

General Vehicle Controls Test Procedure

Safe Driving

Technical Bulletin SD 203

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PREFACE

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).

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INTRODUCTION

This document is intended to provide guidance to the Test Laboratory at the time of evaluating the Euro NCAP Driver Controls assessment, as part of the Driver Engagement protocol.

1 TEST PROCEDURE

The Driver Controls assessment will be conducted by the test laboratory. The Vehicle Manufacturer shall supply to Euro NCAP and the test laboratory a simple dossier containing background information on the location, purpose and basic operation principle of controls for each of the actions/tasks contained in this assessment.

1.1 Test vehicle

The assessment shall be conducted on a vehicle in its factory settings condition. Individual/programmable settings (e.g., favorite buttons, shortcuts) shall not be assessed.

The assessment shall be conducted on a standstill condition, unless driving is required to assess a specific function.

For the assessment of voice commands and media, the vehicle shall be in online condition, and connected to a streaming service account.

1.2 Measurements

The entire assessment shall be recorded, for both transparency and for possible discussion afterwards. The audiovisual recording shall capture the driver and the vehicle cockpit so that each of the activated controls and the associated visual feedback can be seen.

- Adjust the resolution and exposure to the light levels to ensure that the HMI can be clearly identified.
- Voice input and vehicle's response shall be audible on the recording.

1.3 Test execution

For this assessment, the General Vehicle Controls Assessment spreadsheet is used. Greyed-out columns are to be filled, which indicate (for each of the actions/tasks distributed across rows): the function implementation, whether requirements 1 and 2 pass/fail the criteria, and remarks. For each row, the Test Laboratory will fill the following columns as indicated below:

1. Function Implementation: select from the dropdown menu what is applicable: N/A; Direct physical input (e.g. button, pedal, switch, etc.); Direct voice input; Direct touch input (always accessible); Menu-based touch input (max. 2 steps); Menu-based touch input (> 2 steps).
2. Requirement 1, Requirement 2: select from the dropdown menu whether the action/task meets the criteria as outlined in the tables above: Pass; Fail; N/A.
3. Remarks: may be used in case of necessary notes or specific comments.

Remarks:

- If a Function and/or Action/Task is not available in the vehicle it is important to always select N/A in the column Function Implementation. This will automatically fill N/A in the column Meets Requirements 1 and 2.
- A Function implementation which consists of a Menu-based touch input (> 2 steps) is never acceptable for any of the defined Functions.

- In case the vehicle has multiple Function implementations for a single Function, the Test Laboratory shall assess the Function implementation that scores most points.
- A Function implementation shall be assessed individually. Features of different Function implementations shall not be combined to assess a single Function. For example, if a Function can be controlled by two different controls (A and B), and the Function implementation for control A passes requirement 1 but fails requirement 2, and Function implementation for control B fails requirement 1 but passes requirement 2, neither of the Function implementations pass the assessment. Hence, the end result is that the Function implementation has failed to meet the assessment criteria for the Function.
- Inputs that change their original purpose/function to the specific purpose of accepting a prompt (e.g., answering an incoming call) are allowed.
- In case of trouble finding the control for a specific function, the Test Laboratory shall use the information provided by the Vehicle Manufacturer which contains background information on where each Function is located (as part of the information package), or else consult the owner's manual.
- Regarding the interpretation of Requirement 1 and 2:
 - o For Control identification, the expected location for each Function can be found in APPENDIX A.
 - o The definition of direct physical input can be found in the Definitions section of the Driver Engagement protocol.
 - o Minimum requirements of what is sufficiently large and sufficiently separated from other areas are provided in the Driver Engagement protocol.
 - o The definition of direct driver's line of sight and the accepted area it comprises can be found in the Definitions section of the Driver Engagement protocol.
 - o The definition of Essential driving information can be found in the Definitions section of the Driver Engagement protocol.

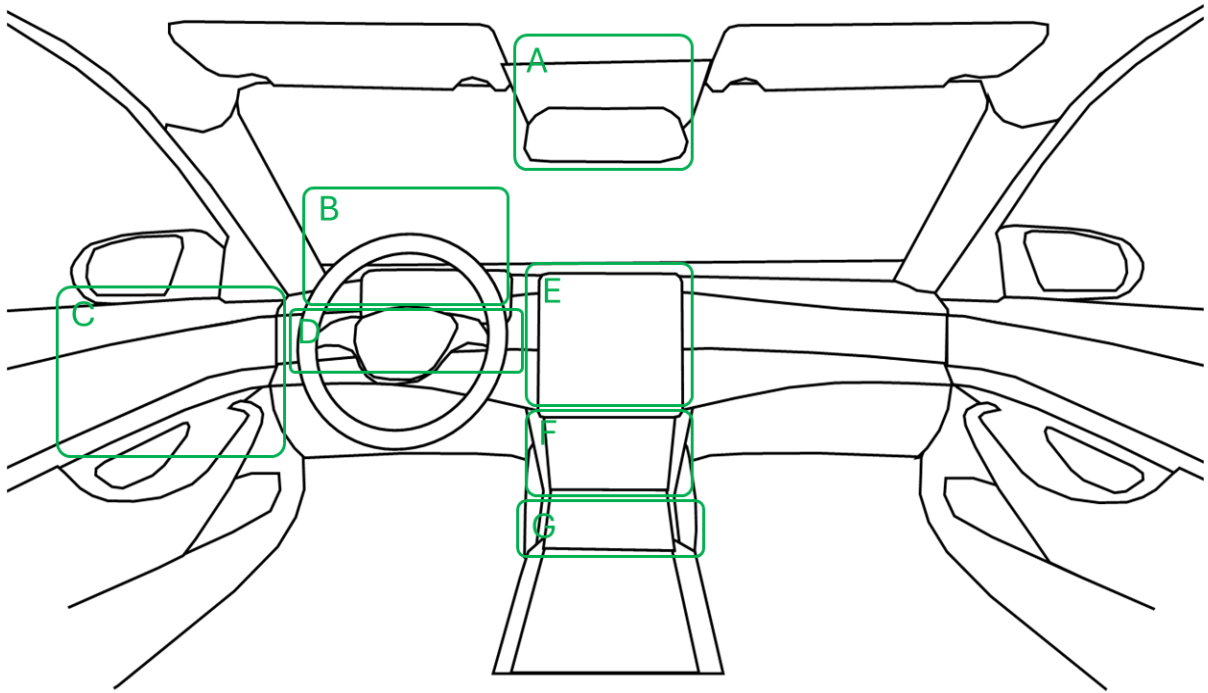
1.3.1 Voice Input

For each of the Functions that allow a pass for direct voice input there are a series of Reference Phrases in various languages based upon the defined tasks. Euro NCAP will select a series of phrases, with at least one related to each of the Actions / Tasks and provides this to the lab (i.e. 7 phrases total). The list of Reference Phrases can be found in APPENDIX E. The test will be conducted in the local language of the test laboratory, and the corresponding language will be used for the phrases provided by Euro NCAP. The tester shall be a native speaker in the language selected.

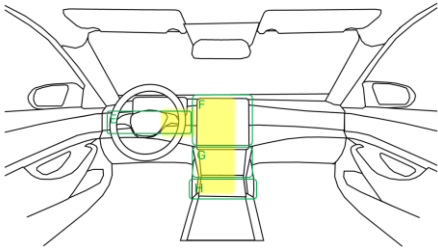
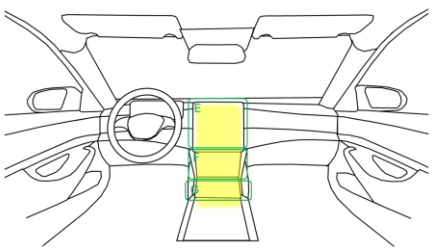
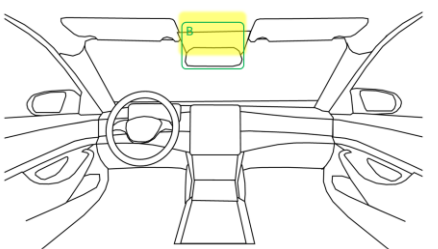
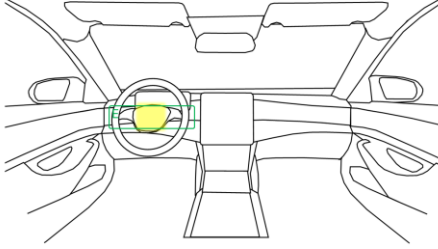
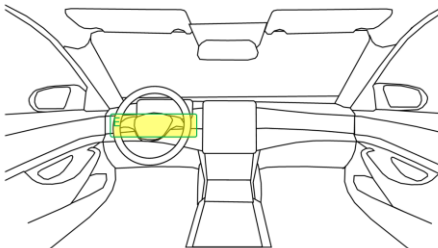
For the official assessment, the Test Laboratory staff are instructed to read the provided phrases using their natural voice and accent. The vehicle's response is to be recorded.

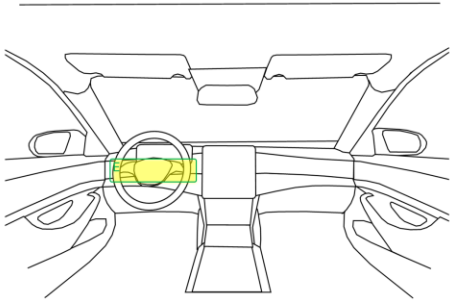
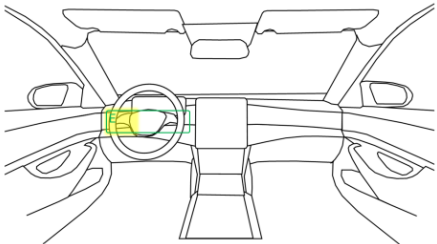
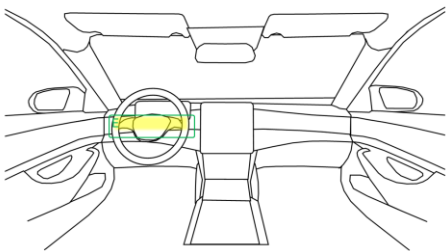
APPENDIX A DIRECT PHYSICAL INPUTS: EXPECTED LOCATIONS

For the expected location reference zones A, B, C, D, E, F and G are distinguished as illustrated in below image:

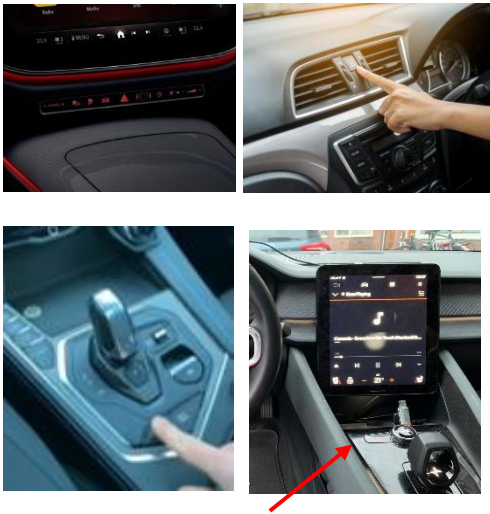


Function [Action / Task]	Reference Zone(s) and description	Reference Image - User Expectation for Position
Direction Indicator [Activate left and right]	Zone D. - In area directly behind steering wheel on left side (i.e. column mounted) - Other implementations should maintain control to left side of steering wheel and should maintain a consistent position at all times during driving	

Gear Selector [Forward, Neutral, Rearward position]	Zone D, E, F, G. - In area directly behind or adjacent to steering wheel on right side (i.e. column mounted) - Centre of vehicle (display, stack, console)	
Hazard Light [Activate / Deactivate]	Zone E, F, G. - Positioned on, or directly adjacent to, the vehicle centre line - In addition, the preferred lower boundary for the hazard light function (either in a vertical or horizontal plane) is similar to the lower boundary of the steering wheel. To be effective by 2029.	
e-Call [Activate]	Zone A.	
Horn [Activate]	Zone D. Positioned on wheel centre.	
Front Wiper [Activate / Change speed / Deactivate (Manual mode) Activate washing fluid (Manual mode)]	Zone D. - In area directly behind steering wheel (i.e. column mounted). - Other implementations should maintain a consistent position at all times during driving. - Activate washing fluid should have consistent position with wiper activate / deactivate	

	control	
Rear Wiper [Activate / Change speed / Deactivate (Manual mode) Activate washing fluid (Manual mode)]	Zone D. - In area directly behind steering wheel (i.e. column mounted). - Other implementations should maintain a consistent position at all times during driving. - Activate washing fluid should have consistent position with wiper activate / deactivate control	
Full Beam [Turn on / off]	Zone D. - On steering wheel or In area directly behind steering wheel on left side (i.e. column mounted).	
Vehicle Assistance [Set speed Change between different SCF (Speed Control Functions)]	Zone D. - On steering wheel or In area directly behind steering wheel (i.e. column mounted).	

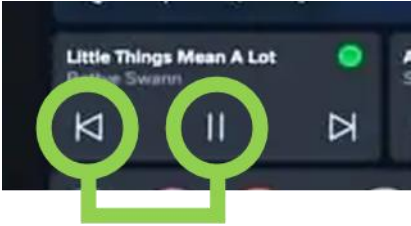
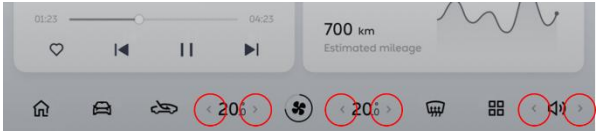
APPENDIX B DIRECT PHYSICAL INPUTS IMPLEMENTATIONS

Function [Action / Task]	Example Acceptable Implementation	Example Unacceptable Implementation
Direction Indicator		
Gear Selector		
Hazard Light		

e-Call		
Horn		
Front Wiper		
Rear Wiper		
Full Beam		

Vehicle Assistance		
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APPENDIX C DIRECT TOUCH INPUT IMPLEMENTATIONS

Function [Action / Task]	Example Acceptable Implementation	Example Unacceptable Implementation
Control Identification – Tactility (only applicable to Steering wheel controls)		
Control Identification – Interaction area	 	

APPENDIX D ESSENTIAL DRIVING INFORMATION:
IMPLEMENTATIONS

Example Acceptable Implementation	Example Unacceptable Implementation
	 Exterior lights, ADAS status: NOK Vehicle speed, SLIF: OK

APPENDIX E VOICE COMMANDS

Overview of the words per lab to include in the set of Reference Phrases.

	Radio station (Lab defined)	Location address (Lab defined)	Contact name (Lab defined)	Stored locations (Generic - translated)	Points of interest (Generic - translated)	Song title (Lab defined)	Media genre (Generic - Translated)	Artist name (Lab defined)
ADAC	Antenne Bayern	Kauferinger Straße 15, 86929 Penzing	Andreas Rigling	Hause, Arbeit	nächste Tankstelle	99 Luftballons	Klassik	Nena
ALP-Lab	Oe 1	Kiebach 2a, 4491 Hofkirchen im Traunkreis	Thomas Strauch	Hause, Arbeit	nächste Tankstelle	Egoist	Klassik	Falco
AstaZero	P3	Örgrytevägen 5, 402 22 Göteborg	Henrik Marcusson	Hemma, Arbete	Närmsta bensinstation	Heartbeats	Klassisk	Evert Taube
BASt	WDR 2	Brüderstraße 53, Bergisch Gladbach	Marvin Schrage	Hause, Arbeit	nächste Tankstelle	Yellow	Klassik	Coldplay
CSI	Deejay	Via Firenze 81, Milano	Mario Rossi	Casa, Lavoro	La stazione di rifornimento più vicino	Azzurro	Musica Classica	Adriano Celentano
IDIADA	Los 40	Carrer de les escoles 12, Llorenç del Penedès	Jordi Bargallo	Casa, mi trabajo	La gasolinera mas cercana	Don't Look Back in Anger	Musica clasica	Rosalia
MIRA	Smooth Radio	Chatsworth House, Bakewell	Robin Williams	Home, work	The nearest petrol station	Radioactive	Classical music	Kings of Leon
Thatcham	Kiss Radio	Retford (Gamston) Airport, Ollerton Road, Retford, Nottinghamshire, DN22 0QL	Curtis Hawes	Home, work	The nearest petrol station	High on Life	Classical music	Martin Garrix
TNO	Slam FM	Automotive Campus 10, 5708JZ, Helmond	Harry van Scheveningen	Huis, werk	Het dichtsbijzijnde benzinestation	Mr. Brightside	Klassieke muziek	Avicii
UTAC	RMC	Avenue Georges Boillot, Linas-Monthéry	Jérémy Magniez	Domicile, Travail	Château de Monthéry	Mistral Gagnant	Musique classique	Georges Brassens

D.1 Reference Phrases in English and German

Function	Action / Task	[English] Reference Phrase	[German] Phrase
Audio entertainment	Tune radio to <pre-determined station>	Put on <Radio station>	<Radio station> einschalten
		Tune the radio to <Radio station>	Zu <Radio station> wechseln
		I want to listen to <Radio station>	Ich möchte <Radio station> hören
Audio entertainment	Play <artist name/song title/genre type>	Put on some <Genre title>	<Genre title> spielen
		Play <Song title>	Spiele <Song title> ab
		I want to listen to <Artist name>	Ich möchte <Artist name> hören
Calling and dialling	Call <Contact name stored on phone>	Call <Contact name>	Rufe <Contact name> an
		Can you ring <Contact name>?	Kannst du <Contact name> anrufen?
		I need to talk with <Contact name> by phone	Ich möchte mit <Contact name> telefonieren
Navigation system	Navigate to <Point of interest>	Please set route to <Point of interest>	Bitte zu/nach <Point of interest> navigieren
		Give me directions for <Point of interest>	Zeige mir die Route zu/nach <Point of interest>
		Get me to <Point of interest>	Fahre mich zu/nach <Point of interest>
Navigation system	Navigate to <Stored location>	Please set route to <Stored location>	Bitte zu/nach <Stored location> navigieren
		Give me directions for <Stored location>	Zeige mir die Route zu/nach <Stored location>
		Get me to <Stored location>	Fahre mich zu/nach <Stored location>
Navigation system	Navigate to <Location address >	Please set route to <Location address>	Bitte zu/nach <Location address> navigieren
		Give me directions for <Location address>	Zeige mir die Route zu/nach <Location address>
		Get me to <Location address>	Fahre mich zu/nach <Location address>
Navigation system	End navigation	Stop navigation	Navigation beenden
		End route	Routenführung stoppen

D.2 Reference Phrases in French and Italian

Function	Action / Task	[French] Phrase	[Italian] Phrase
Audio entertainment	Tune radio to <pre-determined station>	Mettre <Radio Station>	Metti <Radio Station>
		Changer la radio pour <Radio Station>	Sintonizza la radio su <Radio Station>
		Je veux écouter <Radio Station>	Voglio ascoltare <Radio Station>
Audio entertainment	Play <artist name/song title/genre type>	Mets un peu de <Genre Title>	Metti della musica <Genre Title>
		Joue <Song Title>	Riproduci <Song Title>
		Je veux écouter < Artist Name>	Voglio ascoltare <Artist name>
Calling and dialling	Call <Contact name stored on phone>	Appelle <Contact Name>	Chiama <Contact name>
		Peux-tu appeler < Contact name >?	Puoi chiamare <Contact name>?
		J'ai besoin de parler à < Contact name > par téléphone	Ho bisogno di parlare con <Contact name> al telefono
Navigation system	Navigate to <Point of interest>	Définis l'itinéraire vers <Point of interest>	Imposta il navigatore per <Point of interest>
		Donne moi la direction pour < Point of interest >	Dammi le indicazioni per <Point of interest>
		Emmène moi à <Point of interest>	Portami a <Point of interest>
Navigation system	Navigate to <Stored location>	Définis l'itinéraire vers < Stored location>	Imposta il navigatore per <Stored location>
		Donne moi la direction pour < Stored location>	Dammi le indicazioni per <Stored location>
		Emmène moi à < Stored location >	Portami a <Stored location>
Navigation system	Navigate to <Location address >	Définis l'itinéraire vers < Location address>	Imposta il navigatore per <Location address>
		Donne moi la direction pour < Location address >	Dammi le indicazioni per <Location address>
		Emmène moi à < Location address >	Portami a <Location address>
Navigation system	End navigation	Arrête la navigation	Stop Navigazione
		Arrête l'itinéraire	Fine Percorso

D.3 Reference Phrases in Dutch and Swedish.

Function	Action / Task	[Dutch] Phrase	[Swedish] Phrase
Audio entertainment	Tune radio to <pre-determined station>	Zet <Radio station> op	Sätt på <Radio station>
		Zet de radio op <Radio station>	Ställ in <Radio station>
		Ik wil <Radio station> horen	Jag vill lyssna på <Radio station>
Audio entertainment	Play <artist name/song title/genre type>	Zet wat <Media genre> op	Sätt på < Media genre >
		Speel <Song title>	Spela < Song title >
		Ik wil <Artist name> horen	Jag vill lyssna på < Artist name >
Calling and dialling	Call <Contact name stored on phone>	Bel <Contact name>	Ring < Contact name >
		Kan je <Contact name> bellen?	Kan du ringa < Contact name>
		Ik moet met <Contact name> spreken via de telefoon	Jag behöver prata med <Contact name > på telefon
Navigation system	Navigate to <Point of interest>	Navigeer naar <Point of interest>, alsjeblieft	Navigera till <Point of interest>, tack
		Geef me de route naar <Point of interest>	Ge mig vägbeskrivning till <Point of interest>
		Breng me naar <Point of interest>	Ta mig till <Point of interest>
Navigation system	Navigate to <Stored location>	Navigeer naar <Stored location>, alsjeblieft	Navigera till <Stored location>, tack
		Geef me de route naar <Stored location>	Ge mig vägbeskrivning till <Stored location>
		Breng me naar <Stored location>	Ta mig till <Stored location>
Navigation system	Navigate to <Location address >	Navigeer naar <Location address>, alsjeblieft	Navigera till <Location address>, tack
		Geef me de route naar <Location address>	Ge mig vägbeskrivning till <Location address>
		Breng me naar <Location address>	Ta mig till <Location address>
Navigation system	End navigation	Stop navigatie	Avsluta navigering
		Stop route	Avsluta rutt

D.4 Reference Phrases in Spanish and Catalan.

Function	Action / Task	[Spanish] Phrase	[Norwegian] Phrase
Audio entertainment	Tune radio to <pre-determined station>	Pon <Radio station>	Sett på <Radio station>
		Cambia la radio a <Radio station>	Bytt til <Radio station>
		Quiero escuchar <Radio station>	Jeg vil høre på <Radio station>
Audio entertainment	Play <artist name/song title/genre type>	Pon algo de <Media genre>	Spill noe <Media genre>
		Reproducir <Song title>	Spill <Song title>
		Quiero escuchar <Artist name>	Jeg vil høre på <Artist name>
Calling and dialling	Call <Contact name stored on phone>	Llama a <Contact name>	Ring <Contact name>
		Puedes llamar a <Contact name>?	Kan du ringe <Contact name>?
		Necesito hablar con <Contact name> por teléfono	Jeg vil snakke med <Contact name> på telefon
Navigation system	Navigate to <Point of interest>	Por favor, busca la ruta a <Point of interest>	Naviger til <Point of interest>
		Dame indicaciones para llegar a <Point of interest>	Gi veibeskrivelse til <Location address>
		Llevame a <Point of interest>	Ta meg til <Point of interest>
Navigation system	Navigate to <Stored location>	Por favor, define la ruta a <Stored location>	Naviger til <Point of interest>
		Dame direcciones para llegar a <Stored location>	Gi veibeskrivelse til <Location address>
		Llevame a <Stored location>	Ta meg til <Stored location>
Navigation system	Navigate to <Location address >	Por favor, empieza la ruta a <Location address>	Naviger til <Point of interest>
		Dame direcciones para llegar a <Location address>	Gi veibeskrivelse til <Location address>
		Llevame a <Location address>	Ta meg til <Location address>
Navigation system	End navigation	Para la navegacion	Stopp navigering
		Termina ruta	Avslutt rute