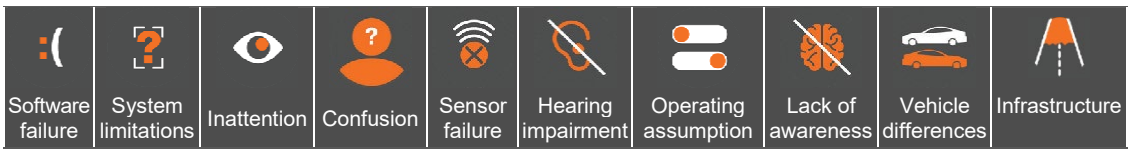
After the vehicle is parked, the driver may need to make some slight adjustments to ensure the vehicle is in an optimal position.

Limitations

Functions that are dependent on cameras are subject to the limitations of the technology and the impact of environmental conditions e.g. camera view obscured by rain, mud etc. In some vehicles the system’s sensitivity may result in an incorrect response.

The operation of APA does not remove the need for the driver to carefully scan the environment before activating the function.

The following limitations apply to APA and are detailed in Section 4 of this Guideline.



Considerations for testing

The use of this ADAS function should not be permitted during testing and the driver should be made aware of this before commencement of the test.

A driver should continue to demonstrate all necessary behaviours for safely parking a vehicle. APA does not demonstrate the driver’s ability to reverse parallel park a vehicle correctly and should not be allowed during testing.

5.3.3 Active Driving Assistance (ADA)

See also
5.1.1 Forward Collision Warning (FCW)
5.2.6 Lane Keeping Assistance (LKA)
5.3.1 Cruise Control (CC) and Adaptive Cruise Control (ACC)

Not permitted during testing

Description

Sometimes described by manufacturers as “autopilot” or “traffic jam assist” these combine a number of stand-alone ADAS functions to take over control of speed, braking and steering for short periods before the driver is required to intervene. These functions take over control of the vehicle and are considered “convenience” functions.

It should be noted that in some Australian jurisdictions the use of ADA might be deemed to constitute an offence due to rendering the driver not in control of the vehicle when their hands and feet are not in contact with the controls. Local regulations should be consulted to ensure compliance.

How it works

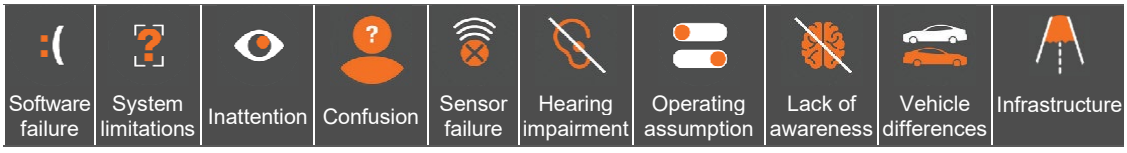
These functions combine functions including Adaptive Cruise Control, Automatic Emergency Braking, Lane Centering Assistance and Lane Keeping Assistance to maintain vehicle speed, distance from vehicles ahead and position in the lane.

Limitations

While ADA functions take over control of the vehicle for short periods, they do not constitute full automation and cannot be relied on to maintain all aspects of safe operation. While these functions require driver intervention at frequent periods, they can result in significantly reduced driver attention and ability to regain control of the vehicle.

In addition, complex combinations of different function are more subject to system failures and environmental factors.

The following limitations apply to ADA and are detailed in Section 4 of this Guideline.



Considerations for testing

The use of this ADAS function should not be permitted during testing and the driver should be made aware of this before commencement of the test.

A driver should continue to demonstrate all necessary behaviours for safely managing the vehicle on the road and in awareness of road and traffic conditions and other road users.

References

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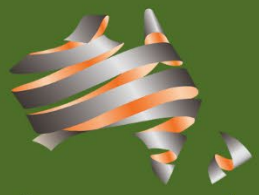
American Automobile Association (2019) *Clearing the Confusion: Recommended Common Naming for Advanced Driver Assistance Technologies* [PDF 227KB].



Austroads

Level 9, 570 George Street
Sydney NSW 2000 Australia

Phone: +61 2 8265 3300

austroads@austroads.com.au
www.austroads.com.au