

# Safe Driving Occupant Monitoring

## 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 dummy positioning, 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 Secretary General should be immediately informed. Any such incident may be reported by the Secretary General 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

# CONTENTS

<b>DEFINITIONS</b>	<b>3</b>
<b>SCORING</b>	<b>5</b>
<b>1 SEATBELT USAGE</b>	<b>6</b>
1.1 General requirements	6
1.2 Correct seatbelt routing	8
1.3 Rear seat occupancy assessment	9
<b>2 OCCUPANT CLASSIFICATION</b>	<b>10</b>
2.1 Passenger airbag status	11
2.2 Out of Position	13
2.3 Occupant stature classification	15
<b>3 OCCUPANT PRESENCE</b>	<b>16</b>
3.1 Child presence detection	16
3.2 Crash occupancy information	16

## DEFINITIONS

**Journey** – The first 8 seconds after either ignition on or master control switch on are not considered for initial and/or final audible signal quality assessments, and the synchronisation requirements above do not apply during this time. This is to avoid conflict with some US FMVSS 208 compliant SBR warning configurations.

**End of journey** – A journey is deemed to have finished 15 minutes after:

- Engine or ignition off or
- Master control switch off.

In subsequent sections of the protocol, the term ‘ignition off’ is used to cover the three different actions detailed in this definition.

**Vehicle master control switch** – Means the device by which the vehicle’s on-board electronics system is brought from being switched off, as in the case where a vehicle is parked without the driver being present, to a normal operation mode.

**Adult occupant** – Means a person with a mass or stature as of 47kg or 140cm defined under the UN ECE R16 lower boundary.

**Six year old child occupant** – Means a person with a mass or stature of that of a 95th percentile child, 28kg or 125cm respectively. Growth Charts - 2000 CDC Growth Charts - United States.

### Sensing

**Direct sensing** – The ability to detect the presence of a human inside the vehicle by means of tracking heartbeat, respiration, movement, or any other sign of life. Direct sensing may or may not allow categorisation and localisation of the subject(s).

**Indirect sensing** – The ability to derive the potential presence of a subject or object inside the car based on logic using information such as door opening, pressure or capacitive sensing etc. Indirect sensing does not distinguish between live persons or objects. From 2025 onwards, indirect sensing system will NOT be rewarded by Euro NCAP.

### CPD warnings

**Alert** – Alert systems consider the potential presence of an occupant in the rear (only) and provide a signal from the vehicle in accordance with the US voluntary commitment (September 2019).

**Initial warning** – The first exterior signal from a vehicle that informs the driver/carer directly that a child may be in the vehicle. This is the first opportunity for a driver/carer to be warned that a child has been locked in a vehicle while they are in the vicinity of the vehicle.

**Escalation warning** – Provided after the initial signal, escalation warnings are more persistent and repetitive than initial warnings providing additional warning signals to the driver/carer and the surrounding environment that a child may be in the vehicle.

**Intervention** – An action by which a system mitigates the threat to any child that has become locked in a vehicle either knowingly or unknowingly. It is considered a last resort when warnings have been ignored and the internal vehicle temperature may be critical.

**CPD Warning signal suppression** – Signal suppression is specifically an intentional action by the driver/carer to either delay a signal before it has started or cancel a signal that has already started.

**Delay of a CPD signal** – Delaying the initial signal may be necessary, for example at a fuel station, and is an intentional act by the driver/carer who is aware that there is a child in the vehicle. This can be done at any time between the start of journey up to the start of the escalation warning.

**Cancellation of a CPD signal** – Cancellation of a signal means stopping any CPD warning where the driver/carer has forgotten or intentionally left an unattended child in the vehicle. Cancellation occurs after the vehicle has been locked and the warning, initial or escalation, has commenced.

Cancellation of any warning must have no consequence on either the subsequent warnings or intervention when a child is in the vehicle.

### **CPD system deactivation**

**Temporary deactivation** – Temporary deactivation of the CPD system means deactivation of all warnings and intervention for a single journey only. This is an intentional act from the driver/carer performed at any time before and during a journey. Temporary deactivation must not be confused with delaying or cancelling the CPD signal.

**Long term deactivation** – Systems that allow the CPD system to be deactivated for more than a single journey will NOT be rewarded by Euro NCAP.

**Child safety locks** – For the purposes of this protocol only, Euro NCAP uses the same definition for child safety locks as that detailed in UN ECE Regulation 11.

Child Safety Lock System is a locking device which can be engaged and released independently of other locking devices and which, when engaged, prevents operation of the interior door handle or other release device. The lock release/engagement device may be manual or electric and may be located anywhere on or in the vehicle.

## SCORING

<b>Occupant monitoring assessment</b>	<b>Total points 30</b>
<b>Seatbelt Usage</b>	<b>10</b>
Correct belt routing	5
Rear seat occupancy	5
<b>Occupant classification</b>	<b>10</b>
Passenger airbag status	4
Out of position	2
Stature classification	4
<b>Occupant presence</b>	<b>10</b>
Child presence detection	5
Crash occupancy information	5

# 1 SEATBELT USAGE

Seatbelt Usage assessment	Total points 10
<b>Correct belt routing</b>	<b>5</b>
Seatbelt buckle only	2
Seatbelt completely behind back	1
Lap belt only, diagonal belt behind back	2
<b>Rear seat occupancy</b>	<b>5</b>
Nr of rear seats with occupancy detection / Nr of rear seats x 5 points	5

## 1.1 General requirements

The seatbelt reminder system must start at the commencement of each 'journey' that the vehicle makes. Short breaks in the journey are allowed where the reminder system is not required to start again. Such short breaks, of up to 30 seconds, are to allow for events such as stalling of the engine where passengers may remain in the vehicle.

All seatbelt reminder systems shall be audio-visual with a clear and obvious link between the audible and visual signals. As soon as the audible part of the seatbelt reminder signal starts, the visual signal must flash and be synchronised (not necessarily at the same frequency, but an integer multiple of each other, e.g. two flashes with every chime) with the audible part.

### 1.1.1 Visual signal

Any visual signal must be clearly visible to the driver, without the need for the head to be moved from the normal driving position (e.g. instrument panel, head-up display, rear-view mirror, centre console).

The visual signal must remain while the seatbelt is fastened and or worn incorrectly. If a belt has been buckled, the signal must recommence once a seatbelt is unbuckled.

### 1.1.2 Audible signal

A 'loud and clear' audible signal is to be deployed before at least one of the following (at the choice of the manufacturer):

- The car has reached a forward speed of 40 km/h, or
- The engine has been running for 90 seconds, or
- The car has been in "Forward Motion" for 90 seconds, or
- The car has been in "Forward Motion" for 1000 meters, or
- The regulatory second level warning is finished.



The duration of the audible signal must be at least 90 seconds not counting gaps exceeding 3 seconds and must start with a positive audible signal (not a gap). There must be no gaps greater than 10 seconds.

### **1.1.3 End of signal**

Once the audible part of the SBR signal has started, it must continue while the seatbelt is unbuckled or work incorrectly. The signal must only stop when the signal has operated for the required duration or when the related belts are buckled and worn correctly.

### **1.1.4 Occupant detection**

In the case of the driver's seat, occupancy can be assumed, therefore the system does not have to be capable of detecting whether or not the seat is in use. For all front seat passengers, seat use must be detected.

### **1.1.5 Secondary buckles**

Monitoring of any seat belt secondary buckles is required. Secondary buckles that require a tool to unlock, do not require monitoring.

### **1.1.6 Airbag deactivation switch**

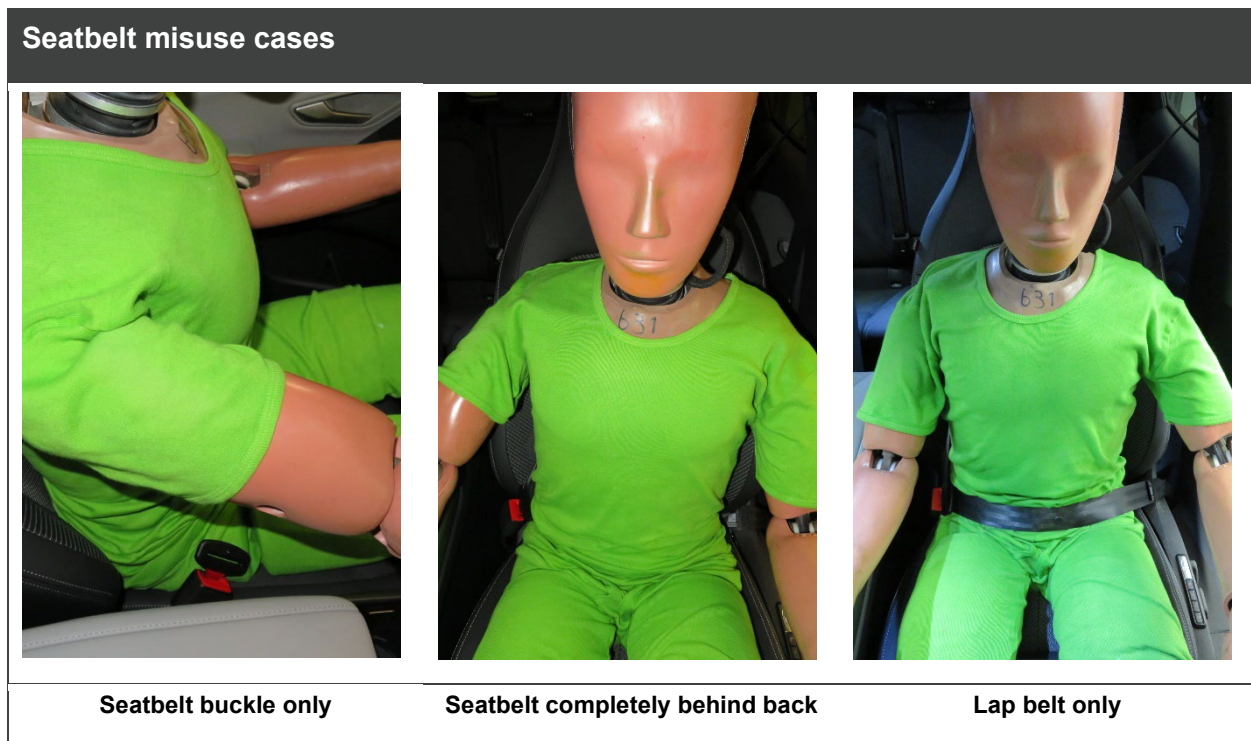
There must be no link between the front seat passenger airbag and the front seat passenger SBR signals. It is NOT acceptable to Euro NCAP for the passenger's seat SBR to be disabled via the passenger airbag switch.

## 1.2 Correct seatbelt routing

Correct seatbelt routing	Total points 5
Seatbelt buckle only	2
Seatbelt completely behind back	1
Lap belt only	2

Initially, the seatbelt misuse cases are only assessed for the driver's seating position. Additional positions within the vehicle and misuse cases may be added in 2029.

### 1.2.1 Seatbelt misuse cases



The pictures above are for illustration purposes only.

### 1.2.2 Warning requirements

Where the vehicle detects any of the misuse cases defined above at the start or during a journey, a seatbelt reminder warning or an alternative audiovisual warning that meets the general warning requirements in Section 1.1 shall be issued.

A latency period of 30 seconds is permitted from the moment of misuse to the time of warning to allow the system to assess and decide on the need for warning.

Once the audible part of signal has started, it is permissible for the driver to acknowledge the signal and silence the audible part (only). The visual signal must continue either in a steady or flashing state.

Where a signal has been acknowledged, there is no need for further audible warnings if the occupant continues to misuse the seatbelt with either the same misuse case or changes to a different misuse case. If the seatbelt is unbuckled after this acknowledgement, the SBR warning must recommence in accordance with Section 1.1.

The system performance will be verified with snug fitting clothing. No further specification of either clothing or occupant size & stature is given to avoid sub-optimisation of detection. Where an issue arises regarding the clothing used for the assessment and the sensing system, this shall be discussed with Euro NCAP Secretariat who will determine if further assessment is required on a case by case basis.

### 1.3Rear seat occupancy assessment

Rear seat occupancy	Total points 5
Nr of rear seats with occupancy detection / Nr of rear seats x 5 points	5

Any rear seating with occupant detection and that issues a seatbelt reminder warning that meets the requirements of 1.1 when the seat is occupied and a belt is not in use, will be awarded points.

## 2 OCCUPANT CLASSIFICATION

Occupant Classification	Total points 10
<b>Passenger airbag status</b>	<b>4</b>
Automatic	4
System advised with manual software switch	3
System advised with manual hardware switch	2
Manual (software or hardware switch)	1
<b>Out of Position</b>	<b>2</b>
Close proximity to the airbag	1
Feet on dashboard	1
<b>Stature classification</b>	<b>4</b>
Driver	3
Front seat passenger	1

## 2.1 Passenger airbag status

Passenger airbag status	Total points 4
Automatic	4
System advised with manual software switch	3
System advised with manual hardware switch	2
Manual (software or hardware switch)	1

The passenger airbag deactivation assessment looks at occupancy sensing, the airbag switch and the status indication. If no front passenger airbag is available on the entire model range, 4 points will be awarded.

### 2.1.1 Occupancy sensing

Automatic and system advised airbag control systems must be able to automatically detect adult occupants and/or children that might be installed in CRS.

For manual switches, the driver is responsible for the occupancy classification.

### 2.1.2 Airbag status

For automatic airbag control systems, the airbag status is fully and automatically controlled by the vehicle.

In the case of advising systems, the driver is prompted to change the airbag status from ON to OFF or vice versa when there is a conflict between the airbag status and the seat occupancy.

Automatic and advising systems should be based on the following strategy:

- The airbag must be OFF for any rearward facing CRS
- The airbag must be ON for a 5<sup>th</sup> percentile occupant and larger
- For forward facing CRS or occupants smaller than a 5<sup>th</sup> percentile, the OEM must provide a strategy for an appropriate airbag status

The entire system must immediately react to the change of occupancy correctly. Up to 10 seconds will be permitted from the change of occupant to the corresponding signal from the airbag status indicator. Systems will be checked once the vehicle diagnostics/system checks have been completed.

The method for assessing automatic and advising systems is detailed in TB 023.

### 2.1.3 Airbag status switch

#### 2.1.3.1 Software switches

Where a software switch is used, clear instructions detailing 'Passenger AIRBAG OFF/ON' (no abbreviations) must be presented in the menu at the same time as the corresponding pictograms used for the status indicator. Additionally, text and instructions within vehicle menus must meet the official language requirements of the Euro NCAP Application Area, TB 002.

### 2.1.3.2 Hardware switches

Switches must be permanently labelled with the words 'Passenger AIRBAG OFF/ON' and the same pictograms as for the airbag status indication in 2.1.4 indicating ON and OFF at the two switch positions.



Where the two switch positions are marked not on the switch but on an adjacent label, the label must be sufficiently close to the switch, such that the user clearly associates one with the other.

The hardware switch must be accessible and clearly visible when installing a CRS. For example, where a switch is located in the glove box, the presence of the switch must be clearly highlighted either by switch itself or an additional, permanent, label when the lid is open. For example, the switch may not be located on the driver's side of the vehicle

It must not be possible for a rearward facing child; restrained on the front passenger seat; to operate the switch at any time.

### 2.1.4 Airbag status indication

The status indicator must be labelled with the words 'Passenger AIRBAG OFF/ON'. Abbreviations such as 'Pass', 'AB' or any other combination is NOT acceptable. Supplementary warnings will be ignored.

Passenger AIRBAG ON	Passenger AIRBAG OFF
	
Shown for 60 seconds after ignition/master control is switched on and after the airbag is switched from OFF to ON	Permanently displayed when the ignition/master control is on and the seat is occupied.

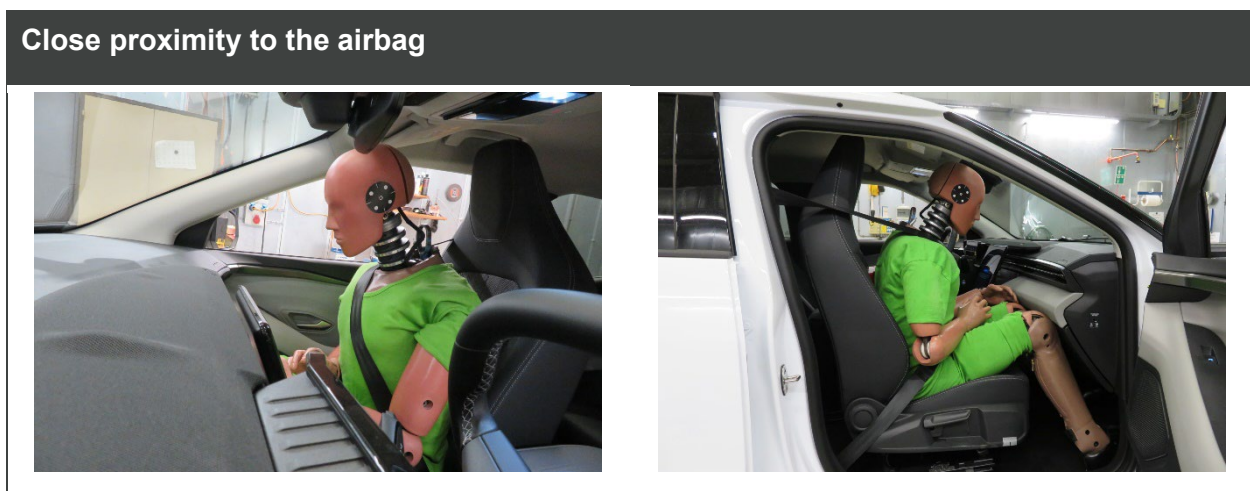
Slight alterations to the ON/OFF pictograms above are acceptable provided that the basic geometry of the pictogram remains the same. Mirroring and monochrome colours are acceptable.

## 2.2 Out of Position

Out of Position	Total points 2
Close proximity to the airbag	1
Feet on dashboard	1

Initially, the OoP cases are only assessed on the outboard front passenger's seating position. Additional positions and cases may be added in 2029.

### 2.2.1 Close proximity to the airbag

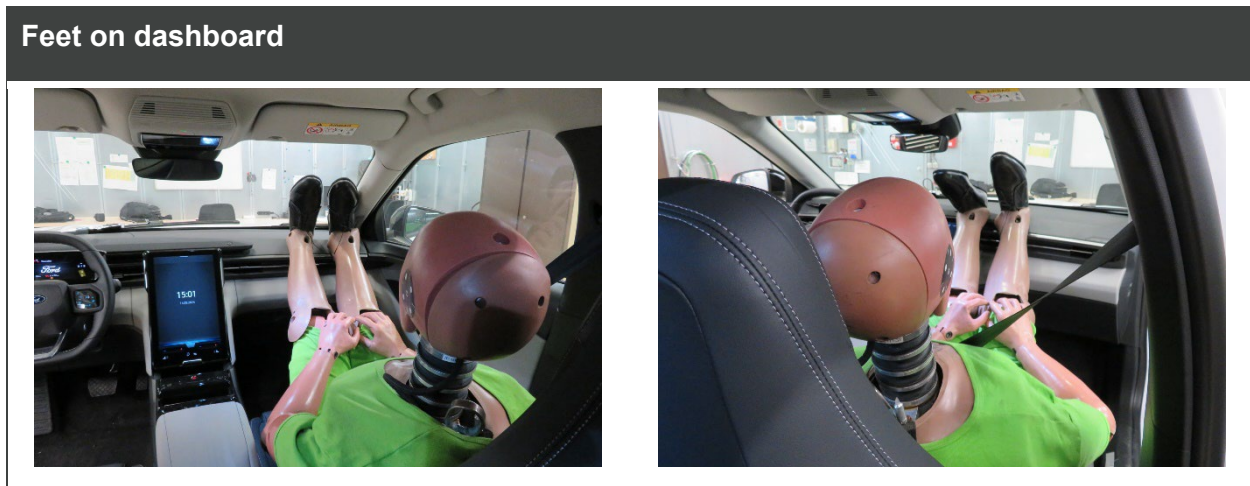


The pictures above are for illustration purposes only.

The system is expected to detect where the passenger is leaning forward and in close proximity to the facia, independent of the position of the front seat.

A warning must be given when the occupant is within 20CM of the facia. A shorter distance is acceptable where the OEM can provide evidence showing that there is no risk to the occupant from the deploying airbag.

### 2.2.2 Feet on dashboard



The pictures above are for illustration purposes only.

The system is expected to detect three foot positions on the facia. Foot positions on the facia are inboard, along the seat centreline and outboard will be evaluated.

All three foot positions must be detected and warned in order to qualify for rewards. There will be no partial rewards for feet on dashboard.

### 2.2.3 Warning requirements

Where the vehicle detects the OoP case(s) above, the vehicle must provide information to either the driver or passenger. Alternatively, countermeasures that adapt the strategy of the occupant restraint system are also eligible for these rewards.

All of the OoP cases identified in Section 2.2.1 and Section 2.2.2 shall be checked both at the start of a journey and during a journey. See the definitions section for the requirements at the start of a journey.

A visual warning must be accompanied by an audible tone to direct the driver towards the visual warning must be given when OoP case has been detected. The visual warning may be a message in the infotainment system, or a pictogram located within the IP or facia. Where a text message is used, this must meet the official language requirements of the Euro NCAP Application Area, TB 002.

Warnings must commence within the parameters defined in Section 1.1.2 and throughout the rest of the journey when OoP is detected. A latency period of up to 30 seconds is permitted from the moment of OoP to the time of warning to allow the system to assess and decide on the need for warning. Where an OoP warning has been given and subsequently ignored, a maximum duration of 15 minutes is permitted between subsequent audiovisual OoP warnings.

The system must function with all sizes and statures of occupant, in a realistic range of seating positions for each stature throughout the whole journey.

All checks will be performed with normal clothing, where unrealistic and complex edge cases will be avoided.



## 2.3 Occupant stature classification

Occupant stature classification	Total points 4
Driver	3
Front seat passenger(s)	1

Driver and front seat passenger(s) occupants should be classified by the vehicle and an appropriate restraint system strategy must be applied.

The assessment will be based on OEM information, where (when approved) the adaptivity settings will be used in the frontal impact assessment.

### 2.3.1 Occupant stature classification information

As a minimum requirement for both the driver and front passenger, the restraint system must have at least two adaptivity settings. The OEM must provide information that justify the range of statures that are covered by each adaptation strategy in the restraint system. This information must be provided by the OEM in order for any restraint adaptivity settings to be used in the VTC frontal impact simulations.

The information must contain:

- Occupant classification strategy including a 5<sup>th</sup>, 50<sup>th</sup> and 95<sup>th</sup> percentile occupant
- Restraint adaptivity for the different statures

### 3 OCCUPANT PRESENCE

Occupant Presence	Total points 10
Child Presence Detection	5
Crash Occupancy information	5

#### 3.1 Child presence detection

The Child Presence Detection test and assessment protocol for 2026 are currently under review by Euro NCAP and expected to be incorporated into this document in the first quarter of 2025.

#### 3.2 Crash occupancy information

Crash occupancy information	Total points 5
<b>Number of occupants</b>	<b>5</b>
Adults	4
Adults and children in ALL CRS	1

##### 3.2.1 Number of occupants detected

The crash occupancy information giving the number of occupants detected in the vehicle, must be included in the eCall message. The OEM must provide details of how the system detects occupants and how this information is included the MSD content. Further information regarding the MSD content is detailed in the Post-Crash test and assessment protocol. Detection must be determined within the parameters defined in Section 1.1.2 and throughout the rest of the journey.

Where a vehicle is available with removable seats and/or optional equipment, the assessment will be based on the worst performing configuration. The following equipment will be considered for the assessment:

Seat rows – e.g. 3rd row

Additional seating positions – e.g. position 2 in row 1

To gain rewards under the sections above, the following occupants must be detected by the vehicle on ALL available seating positions:

**Adults** - The number of adult occupants must be detected in both belted and unbelted conditions and in any position of adjustable seats. All adults must be detected according to the physical parameters detailed in the definitions section. The number of occupants must also include children seated on any belt attached CRS.

**Adults and children in all CRS** – In addition to the occupants detailed above, the vehicle must detect children seated in any integral ISOFIX attached CRS.