**Adaptive Cruise Control and Distance Indication**

**Instrument Cluster Interface Specification**

**CGEA 1.3 / FNV2**

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| Approved by (dept, name, phone) | Issued by (dept, name, phone) |
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# INTRODUCTION

## Revision history

| Version | Date | Description | Responsible | | Approved by |
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| 001 | 2010-08-18 | Initial release – Based on 2013MY D-car CGEA1.2 CADS Cluster Interface Spec v004.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req1v1:  - Deleted AccMntr\_B\_Err since does not exist for CGEA1.3 programs.  - Added display conditions for "Standby\_Denied" state while Normal Cruise Control is selected. - Added Stop&Go ACC display state definitions.  - To simplify tables, separated Set Speed Display table from other display graphics. - Added Table to define ACC Message Overlay for clusters which support. - Added states to enable display of lead vehicle in standby  CGEA13\_CS\_CADS\_IPCDisplay-001:Req2v1:  - Added new warning messages for Applying Park Brake, Down-Shift, Cancelled, and S&G ACC Following Only.  - Revised Priorities to support added warning states - Added new warnings for missing message conditions to support S&G ACC. - Deleted AccSrvcRqd\_B\_Rq. - Added CadsCamraBlck\_B\_Actl and warning state, ACC\_CAM\_BLOCK to communicate reduced function when Camera Blocked.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req3v1: Added S&G ACC state condition. Deleted AccMntr\_B\_Err. Deleted AccSrvcRqd\_B\_Rq.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req4v1: Added new S&G ACC Brake Release Warning. Added chime conditions for lost communications while S&G ACC active.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req26v1: Genericized SC display during ACC Radar Not Aligned warning condition, since some clusters may be able to display system check with non-resettable warning message. Deleted AccSrvcRqd\_B\_Rq  CGEA13\_CS\_CADS\_IPCDisplay-001:Req5v1: Deleted CadsAudioMute\_D\_Rq . Added S&G States to CC\_Function\_Display. Added warning states to ACC\_Display\_Warn\_Req. Added new S&G ACC Chime. Added 5th Time Gap setting. Added new signals, AccStopMde\_B\_Dsply and AccStopRes\_B\_Dsply. Deleted AccSrvcRqd\_B\_Rq.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req29v1: Updated CAN Message name and Missing Message Timer flag to be consistent with CGEA1.3 message list. Added check of CcStat\_D\_Actl\_UB due to gatewayed signal. Added check of GWM Lost Comm.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req9v1: Replaced Ignition\_Switch\_Stable with 1 second timer. Added PwPckTq\_D\_Stat check to disable ACC display during engine crank event. Deleted reference to Adaptive\_Cruise\_Cfg = 'Enabled' since this check is covered in req29.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req13v1: Updated to correct Missing Message Timer Flag. Added support for S&G ACC state. Revised timer duration to be consistent across ACC-supported modules. To support Engine Stop-Start, added ElPw\_D\_Stat as conditions to inhibit missing message DTCs during potential low voltage conditions. To support gateway added PCM missing message check. Added 5sec timer for configuration fault.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req24v1: Added new chime type.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req14v1: Deleted reference to CmbbMntr\_B\_Err. Added CadsCamraBlck\_B\_Actl. Deleted FcwCmbbSrvcRqd\_B\_Rq. Added logic for FCW Warning.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req27v1 : Added CadsCamraBlck\_B\_Actl signal. Deleted FcwCmbbSrvcRqd\_B\_Rq and CmbbMntr\_B\_Err, and replaced with FcwDeny\_B\_Dsply.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req30v1: Revised FCW Setting strategy to provide start-up warning for FCW ON/OFF setting, instead of FCW Audio On/Off.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req18v1:  - Deleted Ignition\_Switch\_Stable, FcwCmbbSrvcRqd\_B\_Rq and CmbbMntr\_B\_Err.  - Added Low Visibility warning and SC value.  - Added FCW\_Locked menu setting option.  - Deleted FcwAudioOn\_MC, since Audio On/Off is not adjustable.  - Added FdaStat\_MC to support Forward Distance Alert On/Off adjustment. - Replaced Fcw\_Chime\_Warn\_Flg and FCWChimeOffTimer with FcwOff\_Warn\_Flg and FCWOffTimer. Change needed since audio On/Off deleted and FCW On/Off can be remembered between keycycles. - Added FDA\_Cfg Method 2 configuration signal. Added states to FCW\_Menu\_Setting to support FDA menu setting displays  CGEA13\_CS\_CADS\_IPCDisplay-001:Req15v1: Added FCW Locked Menu condition to prevent feature adjustment when feature is not available due to blockage or fault. Added FDA\_Cfg configuration signal. Added states to FCW\_Menu\_Setting to support FDA menu setting displays.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req21v1: Deleted Ignition\_Switch\_Stable and replaced with 1sec timer. Deleted Fcw\_Cfg condition since redundant with state charts.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req22v1: Updated to support engine stop-start. Added configuration fault check and 5sec timer.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req25v1: Updated to define ACC\_Brake\_Release Chime within sequence. Added reference to audio system generated chime.  U38x\_CS\_CADS\_IPCDisplay-009:Req10v5: Updated to reference lost comm. with GWM and Invalid Data from PCM due to CGEA1.3 communications architecture.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req13v1: Requirement deleted. Detailed logic and DTC definitions are defined in req29.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req28v1: Added requirement to enable back-up cluster chime if the audio system is unable to perform chime function.  CGEA13\_CS\_CADS\_IPCDisplay-001:Req20v1: Defined settings for Forward Distance Alert On/Off | Aaron Mills | |  |
| 002 |  | CGEA13\_CS\_CADS\_IPCDisplay-002:Req1v2: Modified to clarify that the embedded faults for the signal, Veh\_V\_DsplyCcSet, should be mapped to 'Inactive' (i.e. set speed value not displayed).  CGEA13\_CS\_CADS\_IPCDisplay-002:Req2v2: Updated duration of ACC Not Available Warnings to be consistent  CGEA13\_CS\_CADS\_IPCDisplay-002:Req5v2: Corrected Time Gap definitions, since graphics only support 4 possible gap display values. Mapped Gap5 to same setting as Time\_Gap\_4. Clarified that the displayed set speed value shall be equivalent to Veh\_V\_DsplyCcSet when CC\_Display\_Speed = ACT. Assigned Warning ID to Brake Capacity Warning.  CGEA13\_CS\_CADS\_IPCDisplay-002:Req30v2: Requirement deleted.  CGEA13\_CS\_CADS\_IPCDisplay-002:Req18v2 : Assigned Warning ID to FCW Warning. |  | |  |
| 003 |  | CGEA13\_CS\_CADS\_IPCDisplay-003:Req13v2: Corrected error in PCM Comm flowchart. Incorrectly referred to MMT\_C146\_42E instead of MMT\_C100\_42E.  CGEA13\_CS\_CADS\_IPCDisplay-003:Req14v2: Updated FCW\_Cfg value to include both FCW and DA option. This aligned spec with the Forward Collision Warning Control Function – CGEA 1.3 spec. Updated to delete conditions associated with CmbbPostEvnt\_B\_Dsply.  CGEA13\_CS\_CADS\_IPCDisplay-003:Req15v2 : Updated FCW\_Cfg value to include both FCW and DA option.  CGEA13\_CS\_CADS\_IPCDisplay-003:Req16v1: Updated FCW\_Cfg value to include both FCW and DA option.  CGEA13\_CS\_CADS\_IPCDisplay-003:Req27v2: Updated FCW\_Cfg value to include both FCW and DA option.  CGEA13\_CS\_CADS\_IPCDisplay-003:Req18v3: Deleted FDA\_Cfg. Modified FCW\_Cfg to be consistent with Forward Collision Warning Control Function – CGEA 1.3 spec.  CGEA13\_CS\_CADS\_IPCDisplay-003:Req2v3 : Corrected typo. State ACC\_NA\_SC was changed to ACC\_NA  CGEA13\_CS\_CADS\_IPCDisplay-003:Req1v3 : Modified state chart to define "ALL OTHER CASES" only when ACC is enabled. This is to allow for a compatible state chart in the Speed Control STSS.  CGEA13\_CS\_CADS\_IPCDisplay-003:Req5v3: Updated ACC\_Display\_Warn\_Req to replace TBDs with warnings W1430, W1431, and W1432. To clarify intent for FCW\_Menu\_Setting, replaced 'de-emphasized' verbage with 'restricted' (i.e. no change in function). Mapped ACC\_Brake\_Release to Soft warning chime.  CGEA13\_CS\_CADS\_IPCDisplay-003:Req4v2: Updated ACC\_Brake\_Release chime state to have consistent attenuation level with other Soft Warning chimes. |  | |  |
| 004 |  | CGEA13\_CS\_CADS\_IPCDisplay-004:Req1v4: New table and flowchart to support Analog and redundant digital set speed display on M3 cluster  CGEA13\_CS\_CADS\_IPCDisplay-004:Req5v4: New parameters to support Analog and redundant digital set speed display  CGEA13\_CS\_CADS\_IPCDisplay-004:Req14v3: FCW\_CAM\_LOW\_VIS state not used. Trigger condition for this state deleted.  CGEA13\_CS\_CADS\_IPCDisplay-004:Req18v4: Defined FCW\_CAM\_LOW\_VIS state as not used. |  | |  |
| 005 |  | CGEA13\_CS\_CADS\_IPCDisplay-005:Req22v2: MMT\_C146\_42E renamed to MMT\_C146\_42C due to change in message ID of CcStat\_D\_Actl.  CGEA13\_CS\_CADS\_IPCDisplay-005:Req13v3 : MMT\_C146\_42E renamed to MMT\_C146\_42C due to change in message ID of CcStat\_D\_Actl. |  | |  |
| 006 |  | CGEA13\_CS\_CADS\_IPCDisplay-006:Req18v5: Corrected setting definition for FCW\_Sensitivity\_1 and FCW\_Sensitivity\_3. Clarified state FCW\_CAM\_LOW\_VIS\_SC as not used.  CGEA13\_CS\_CADS\_IPCDisplay-006:Req22v3: Corrected state chart to support new FCW+DA state, FCW\_Cfg = 0x2  CGEA13\_CS\_CADS\_IPCDisplay-006:Req10v1 : Corrected typo. Referenced wrong requirement.  CGEA13\_CS\_CADS\_IPCDisplay-006:Req27v3 : Deleted reference to FCW\_CAM\_LOW\_VIS\_SC, since not supported.  CGEA13\_CS\_CADS\_IPCDisplay-006:Req1v5 : Revised flow chart to prevent display of 0 set speed when Veh\_V\_DsplyCcSet = 0 and CcStat\_D\_Actl = Active. |  | |  |
| 007 |  | CGEA13\_CS\_CADS\_IPCDisplay-007:Req18v6: Deleted reference to unused signals, Attn\_Info\_Audio and Chime\_Req\_Audio. No impact on function. Deleted unused menu settings, due to simplication of FCW settings strategy.  CGEA13\_CS\_CADS\_IPCDisplay-007:Req5v5: Deleted reference to unused signal, Attn\_Info\_Audio. No impact on function.  CGEA13\_CS\_CADS\_IPCDisplay-007:Req1v6: Added ACC Cancelled display state to Table 1 and Table 4. Replaced strikethrough state with standby state in Table 2.  CGEA13\_CS\_CADS\_IPCDisplay-007:Req2v4: Deleted ACC Cancelled Warning. Moved to display state.  CGEA13\_CS\_CADS\_IPCDisplay-007:Req5v5 : Added CC\_Display\_Speed = STANDBY, CC\_Function\_Display = ACC\_CANCEL\_NLV, CC\_Function\_Overlay = ACC\_CANCEL\_NLV. Deleted ACC\_Display\_Warn\_Req = ACC\_CANCELLED  CGEA13\_CS\_CADS\_IPCDisplay-007:Req15v3 : Deleted unused menu settings, due to simplication of FCW settings strategy. |  | |  |
| 008 |  | CGEA13\_CS\_CADS\_IPCDisplay-008:Req15v4: Deleted FCWStat\_MC  CGEA13\_CS\_CADS\_IPCDisplay-008:Req18v7: Deleted FCWStat\_MC |  | |  |
| 009 |  | CGEA13\_CS\_CADS\_IPCDisplay-009:Req2v5: Modified ACC warning strategy to provide 2-stage warning when NCC is activated at the beginning of a drive cycle. Modified ‘ACC\_BLOCK’ warning defintion to be a 2-stage warning to enable Cruise Control shortcut menu.  CGEA13\_CS\_CADS\_IPCDisplay-009:Req5v6: Added warning state definition “NCC\_ENABLE\_AND\_SHORTCUT”. Revised blockage warning to a 2-stage message.  CGEA13\_CS\_CADS\_IPCDisplay-009:Req15v5: Added TRUCK\_FCW Menu setting to enable last-remembered FCW ON/OFF strategy for pickup truck applications.  CGEA13\_CS\_CADS\_IPCDisplay-009:Req18v8: Added TRUCK\_FCW Menu setting and FCW\_Cfg definitions.  CGEA13\_CS\_CADS\_IPCDisplay-009:Req30v3: Added strategy to activate the FCW ON/OFF Shortcut message at startup if FCW is set to OFF. |  | |  |
| 010 |  | CGEA13\_CS\_CADS\_IPCDisplay-010:Req18v9: Defined FCW OFF Setting Warning as W911. Deleted FCW\_CAM\_LOW\_VIS states.  CGEA13\_CS\_CADS\_IPCDisplay-010:Req14v4: Revised to trigger Collision Warning NA when FCW is misconfigured in the cluster. Added Fcw\_Cfg = TRUCK\_FCW as added condition to enable warning strategy.  CGEA13\_CS\_CADS\_IPCDisplay-010:Req5v7 Deleted 2-stage warning strategy. Reverted ACC\_BLOCK message to existing W818 warning code. Deleted proposed new 2-stage warning NCC\_ENABLE\_AND\_MENU\_SHORTCUT. Revised wording of W1000 message.  CGEA13\_CS\_CADS\_IPCDisplay-010:Req2v6: Deleted 2-stage warning strategy. Replaced NCC\_ENABLE\_AND\_MENU\_SHORTCUT with existing NCC\_ENABLE state.  CGEA13\_CS\_CADS\_IPCDisplay-010:Req16v2: Added Fcw\_Cfg = TRUCK\_FCW as added condition to enable warning strategy.  CGEA13\_CS\_CADS\_IPCDisplay-010:Req27v4: Added Fcw\_Cfg = TRUCK\_FCW as added condition to enable diagnostic strategy. |  | |  |
| 011 |  | CGEA13\_CS\_CADS\_IPCDisplay-010:Req1v7: Modified ACC Function display to support the distance indication function.  CGEA13\_CS\_CADS\_IPCDisplay-011:Req5v8: Added Distance Indication state definitions to CC\_Function\_Display. Added state table for AccTrgDist2\_D\_Dsply. Deleted CadsCamraBlck\_B\_Actl.  CGEA13\_CS\_CADS\_IPCDisplay-011:Req2v7: Corrected W1000 Warning Type as Temporary Alert. Deleted CadsCamraBlck\_B\_Actl.  CGEA13\_CS\_CADS\_IPCDisplay-011:Req15v6: Clarified menu strategy to show FCW Not Available (Greyed-out) graphics when there is an FCW Missing Message C ondition. |  | |  |
| 012 |  | CGEA13\_CS\_CADS\_IPCDisplay-012:Req2v8: revised ACC\_BRAKE\_CAPACITY to be a resettable warning.  CGEA13\_CS\_CADS\_IPCDisplay-012:Req14v5: revised FCW\_WARN to be a resettable warning.  CGEA13\_CS\_CADS\_IPCDisplay-012:Req18v10: Updated to add FCW\_OnOff\_Setting, FCW\_Sensitivity\_Setting, Distance\_Alert\_OnOff\_Setting and FCW\_ON\_MENU\_Cfg. Delete FCW\_Menu\_Setting.  CGEA13\_CS\_CADS\_IPCDisplay-012:Req15v7: Modified FCW Menu strategy to be consistent with FCW STSS for Truck applications. Specifically, defined separate FCW On/Off Menu Setting Configuration, instead of adding to the existing FCW\_Cfg configuration. Simplified table to define whether individual menu parameters are Enabled, Disabled, or Restricted. |  | |  |
| 013 |  | CGEA13\_CS\_CADS\_IPCDisplay-013:Req5v9: Deleted CC\_Display\_RedundantSpeed, since not used.  CGEA13\_CS\_CADS\_IPCDisplay-013:Req16v3: Deleted reference to TRUCK\_FCW.  CGEA13\_CS\_CADS\_IPCDisplay-013:Req27v5: Deleted reference to TRUCK\_FCW.  CGEA13\_CS\_CADS\_IPCDisplay-013:Req30v4: Replaced reference to TRUCK\_FCW configuration with FCW\_ON\_MENU\_Cfg.  CGEA13\_CS\_CADS\_IPCDisplay-013:Req1v8: Clarified that Tables 3, 4 and Figure 1 are not supported on current implementations.  CGEA13\_CS\_CADS\_IPCDisplay-013:Req14v6: Deleted reference to TRUCK\_FCW |  | |  |
| 014 |  | CGEA13\_CS\_CADS\_IPCDisplay-014:Req3v2: Corrected ACC Menu state table to avoid inconsistency associated with menu output when AccDeny\_B\_RqIpc = TRUE  CGEA13\_CS\_CADS\_IPCDisplay-014:Req18v11: W910 is deleted from FCW\_Display\_Warn\_Req since not supported.  CGEA13\_CS\_CADS\_IPCDisplay-014:Req15v8: Corrected strategy to disable DA On/Off when MyKey is enabled.  CGEA13\_CS\_CADS\_IPCDisplay-014:Req2v9: Modified to allow ACC\_Display\_Warn\_Req = ACC\_RADAR\_NOT\_ALIGN when ACC is not configured. This is to support this warning message on programs that have FCW functionality with conventional cruise control.  CGEA13\_CS\_CADS\_IPCDisplay-014:Req29v2: Updated to only detect misconfiguration when message is received AND CAN signal, AccMemEnbl\_B\_RqDrv = Yes |  | |  |
| 015 |  | CGEA13\_CS\_CADS\_IPCDisplay-015:Req14v7: Undeleted CMbB\_Post\_Evnt\_Warn from warning strategy.  CGEA13\_CS\_CADS\_IPCDisplay-015:Req18v12: Revised CMbB\_Post\_Evnt\_Warn state as Warning ID TBD, instead of NOT\_USED. |  | |  |
| 016 |  | CGEA13\_CS\_CADS\_IPCDisplay-016:Req15v9: Updated to support the Active\_Braking\_OnOff\_Setting strategy for the Active Emergency Braking function.  CGEA13\_CS\_CADS\_IPCDisplay-016:Req20v2: Updated to add in the Active Emergency Braking (AEB) On/Off setting.  CGEA13\_CS\_CADS\_IPCDisplay-016:Req18v13: Updated to define AebStat\_MC and FCW\_BrakingOnOff\_Cfg. Deleted reference to W820 since not used. Clarified that CMbB\_Post\_Evnt\_Warn is not used. Replaced W823, W821, W1082 , and W911 with new message IDs, W3298, W3297, W3296, and W3295.  CGEA13\_CS\_CADS\_IPCDisplay-016:Req5v10: Minor clarification. W816 is removed since not used in strategy. Updated Distance Indication sample graphics based on latest graphics.  CGEA13\_CS\_CADS\_IPCDisplay-016:Req14v8: Removed reference to CMbB\_Post\_Evnt\_Warn , since not supported.  CGEA13\_CS\_CADS\_IPCDisplay-016:Req13v4: Changed DTC ID to be set under lost comm condition. |  | |  |
| 017 |  | CGEA13\_CS\_CADS\_IPCDisplay-017:Req1v9: Defined new table to separate Distance Indication graphics state definition from CC state definition. New requirements needed to support Distance Indication feature on applications that do not have ACC functionality.  CGEA13\_CS\_CADS\_IPCDisplay-017:Req5v11: Defined new dedicated Function Display state for Distance Indication. Moved states from existing CC\_Function\_Display to new Distance\_Function\_Display.  CGEA13\_CS\_CADS\_IPCDisplay-016:Req15v9: Replaced FCW\_MenuOnOff\_Cfg with FCW\_ON\_MENU\_Cfg to be consistent with ‘Forward Collision Warning Control Function - CGEA1.3\_v2.0’ |  | |  |
| 018 |  | **Modified the ‘Purpose’ associated with each requirement to define each requirement as relevent for [IPC] and/or [HUD]**  CGEA13\_CS\_CADS\_IPCDisplay-018:Req1v10: Heavily revised to support HUD graphics, analog set speed display, temporary gap and set speed displays.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req2v10: Added strategy to inhibit cluster warning messages when the HUD is active.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req4v3: Deleted chime from W1000 warning condition to be consistent across all trigger conditions.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req7v1: Updated latency performance to include HUD and ACC Warnings  CGEA13\_CS\_CADS\_IPCDisplay-018:Req31v1: New requirement to specify ACC HUD Warning display.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req5v12: Added CC\_Display\_RedundantSpeed, ACC\_Display\_Gap, ACC\_HUD\_Warn\_Req, SetSpeedError, CC\_TempSetSpeed\_Timer, Veh\_V\_DsplyCcSet\_n\_1, and ACC\_HUD\_Display to support new HUD and HMI strategy. Deleted CC\_Function\_Overlay.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req12v1: Updated to require that HUD speed strategy and calibrations are common with cluster.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req9v2: Updated to clarify that HUDs should implement common strategy.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req31v1: New requirement to define ACC warnings that are to be displayed in HUD.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req32v1: New requirement to specify the HUD FCW Warning.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req18v14: Added FCW\_HUD\_Warn\_Req to define HUD warning |  | |  |
| 019 |  | CGEA13\_CS\_CADS\_IPCDisplay-019:Req1v11: Seperated Clustet display requirements from HUD display requirements, due to differences in how the temporary set speed strategy would be implemented and to clarify that strategy is dependent on existence of HUD.  CGEA13\_CS\_CADS\_IPCDisplay-019:Req33v1: Revised Table 9 to hide the set speed display in the SGACC\_STOP states. New requirement to separate the HUD Display graphics from the Cluster display graphics.  CGEA13\_CS\_CADS\_IPCDisplay-019:Req10v2: Deleted reference to Invalid Data from PCM  CGEA13\_CS\_CADS\_IPCDisplay-019:Req14v9: Added unique warning message for flashing FCW Warning.  CGEA13\_CS\_CADS\_IPCDisplay-018:Req18v15: Added Flashing FCW Warning message.  CGEA13\_CS\_CADS\_IPCDisplay-019:Req21v2: Added HUD criteria for startup enabling. |  | |  |
| 020 |  | CGEA13\_CS\_CADS\_IPCDisplay-20:Req34v3: New requirement to define an FCW RTT needed to meet UN-ECE 131 Regulations (e.g. V36x). Updated to include configuration capability for RTT.  CGEA13\_CS\_CADS\_IPCDisplay-020:Req32v2: Updated HUD flash rate to allow up to 5Hz rate. Referenced HUD Brightness Spec.  CGEA13\_CS\_CADS\_IPCDisplay-020:Req1v12: Updated Table 1 to correct the logic condition that should set the RES diplay. Updated Figure 2 to clarify that the temporary digital setspeed is only showed in the cluster when the HUD is inactive and to clarify that Units are not displayed when SET is displayed.  CGEA13\_CS\_CADS\_IPCDisplay-020:Req31v2: Deleted warning duration criteria from HUD Warning table. ACC Warning durations are controlled by the ACC controller.  CGEA13\_CS\_CADS\_IPCDisplay-020:Req33v2: Updated Table 7 to correct the logic condition that should set the RES diplay. Clarified mapping of Veh\_V\_DsplyCcSet = Unknown/Fault to a value of 0 for Figure 3.  CGEA13\_CS\_CADS\_IPCDisplay-019:Req18v16: Updated to support FCW RTT needed to meet UN-ECE 131 Regulations for V36x MCA (new RTT control and configuration parameters)  CGEA13\_CS\_CADS\_IPCDisplay-017p3:Req35v2: New requirement to define RTT for Distance Alert conditions on applications that do not have an Advanced HUD or FCW LED Light Bar HUD (based on spec v17.3 for V36x). Updated strategy to consider the value of HUD\_Cfg.  CGEA13\_CS\_CADS\_IPCDisplay-020:Req5v13: Updated to define Distance\_Alert\_Telltale display parameter. Revised definition of ACC\_HUD\_Display to reference the HUD\_ADAS\_ON/OFF Memory setting, and referenced both Cruise/LKS\_ON and CruiseOn as valid HUD Active States.. Modified Adaptive\_Cruise\_Cfg default value to Enabled to ensure that initial ACC settings don’t change during the assy process.  CGEA13\_CS\_CADS\_IPCDisplay-020:Req14v10: Removed FcwDeny\_B\_Dsply signal as condition to trgger FCW\_NA warning message. This is to allow this signal to independently control the amber FCW RTT for applications/markets that require this. Modified HUD\_Cfg to define Flashing FCW warning only required for non-HUD implementations.  CGEA13\_CS\_CADS\_IPCDisplay-020:Req2v11: Flashing ACC Brake Capacity warning only required for non-HUD implementations. |  | |  |
| 021 |  | CGEA13\_CS\_CADS\_IPCDisplay-021:Req1v13: Generated 3 new tables to support B479 display concept. Added example mapping between Tables/Figures and example clusters/programs  CGEA13\_CS\_CADS\_IPCDisplay-021:Req10v3: Updated to clarify that Lost Comm DTCs should be applied to IPMA instead of CCM on new applications.  CGEA13\_CS\_CADS\_IPCDisplay-021:Req5v14: Updated to define display signals to support B479 display concept.  CEA13\_CS\_CADS\_IPCDisplay-021:Req13v5: Updated Lost Comm diagnostics to refer to Lost Comm with IPMA (C23A) instead of Lost Comm with CCM (C104), since IPMA will replace the CCM as the feature controller for B479 and later applications.  CGEA13\_CS\_CADS\_IPCDisplay-021:Req22v4: Updated Lost Comm diagnostics to refer to Lost Comm with IPMA (C23A) instead of Lost Comm with CCM (C104), since IPMA will replace the CCM as the feature controller for B479 and later applications.  CGEA13\_CS\_CADS\_IPCDisplay-021:Req14v11: To support HUD and non-HUD applications (i.e. FCW Warning in cluster), the FCW warnings are triggered differently. Specifically, non-HUD will have flashing warning followed by non-flashing warning (when active braking has been applied), while HUD applications will have constant non-flashing warning. |  | |  |
| 022 |  | CGEA13\_CS\_CADS\_IPCDisplay-022:Req14v12:  - Updated to clarify the flash rate associated with the cluster flashing FCW warning.  - Added strategy to support unique combiner HUD requirements for FCW warning. Specifically, the Combiner HUD can only issue a warning when the combiner is deployed and is active.  - Removed FCW\_NA message when not configured for FCW (see req22 for more details on updated missing message strategy)  CGEA13\_CS\_CADS\_IPCDisplay-022:Req32v3: Clarified that HUD warning strategy common with Combiner and Windshield HUDs.  CGEA13\_CS\_CADS\_IPCDisplay-022:Req18v17:  - Replaced TBD Warning ID with W3556 for flashing PCA warning.  -Deleted FCW\_BrakingOnOff\_Cfg, since new applications have active braking.  -Updated FCW\_Chime\_Req to Active\_Chime\_Status\_Flag and deleted FCW\_Mute\_Req to reconcile with Chime STSS.  CGEA13\_CS\_CADS\_IPCDisplay-022:Req5v15:  -Replaced TBD warning ID with W3555 for flashing ACC warning.  -Added Combiner HUD as possible HUD\_Cfg.  -Defined new state to define activation status of Combiner HUD.  -Added new configuration setting, IACC\_Cfg.  -Added new settings to ACC\_Menu\_Setting to support IACC settings.  -Added states to ACC\_Display\_Warn\_Req to support IACC\_NA and TJA\_NA trigger condition.  -Added new display states for HUD and cluster to support IACC Display strategy.  -Updated signal from AccMsgTxt\_D\_Rq to AccMsgTxt\_D2\_Rq to support new states -Deleted ACC\_Mute\_Req and replaced ACC\_Chime\_Req with Active\_Chime\_Status\_Flag to be consistent with Audio Generated DNA Chimes- Cluster Chime Arbitrator STSS  CGEA13\_CS\_CADS\_IPCDisplay-022:Req2v12:  -Added Brake Capacity warning strategy for Combiner HUD implementations.  -Deleted ACC SHIFT DOWN Warning, since the shift down warning has been integrated into the standard (non-ACC) shift down warning.  -Modified conditions for ACC Not Available and ACC Blockage warnings to occur independent of HUD state.  -Added IACC Not Available and TJA Not Available warning conditions. -Clarified that ACC\_BRAKE\_CAP\_FLASH is to cycle at 4-5Hz.  CGEA13\_CS\_CADS\_IPCDisplay-022:Req31v3: Deleted HUD warning for ACC Shift Down Warning, since commonized with non-ACC shift-down warning. Deleted ACC Not Available and Blockage warnings, to align with Combiner HUD space constraints, and since information would fit better within common cluster warning strategy.  CGEA13\_CS\_CADS\_IPCDisplay-022:Req1Av14:  -Seperated requirement for M/L Family Clusters (req1A) from S Family Clusters (req1B).  -Updated Table 4 to be consistent with implementation. Specifically, in GAP is displayed continuously in Follow Mode (independent of AccTgap\_B\_Dsply)  -Renamed AccMsgTxt\_D2\_Rq to be consistent with latest message list (no strategy change)  CGEA13\_CS\_CADS\_IPCDisplay-022:Req1Bv14:  - Added new Table to define Set Speed display strategy for ‘thin’ clusters.  - Revised Thin cluster tables to be independent of the HUD state (specifically, clusters with on-demand ADAS screens have a mirroring strategy in the HUD).  - Added new table for DA RTT control  CGEA13\_CS\_CADS\_IPCDisplay-022:Req29v3: Clarified that requirement is to be met by HUD  CGEA13\_CS\_CADS\_IPCDisplay-022:Req13v6: Clarified that requirement is to be met by HUD  CGEA13\_CS\_CADS\_IPCDisplay-022:Req22v5: Clarified that requirement is to be met by HUD. Modified missing message strategy to delete DTC test condition where ACCDATA\_3 message is received but FCW\_Cfg = 0 (Not Configured). Specifically, for IPMA-based implementations, this message will be transmitted independent of whether the vehicle offers FCW, hence this check must be deleted.  CGEA13\_CS\_CADS\_IPCDisplay-022:Req3v3: Updated to define IACC configuration options  CGEA13\_CS\_CADS\_IPCDisplay-022:Req33v3: Added sample graphics for combiner HUD. Added new table to support IACC. Updated temporary GAP display to always show the GAP when in Follow Mode. Updated Set Speed state chart to show Set Speed when in Stopped Mode and to clarify that OVERRIDE is a unique graphical state compared to ACTIVE (Grey instead of white)  CGEA13\_CS\_CADS\_IPCDisplay-022:Req15v10: Removed strategy for FCW\_BrakingOnOff\_Cfg since Active Braking is bundled with AEB on all upcoming applications.  CGEA13\_CS\_CADS\_IPCDisplay-0022:Req8v3: Clarified that IACC is mapped to AccEnbl\_B\_RqDrv = ‘Adaptive\_Cruise’  CGEA13\_CS\_CADS\_IPCDisplay-022:Req4v4: Replaced chime table with new table that is compatible with Audio Generated DNA Chimes- Cluster Chime Arbitrator - CGEA v6.6 STSS and later. Specifically, all warning requests need to be linked to a chime request. Attenuation strategy is deleted and is part of chime spec.  CGEA13\_CS\_CADS\_IPCDisplay-022:Req16v4: Replaced chime table with new table that is compatible with Audio Generated DNA Chimes- Cluster Chime Arbitrator - CGEA v6.6 STSS and later. Specifically, all warning requests need to be linked to a chime request. Attenuation strategy is deleted and is part of chime spec. Deleted FCW\_Confirmation chime, since obsolete. |  | |  |
| 023 |  | CGEA13\_CS\_CADS\_IPCDisplay-023:Req33v4: HUD incorrectly referenced the Cluster internal parameter, CC\_Function\_Display, instead of the HUD-internal parameter CC\_Function\_HUD. Updated tables to support base Cruise Control strategy (replaces ‘Speed Control Dedicated RTT w ACC CGEA1.3 STSS) Updated State Chart for CC\_Display\_Speed to allow common strategy to be enabled for Cruise control.  CGEA13\_CS\_CADS\_IPCDisplay-023:Req1Av15: Updated tables to support base Cruise Control strategy (replaces ‘Speed Control Dedicated RTT w ACC CGEA1.3 STSS)  CGEA13\_CS\_CADS\_IPCDisplay-023:Req1Bv15: Updated tables to support base Cruise Control strategy (replaces ‘Speed Control Dedicated RTT w ACC CGEA1.3 STSS)  CGEA13\_CS\_CADS\_IPCDisplay-23:Req36v1: New requirement to clarify that the Downshift RTT strategy shall be applied to all applications with ACC and Manual Transmission. This is needed since the ACC-specific Downshift warning has been deleted to allow for a common indication strategy.  CGEA13\_CS\_CADS\_IPCDisplay-023:Req5v16: Updated definition of CC\_Dissplay\_RedundantSpeed to include STANDBY state since the new Set Speed display stragy for unscaled speedometer rings requires a digital standby set speed display. |  | |  |
| 24 |  | CGEA13\_CS\_CADS\_IPCDisplay-024:Req33v5: Updated ACC\_Gap\_HUD logic to display gap lines in Cancel, STOP\_LV, STANDBY\_LV and RESUME states, independent of AccTgap\_B\_Dsply (since GAP should be shown continuosuly when there is a Lead Vehicle). Updated DI table to use a DI-specific HUD display setting, DI\_HUD\_Display, since some HUDs have a separate On/Off for DI.  CGEA13\_CS\_CADS\_IPCDisplay-024:Req1Av16: Updated ACC\_Display\_Gap logic to display gap lines in Cancel state independent of AccTgap\_B\_Dsply. Updated Digital Set Speed table and temporary digital display state chart and flow chart to include an Override state, to clarify different graphics associated with Override (Grey) vs. Active (White)  CGEA13\_CS\_CADS\_IPCDisplay-024:Req1Bv16: Updated Digital Set Speed table to include an Override state, to clarify different graphics associated with Override (Grey) vs. Active (White)  CGEA13\_CS\_CADS\_IPCDisplay-024:Req5v17: Added Override state to set speed parameters, to clarify that there is a graphical difference compared to SET (non-functional change). Updated ACC\_HUD\_Display based on C-HUD strategy. Added DI\_HUD\_Display parameter, to control the DI HUD display seperately for HUD applications that allow separate setting controls for DI and ACC. Clarified HUD\_Mode and how it is mapped to the HudActv\_D\_Stat signal. |  | |  |
| 25 |  | Clarified generally in the spec that all HUD definitions refer to both Advanced (Projection) and Combiner HUDs.  CGEA13\_CS\_CADS\_IPCDisplay-025:Req22v6: Clarified that DTC C23A00 should be set under FCW\_Missing\_Msg conditions.  CGEA13\_CS\_CADS\_IPCDisplay-25:Req34v4: Clarified that a standard Telltale may also be used.  CGEA13\_CS\_CADS\_IPCDisplay-025:Req13v7: Non-functional impact. Defined signal name instead of message name for missing message strategy.  CGEA13\_CS\_CADS\_IPCDisplay-025:Req5v18: Clarified that Combiner and Windshield HUDs are both treated as ‘Advanced’ HUDs for purposes of this specification. Referenced Warning ID for TJA Not Available.  CGEA13\_CS\_CADS\_IPCDisplay-025:Req33v6:  - Revised conditions for triggering SGACC\_RES\_READY in the Main ACC Chart to also consider CcStat\_D\_Actl == Active  - Minor correction with no functional impact. AccDeny\_B\_RqIpc is an IPC signal that is not received by the HUD. As such, revised the table to consider lost comm condition (ACC\_Missing\_Msg).  - Update to Digital Set Speed State Chart to Add check of Veh\_V\_DsplyCcSet > 0 for transition from Set\_Speed\_Inhibit to Temp\_SetSpeed\_Display to prevent single cycle display of Set Speed - Modified Figure 3 to remove the word ‘Analog’. Specifically, the ACC HUD Set Speed display strategy is relevent whenever there is a redundant cluster set speed (whether analong or digital)  CGEA13\_CS\_CADS\_IPCDisplay-025:Req15v11:  - For truck with Snow-plow applications, it is possible to have FCW set to OFF with a MyKey. As such, in this case, if FCW is OFF, then the Sensitivity setting should be restricted.  - When MyKey is enabled, the DI menu should be hidden. This is to align this spec with the Forward Collision Warning Control Function STSS.  CGEA13\_CS\_CADS\_IPCDisplay-25:Req35v4: Clarified that a DA RTT is only required when there is not a continuous DI display (i.e. with Driver Assist ODI implementations)  CGEA13\_CS\_CADS\_IPCDisplay-025:Req1Av17:  - Revised conditions for triggering SGACC\_RES\_READY in the Main ACC Chart to also consider CcStat\_D\_Actl == Active - Update to Digital Set Speed State Chart (Unscaled Speedometer Ring) to Add check of Veh\_V\_DsplyCcSet > 0 for transition from Set\_Speed\_Inhibit to Temp\_SetSpeed\_Display to prevent single cycle display of Set Speed  CGEA13\_CS\_CADS\_IPCDisplay-025:Req31v4: To support C-HUD failure mode (loss of RED LEDs, added a comment that there shall be a backup warning to replace the Red flashing ACC\_BRAKE\_CAPACITY warning.  CGEA13\_CS\_CADS\_IPCDisplay-025:Req32v4: To support C-HUD failure mode (loss of RED LEDs, added a comment that there shall be a backup warning to replace the Red flashing FCW\_WARN warning. |  | |  |
| 25.1 |  | CGEA13\_CS\_CADS\_IPCDisplay-026:Req31v5: Updated to define duration for HUD warnings. Limited duration of ACC\_BRAKE\_CAPACITY warning to 1.5 sec to maintain consistency with the chime duration (D544 AIMS #3594085)  CGEA13\_CS\_CADS\_IPCDisplay-025p1:Req32v5: Limited duration of FCW\_WARN warning to 1.5 sec to maintain consistency with the chime duration (D544 AIMS #3594085) |  | |  |
| 26 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Impact Matrix** | | | | | | |  | ACC | S&G ACC | FCW | IACC | TJA | | C-HUD Functional Impact | Minor |  |  |  | Minor | | C-HUD Diagnostic Impact |  |  |  |  |  | | A-HUD Functional Impact | Minor |  |  |  | Y | | A-HUD Diagnostic Impact |  |  |  |  |  | | Low Cost Cluster Functional Impact |  |  |  |  |  | | S1-S2 Cluster Functional Impact | Minor | Y |  |  | Y | | M/L/SX-Family Cluster Functional Impact | Minor |  |  | Y | Y | | Reconfigurable Cluster Functional Impact | Minor |  |  | Y | Y | | Cluster Diagnostics Impact |  |  |  |  |  | | Menu In Center Stack | Y | Y | Y | Y |  |   CGEA13\_CS\_CADS\_IPCDisplay-026:Req1Av18:  - Added a new table to support IACC-unique display.  - Revised Table 1 to remove conflict between ACC\_CRUISE/ACC\_FOLLOW and SGACC\_RES\_READY states. Also, needed to create a new state, SGACC\_RES\_READY\_NLV to support applications where no lead vehicle is shown.  - Deleted Table 4, since HMI direction is to always show gap in cluster display. - Deleted Figures 1 and 2 since HMI direction is to follow standard digital set speed display strategy in table 3. - Modified strategy such that Table 3 (digital set speed) is relevent for all clusters - Updated Distance Indication Function display to display content in Normal or Crank. This is to resolve display flicker that can occur during crank.  CGEA13\_CS\_CADS\_IPCDisplay-026:Req1Bv17:  - Revised Table 10 to remove conflict between ACC\_CRUISE/ACC\_FOLLOW and SGACC\_RES\_READY/ SGACC\_RES\_READY\_GAP states. Also, needed to create a new state, SGACC\_RES\_READY\_NLV to support applications where no lead vehicle is shown.  - Updated Table 8 to define CC\_Display\_Speed to show standby graphic (i.e. strikethrough) when AccStopMde\_B\_Dsply or AccStopRes\_B\_Dsply are TRUE. - Updated Distance Indication Function display to display content in Normal or Crank. This is to resolve display flicker that can occur during crank.  CGEA13\_CS\_CADS\_IPCDisplay-026:Req33v7:  - Revised Table 14 to remove conflict between ACC\_CRUISE/ACC\_FOLLOW and SGACC\_RES\_READY states.  - Revised Table 14 to create a new state, SGACC\_RES\_READY\_NLV to support applications where no lead vehicle is shown.  - Revised Table 14 to correct logic for displaying NCC\_OVERRIDE state when HUD is configured for Cruise. - Updated Table 17 to include new SGACC\_RES\_READY\_NLV state - Revised Table 18 to replace AccDeny\_B\_RqIpc with ACC\_Missing\_Msg, since HUD doesn’t receive AccDeny\_B\_Rq\_Ipc. - Updated Distance Indication Function display to display content in Normal or Crank. This is to resolve display flicker that can occur during crank.  CGEA13\_CS\_CADS\_IPCDisplay-026:Req5v19: Added IACC\_Func\_Disp for non-S2 clusters. Clarified definition of SGACC\_RES\_READY, since this is also to be used to support the TJA Take-over strategy (i.e. ACC is inhibited from accelerating to set speed until the driver presses the RESUME button. Added SGACC\_RES\_READY\_NLV to clarify that the lead vehicle may not be displayed. Added Settings\_Menu\_Cfg  CGEA13\_CS\_CADS\_IPCDisplay-026:Req3v4: To support migration of menu settings to the Center Stack, modified the menu logic to be enabled only when Settings\_menu\_cfg == Enabled  CGEA13\_CS\_CADS\_IPCDisplay-026:Req15v12: To support migration of menu settings to the Center Stack, modified the menu logic to be enabled only when Settings\_menu\_cfg == Enabled  CGEA13\_CS\_CADS\_IPCDisplay-026:Req18v18: To support migration of menu settings to center stack, clarified that the settings signals (i.e. FcwStat\_MC, FcwSens\_MC, etc.) are to be defined by the IPC based on the Personalization interface even when the menus are disabled.  CGEA13\_CS\_CADS\_IPCDisplay-026:Req9v3: Removed display requirement from requirement, as display requirements are specified in individual display tables based on Operational Mode. | | | | |
| 26.1 | CGEA13\_CS\_CADS\_IPCDisplay-026p1:Req2v13: Added a new warning state, ACC\_BRAKE\_WARM  CGEA13\_CS\_CADS\_IPCDisplay-026p1:Req5v20: Added new warning message W999, tied to ACC\_Display\_Warn\_Req. | | | | |
| 27 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Impact Matrix** | | | | | | |  | ACC | S&G ACC | IACC | TJA |  | | C-HUD Functional Impact | Minor |  |  |  |  | | C-HUD Diagnostic Impact |  |  |  |  |  | | A-HUD Functional Impact | Minor |  |  |  |  | | A-HUD Diagnostic Impact |  |  |  |  |  | | Low Cost Cluster Functional Impact | Minor |  |  |  |  | | S1-S2 Cluster Functional Impact | Y |  |  |  |  | | M/L/SX-Family Cluster Functional Impact | Y |  |  |  |  | | Reconfigurable Cluster Functional Impact | Y |  |  |  |  | | Cluster Diagnostics Impact |  |  |  |  |  | | Menu In Center Stack |  |  |  |  |  |   Separated the CADS Cluster Interface Spec into 2 versions: PCA and ACC+DI  CGEA13\_CS\_CADS\_IPCDisplay-027:Req1Av19: Corrected typos in Table 3. Specifically, falsely added rows to show STANDBY when in Active and Active\_Que\_Assist states. Modified ACC display conditions to also include ‘Crank’. Modified Distance\_Function\_Display output function to be enabled during CcStat\_D\_Actl = Denied (added robustness). Undeleted and modified Table 4 for temporary Gap.  CGEA13\_CS\_CADS\_IPCDisplay-027:Req1Bv18: Modified ACC display conditions to also include ‘Crank’. Modified Dist\_Func\_Disp\_On\_Demand output function to be enabled during CcStat\_D\_Actl = Denied (added robustness).  CGEA13\_CS\_CADS\_IPCDisplay-027:Req33v8:   * Modified ACC display conditions to also include ‘Crank’. * Modified Distance\_Function\_HUD output function to be enabled during CcStat\_D\_Actl = Denied (added robustness) * Modify Set Speed State Chart to consider normal OR Crank as operational modes * Modify Set Speed State Chart to add Veh\_V\_DsplyCcSet != 0 as a required condition for transition from Standby to Active to prevent potential false transition (i.e. set speed flicker) to SET\_SPEED\_INHIBIT   CGEA13\_CS\_CADS\_IPCDisplay-027:Req3v5: Clarified encoding for Settings\_Menu\_Cfg to refer to ‘Cluster’  CGEA13\_CS\_CADS\_IPCDisplay-027:Req5v21: Clarified encoding for Settings\_Menu\_Cfg to refer to ‘Cluster’ or ‘CenterStack’ | | | | |
| 27.1 | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Impact Matrix** | | | | | | |  | ACC | S&G ACC | IACC | TJA |  | | C-HUD Functional Impact |  |  |  |  |  | | C-HUD Diagnostic Impact |  |  |  |  |  | | A-HUD Functional Impact |  |  |  |  |  | | A-HUD Diagnostic Impact |  |  |  |  |  | | Low Cost Cluster Functional Impact |  |  |  |  |  | | S1-S2 Cluster Functional Impact |  | Y |  |  |  | | M/L/SX-Family Cluster Functional Impact |  | Y |  |  |  | | Reconfigurable Cluster Functional Impact |  | Y |  |  |  | | Cluster Diagnostics Impact |  |  |  |  |  | | Menu In Center Stack |  |  |  |  |  |   CGEA13\_CS\_CADS\_IPCDisplay-027p1:Req4v5: Replaced the Chime associated with ACC\_APPLY\_ BRAKE to be common with the TJA/LCA Hands Off Warning. This change is to support applications of Stop&Go ACC without EPB (Bx726 lead), though it should migrate to all ACC applications | | | | |
| 28 | 2019.02.08 | CGEA13\_CS\_CADS\_IPCDisplay-028:Req1Av20   * Table 1 updated to include new display request signal **AccStopStat\_D\_Dsply** and new display state SGACC\_AUTO\_RES * Table 4 updated to include new display state SGACC\_AUTO\_RES   CGEA13\_CS\_CADS\_IPCDisplay-028:Req1Bv19   * Table 7 updated to include new display request signal **AccStopStat\_D\_Dsply** and new display states SGACC\_AUTO\_RES * Table 8 updated to include new display request signal **AccStopStat\_D\_Dsply** * Table 9 updated to include new display request signal **AccStopStat\_D\_Dsply** * Table 10 updated to include new display request signal **AccStopStat\_D\_Dsply** and new display states SGACC\_AUTO\_RES and SGACC\_AUTO\_RES\_GAP   CGEA13\_CS\_CADS\_IPCDisplay-028:Req33v9   * Table 14 updated to include new display request signal **AccStopStat\_D\_Dsply** and new display states SGACC\_AUTO\_RES * Table 17 updated to include new display states SGACC\_AUTO\_RES   CGEA13\_CS\_CADS\_IPCDisplay-028:Req5v22   * Table 25 updated to include new display request signal **AccStopStat\_D\_Dsply** * Table 27 updated to define new display states SGACC\_AUTO\_RES and SGACC\_AUTO\_RES\_GAP | T Boettcher |  | |
| 28.1 | 2019.05.03 | CGEA13\_CS\_CADS\_IPCDisplay-028:Req1Av20  Table 1 updated to clarify some questions about v28 from IPC supplier | T Boettcher |  | |
| 28.2 | 2019.05.28 | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Impact Matrix** | | | | | |  | ACC | S&G ACC | IACC | TJA | | C-HUD Functional Impact |  |  |  |  | | C-HUD Diagnostic Impact |  |  |  |  | | A-HUD Functional Impact |  |  |  |  | | A-HUD Diagnostic Impact |  |  |  |  | | Low Cost Cluster Functional Impact |  |  |  |  | | S1-S2 Cluster Functional Impact | Y | Y |  |  | | M/L/SX-Family Cluster Functional Impact | Y | Y |  |  | | Reconfigurable Cluster Functional Impact | Y | Y |  |  | | Cluster Diagnostics Impact |  |  |  |  | | Menu In Center Stack |  |  |  |  |   CGEA13\_CS\_CADS\_IPCDisplay-028p2:Req9v4:  Reinstated the requirement to inhibit displays during ignition on sequence, with changes to make it applicable only to warning messages that are triggered by CAN signals. (Originated from ACC Cluster Interface Specification ver027p2) | T Boettcher |  | |
| 28.3 | 2019.07.12 | CGEA13\_CS\_CADS\_IPCDisplay-028p3:Req1Av21:  Revised Table 3 to clarify intent regarding set speed display format during ACC Stop Mode events.  CGEA13\_CS\_CADS\_IPCDisplay-028p3:Req1Bv20:  Revised Table 8 to clarify intent regarding set speed display format during ACC Stop Mode events. | T Boettcher |  | |

# Terminology

## Definitions

| Definition | Description |
| --- | --- |
| CADS | Collision Avoidance & Driver Support |
| CC | Cruise Control (Superset of NCC and ACC) |
| ACC | Adaptive Cruise Control |
| NCC | Normal Cruise Control |
| CMbB | Collision Mitigation by Braking |
| FCW | Forward Collision Warning |

## Identification of requirements

**Ex. DocID-IssueIndex** : **ReqNrVersNr**

When a requirement is introduced it is given a tag including a requirement number. This tag follows the requirement throughout the development process. In this document requirements are identified using a tag consisting of two parts. The first part consists of the document ID and the document issue in which the requirement was introduced *or* updated. The second part consists of the requirement number and the requirement version. A colon separates each part. A requirement tag shall be unique, i.e. there must not exist two different requirements with the same requirement tag. The same requirement may however be used more than once (i.e. the same requirement may exist several times, even within the same document).

*<The document owner is responsible for defining a suitable document ID. Since a requirement may be used in other documents (i.e. not only in its source document) it is very important that this ID is unique and not used to identify any other document. Otherwise there is a risk that two or more different requirements will have exactly the same requirement tag. Try to define an ID that is as descriptive as possible.>*

*Example:*

*SRD-5A-001:Req4v1 This requirement was introduced in the first issue of the document with ID SRD-5A. The requirement number is 4 and it is the first version.*

*CS-FA7A-3-003:Req1v2 This requirement was updated in the third issue of the document with ID CS-FA7A-3. The requirement number is 1 and it has been updated to a second version (CS could e.g. be an abbreviation for Class Specification, FA7A could be an ID for the function area and 3 could be an ID for a class within this function area).*

*SWRS-PJB-003:Req9v1 This requirement was introduced in the third issue of document with ID SWRS-PJB. The requirement number is 9 and it is introduced for the first time in document issue 003 (PJB could e.g. be an abbreviation for an ECU).*

*<Two predefined macros are available in the SRD template to help in tagging the requirements. Insert a new requirement with the "InsertNewReq" macro and update an existing requirement with the macro "UpdateExistingReq". When running these macros a dialog box appears where the following information is to be inserted:*

*DocumentID: This field should be set to the ID you select for your document (e.g. SRD-5A, where 5A a number identifying the system). The document owner are free to choose any ID, but it is important to select one that is unique (i.e. not used by any other document) since it is this part that will make the requirement tag unique. The ID is changed from the Properties Dialogue (File -> Properties and the tab “Custom”)*

*Doc Issue: This field is set to the issue index of the document. The issue index is changed from the Properties Dialogue (File->Properties and the tab Custom).*

*ReqNr: The number of the requirement. If a new requirement is to be inserted, the macro proposes the next number according to the "HighestReqNr" property (File -> Properties and the tab “Custom”-> HighestReqNr). Otherwise this field is by default empty.*

*VersionNr: The version number of the requirement. If a new requirement is to be inserted, the version number is automatically set to 1. Otherwise this field is by default empty.*

*ContextID: This field should be set to the identifier of the domain in which you are working in (e.g. the system area for SRD or class specification, or the component for SWRS). The information is used to name the requirement styles in this document. This makes it possible for SWRS writers to automatically create lists showing changes in a new SRD releases from the previous ones.*

*When pressing OK in the dialog box the macro will automatically select or create the right styles for the requirement, create a requirement tag and create the sub sections of the requirement according to the information in the dialog box. Please note that it is important that the styles for the requirements are not changed. Doing so may make the requirement technique and macros to malfunction.*

*The macros described are generic and used in a number of different specifications within the electrical development process. In order to get the macros to work correctly the type of specification must be specified in the property dialog box for this document (Properties Dialogue (File -> Properties and the tab “Custom”->SpecType). The coding of the field is as follows:*

*0: Specification type not defined.*

*1: FAD (Function Area Description)*

*2: SRD (System Requirement and Description)*

*3: SWRS (Software Requirement Specification*

*4: CS (Class specification)*

*5: SWDC.*

*6. Specification type not defined. >*

# ACC requirements

## Functional Description

The purpose of the Adaptive Cruise Control Function is to inform the driver of Cruise Control ON/OFF/Override events, speed and following distance (gap) settings, Driver Intervene warnings, or system malfunction information.

The Adaptive Cruise Control function correlates the ACC signals from the CCM and PCM with the configuration information, the English/Metric status, and the operational mode to display the appropriate warning or INFO display in the message center and/or sound the appropriate chime.

## ACC Interfaces

CGEA13\_CS\_CADS\_IPCDisplay-028:Req1Av21 ACC Primary Displays – M/L Family Clusters

Req ID:

Purpose: [ACC] [IPC]

Verification Method:

**Req:**

The following state charts defines the graphic and textual displays for the primary ACC display area of the IPC. For Definitions of the Input and Output parameters in the state chart, see req5

Table 1 defines the display state for the primary ACC and Normal Cruise Control features

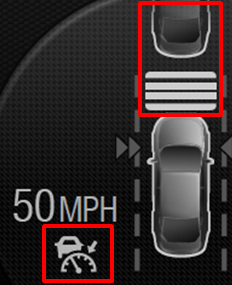
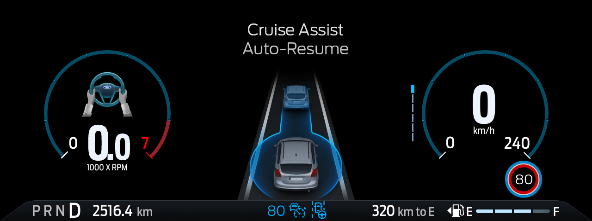
  

Table 2 defines the display state for the Distance Indication feature



Table 3 defines the formatting of the digital set speed display

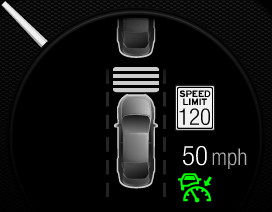
 

Table 4 defines conditions when the ACC GAP display shall be displayed (Displays that support temporary GAP displays)

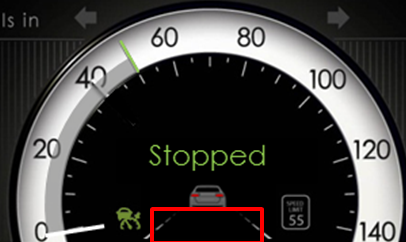
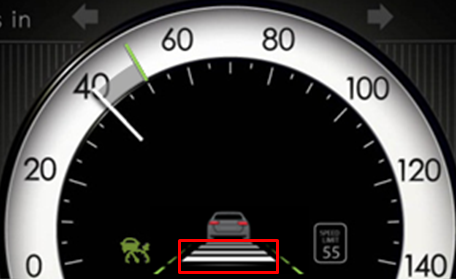
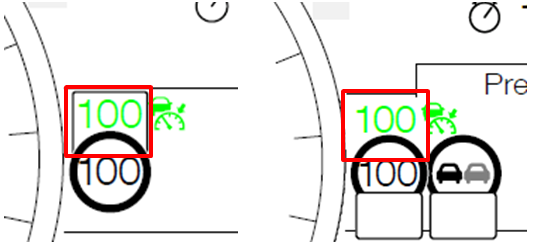
 

Table 5 defines the formatting of the analog set speed display (Clusters with Analog Set Speed displays). 

Table 6 defines the IACC (ACC+Speed Limit Recognition) content which shall be displayed



Examples for the mapping between display tables/figures and clusters/programs is shown below.

|  |  |
| --- | --- |
|  | **Example Programs/Clusters\*** |
| Table 1 | All clusters |
| Table 2 | All clusters |
| Table 3 | All clusters |
| ~~Table 4~~ | ~~D544/U554~~ |
| Table 5 | Lincoln / S550 LX |
| Table 6 | IACC |

Table 1: State Chart for Main ACC and Normal Cruise Control Function Display

| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **ACC\_HUD\_Display** | **AccDeny\_B\_RqIpc** | **CcStat\_D\_Actl** | **AccEnbl\_B\_RqDrv** | **CcOvrrdActv\_B\_Actl** | **AccFllwMde\_B\_Dsply** | **AccStopMde\_B\_Dsply** | **AccStopRes\_B\_Dsply** | **AccStopStat\_D\_Dsply** | | **AccMsgTxt\_D2\_Rq** | **CC\_Function\_Display** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Normal or Crank | Enabled |  | TRUE | X | X | X | X | X | X | X | | X | Ina |
|  | FALSE | Off | X | X | X | X | X | X | | X | Ina |
|  | FALSE | Denied | X | X | X | X | X | X | | X | Ina |
| FALSE | Standby\_Denied | ACC | X | FALSE | X | X | X | | <> ACC\_ Cancelled | ACC\_SB\_INFO\_NLV |
| FALSE | Standby\_Denied | ACC | X | TRUE | X | X | X | | <> ACC\_ Cancelled | ACC\_SB\_INFO\_LV |
|  | FALSE | Standby\_Denied | ACC | X | X | X | X | X | | ACC\_ Cancelled | ACC\_CANCEL\_NLV |
|  | FALSE | Standby\_Denied | CRUISE | X | X | X | X | X | | X | NCC\_SB\_INFO |
|  | FALSE | Standby | ACC | X | FALSE | X | X | X | | <> ACC\_ Cancelled | ACC\_SB\_INFO\_NLV |
|  | FALSE | Standby | ACC | X | TRUE | X | X | X | | <> ACC\_ Cancelled | ACC\_SB\_INFO\_LV |
| Ina | FALSE | Standby | ACC | X | X | X | X | X | | ACC\_ Cancelled | ACC\_CANCEL\_NLV |
| FALSE | Standby | CRUISE | X | X | X | X | X | | X | NCC\_SB\_INFO |
| FALSE | Active | ACC | TRUE | X | X | X | X | | X | ACC\_OVERRIDE |
| FALSE | Active | ACC | FALSE | FALSE | FALSE | FALSE | NoDisplay | | X | ACC\_CRUISE |
|  | FALSE | Active | ACC | FALSE | TRUE | FALSE | FALSE | NoDisplay | | X | ACC\_FOLLOW |
|  | FALSE | Active | CRUISE | FALSE | X | X | X | X | | X | NCC\_CRUISE |
|  | FALSE | Active | CRUISE | TRUE | X | X | X | X | | X | NCC\_OVERRIDE |
|  | FALSE | Active\_Que\_Assist | ACC | TRUE | X | X | X | X | | X | ACC\_OVERRIDE |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | FALSE | FALSE | FALSE | NoDisplay | | X | ACC\_CRUISE |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | TRUE | FALSE | FALSE | NoDisplay | | X | ACC\_FOLLOW |
|  | FALSE | Active\_Que\_Assist | CRUISE | FALSE | X | X | X | X | | X | NCC\_CRUISE |
|  | FALSE | Active\_Que\_Assist | CRUISE | TRUE | X | X | X | X | | X | NCC\_OVERRIDE |
|  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | FALSE | TRUE | FALSE | NoDisplay | | X | SGACC\_STOP\_NLV |
|  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | FALSE | X | X | Stopped | | X | SGACC\_STOP\_NLV |
|  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | TRUE | TRUE | FALSE | NoDisplay | | X | SGACC\_STOP\_LV |
|  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | TRUE | X | X | Stopped | | X | SGACC\_STOP\_LV |
|  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | X | X | X | ResumeReady | | X | SGACC\_AUTO\_RES |
|  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | FALSE | X | TRUE | NoDisplay | | X | SGACC\_RES\_READY\_NLV |
|  |  |  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | FALSE | X | X | PressResume | | X | SGACC\_RES\_READY\_NLV |
|  |  |  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | TRUE | X | TRUE | NoDisplay | | X | SGACC\_RES\_READY |
|  |  |  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | TRUE | X | X | PressResume | | X | SGACC\_RES\_READY |
|  | Disabled |  | FALSE | Standby\_Denied OR Standby | CRUISE | X | X | X | X | X | | X | NCC\_SB\_INFO |
|  |  | FALSE | Active OR Active\_Que \_Assist | CRUISE | FALSE | X | X | X | X | | X | NCC\_CRUISE |
|  |  | FALSE | Active OR Active\_Que \_Assist | CRUISE | TRUE | X | X | X | X | | X | NCC\_OVERRIDE |
|  | ALL OTHER CASES | | |  |  | | | | |  |  |  | Ina |

Table 2: State Chart for Distance Indication Function Display

| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **ACC\_HUD\_Display** | **CcStat\_D\_Actl** | **FCW\_Cfg** | **FdaStat\_MC** | **AccTrgDist2\_D\_Dsply** | **Distance\_Function\_Display** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Normal or Crank | Enabled |  | Off or Denied | FCW+ FDA | ON | DIST\_STANDBY | DI\_STANDBY |
|  | Off or Denied | FCW+ FDA | ON | DIST\_ACTIVE\_No\_Target | DI\_ACTIVE\_NLV |
| Ina | Off or Denied | FCW+ FDA | ON | ≥ DIST\_ACTIVE\_1\_Closest | DI\_ACTIVE\_LV |
| Disabled | X | FCW+ FDA | ON | DIST\_STANDBY | DI\_STANDBY |
| X | FCW+ FDA | ON | DIST\_ACTIVE\_No\_Target | DI\_ACTIVE\_NLV |
| X | FCW+ FDA | ON | ≥ DIST\_ACTIVE\_1\_Closest | DI\_ACTIVE\_LV |
| ALL OTHER CASES | | | | | | Ina |

Distance\_Function\_Display and CC\_Function\_Display states are defined to ensure that the associated graphics do not occupy the same graphical space simultaneously (i.e. Distance Indication states will not be defined simultaneous with ACC Lead Vehicle or GAP graphics)

Table 3: State Chart for ACC and Speed Control Set Speed Display

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **ACC\_HUD\_Display** | **AccDeny\_B\_RqIpc** | **CcStat\_D\_Actl** | **MetricActv\_B\_Actl** | **Veh\_V\_DsplyCcSet \*** | **AccStopMde\_B\_Dsply** | **AccStopRes\_B\_Dsply** | **AccStopStat\_D\_Dsply** | **CcOvrrdActv\_B\_Actl** | **CC\_Display\_Speed** | **CC\_Display\_Speed\_Units** |
| Normal or Crank | Ina | TRUE | X | X | X | X | X | X | X | Ina | Ina |
| FALSE | Off | X | X | X | X | X | X | Ina | Ina |
| FALSE | Denied | X | X | X | X | X | X | Ina | Ina |
| FALSE | Standby\_Denied | X | 0 | X | X | X | X | SET | Ina |
| FALSE | Standby\_Denied | Metric | >0 | X | X | X | X | STANDBY | Metric |
| FALSE | Standby\_Denied | English | >0 | X | X | X | X | STANDBY | English |
| FALSE | Standby | X | 0 | X | X | X | X | SET | Ina |
| FALSE | Standby | Metric | >0 | X | X | X | X | STANDBY | Metric |
| FALSE | Standby | English | >0 | X | X | X | X | STANDBY | English |
| FALSE | Active OR Active\_Que\_Assist | X | 0 | X | X | X | X | Ina | Ina |
| FALSE | Active OR Active\_Que\_Assist | Metric | >0 | FALSE | FALSE | NoDisplay | FALSE | ACT | Metric |
| FALSE | Active OR Active\_Que\_Assist | English | >0 | FALSE | FALSE | NoDisplay | FALSE | ACT | English |
| FALSE | Active OR Active\_Que\_Assist | Metric | >0 | FALSE | FALSE | NoDisplay | TRUE | OVERRIDE | Metric |
| FALSE | Active OR Active\_Que\_Assist | English | >0 | FALSE | FALSE | NoDisplay | TRUE | OVERRIDE | English |
| FALSE | Active OR Active\_Que\_Assist | Metric | >0 | TRUE | X | NoDisplay | X | OVERRIDE | Metric |
| FALSE | Active OR Active\_Que\_Assist | English | >0 | TRUE | X | NoDisplay | X | OVERRIDE | English |
| FALSE | Active OR Active\_Que\_Assist | Metric | >0 | X | TRUE | NoDisplay | X | OVERRIDE | Metric |
| FALSE | Active OR Active\_Que\_Assist | English | >0 | X | TRUE | NoDisplay | X | OVERRIDE | English |
| FALSE | Active OR Active\_Que\_Assist | Metric | >0 | X | X | Stopped | X | OVERRIDE | Metric |
| FALSE | Active OR Active\_Que\_Assist | English | >0 | X | X | Stopped | X | OVERRIDE | English |
| FALSE | Active OR Active\_Que\_Assist | Metric | >0 | X | X | PressResume | X | OVERRIDE | Metric |
| FALSE | Active OR Active\_Que\_Assist | English | >0 | X | X | PressResume | X | OVERRIDE | English |
|  | FALSE | Active OR Active\_Que\_Assist | Metric | >0 | X | X | ResumeReady | X | ACT | Metric |
|  | FALSE | Active OR Active\_Que\_Assist | English | >0 | X | X | ResumeReady | X | ACT | English |
| ALL OTHER CASES | | | | | | | | | Ina | Ina |

\*The embedded states conditions, Veh\_V\_DsplyCcSet = 'Unknown' and Veh\_V\_DsplyCcSet = 'Fault', shall be mapped to Veh\_V\_DsplyCcSet = 0

Table 4: State Chart for displays that support Temporary ACC Gap Display

| **ACC\_HUD\_Display** | **CC\_Function\_Display** | **AccTgap\_B\_Dsply** | **ACC\_Display\_Gap** |
| --- | --- | --- | --- |
|  | ACC\_SB\_INFO\_NLV | Yes | ACT |
|  | ACC\_SB\_INFO\_LV | Yes | ACT |
|  | ACC\_CRUISE | Yes | ACT |
| Ina | ACC\_FOLLOW | Yes | ACT |
|  | ACC\_OVERRIDE | Yes | ACT |
|  | SGACC\_STOP\_NLV | Yes | ACT |
|  | SGACC\_STOP\_LV | Yes | ACT |
|  | SGACC\_RES\_READY | Yes | ACT |
|  | SGACC\_RES\_READY\_NLV | Yes | ACT |
|  | SGACC\_AUTO\_RES | Yes | ACT |
|  | ACC\_CANCEL\_NLV | Yes | ACT |
| ALL OTHER CASES | | | Ina |

Table 5: State Chart for ACC and Speed Control Set Speed Display – Analog Set Speed Implementations

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **AccDeny\_B\_RqIpc** | **CcStat\_D\_Actl** | **Veh\_V\_DsplyCcSet \*** | **CcOvrrdActv\_B\_Actl** | **CC\_Display\_Speed\_Analog** |
|  | TRUE | X | X | X | Ina |
|  | FALSE | Off | X | X | Ina |
|  | FALSE | Denied | X | X | Ina |
|  | FALSE | Standby\_Denied | 0 | X | Ina |
|  | FALSE | Standby\_Denied | >0 | X | STANDBY |
|  | FALSE | Standby | 0 | X | Ina |
| Normal or Crank | FALSE | Standby | >0 | X | STANDBY |
|  | FALSE | Active | 0 | X | Ina |
|  | FALSE | Active | >0 | FALSE | ACT |
|  | FALSE | Active | >0 | TRUE | OVERRIDE |
|  | FALSE | Active\_Que\_Assist | 0 | X | Ina |
|  | FALSE | Active\_Que\_Assist | >0 | FALSE | ACT |
|  | FALSE | Active\_Que\_Assist | >0 | TRUE | OVERRIDE |
|  | ALL OTHER CASES | | |  | Ina |

\*The embedded states conditions, Veh\_V\_DsplyCcSet = 'Unknown' and Veh\_V\_DsplyCcSet = 'Fault', shall be mapped to Veh\_V\_DsplyCcSet = 0 for use in Table 5.

Table 6: State Chart for Display for IACC Display

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **AccDeny\_B\_RqIpc** | **CcStat\_D\_Actl** | **AccEnbl\_B\_RqDrv** | **IaccLamp\_D\_Rq** | **IACC\_Func\_Disp** |
|  |  | TRUE | X | X | X | Ina |
|  |  | FALSE | Off OR Denied | X | X | Ina |
|  | Enabled | FALSE | X | CRUISE | X | Ina |
|  | FALSE | X | ACC | OFF | Ina |
| Normal or Crank |  | FALSE | Standby\_Denied OR Standby OR Active OR Active\_Que\_Assist | ACC | ON | ACT |
|  |  | ALL OTHER CASES | | | | Ina |

**CGEA13\_CS\_CADS\_IPCDisplay-028p3:Req1Bv20 ACC Primary Displays – S Family Clusters**

Req ID:

Purpose: [ACC] [IPC]

Verification Method:

**Req:**

The following state charts define the graphic and textual displays for the primary ACC display area of the IPC. For Definitions of the Input and Output parameters in the state chart, see req5

Table 7 and Table 8 define the display state for the primary ACC and Normal Cruise Control features for implementations with a thin continuous display and a continuous on-demand screen.

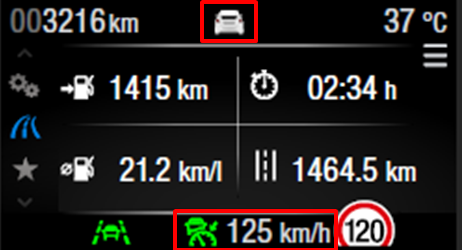


Table 9 defines the pop-up display state for the primary ACC and Normal Cruise Control features for implementations with a thin continuous display and a continuous on-demand screen.

Table 10 defines the ACC content within the Driver Assist On-Demand Screen for implementations with a thin continuous display and a continuous on-demand screen.



Table 11 defines the Distance Indication content within the Driver Assist On-Demand Screen for implementations with a thin continuous display and a continuous on-demand screen.



Table 12 defines the Distance Indication Telltale within the Driver Assist On-Demand Screen for implementations with a thin continuous display and a continuous on-demand screen.

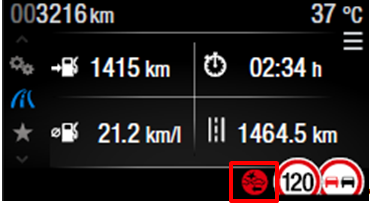
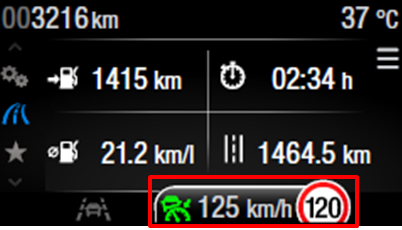


Table 13 defines the IACC (ACC+Speed Limit Recognition) content within the thin display for implementations with a thin continuous display and a continuous on-demand screen.



Examples for the mapping between display tables/figures and clusters/programs is shown below.

|  |  |
| --- | --- |
|  | **Example Programs/Clusters\*** |
| Table 7 | B479/C519 – S Family |
| Table 8 | B479/C519 – S Family |
| Table 9 | B479/C519 – S Family |
| Table 10 | B479/C519 – S Family |
| Table 11 | B479/C519 – S Family |
| Table 12 | B479/C519 – S Family |

\* Note: Mapping of Tables to Programs is for reference only. Confirm with the feature owner to ensure appropriate mapping for a given program.

Table 7: State Chart for Main ACC and Normal Cruise Control Function Display for Thin ACC Displays (Displays with continuous On-Demand Screen)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **AccDeny\_B\_RqIpc** | **CcStat\_D\_Actl** | **AccEnbl\_B\_RqDrv** | **CcOvrrdActv\_B\_Actl** | **AccFllwMde\_B\_Dsply** | **AccStopMde\_B\_Dsply** | **AccStopStat\_D\_Dsply** | **CC\_Func\_Disp\_Thin** |
|  |  | TRUE | X | X | X | X | X | X | Ina |
|  |  | FALSE | Off OR Denied | X | X | X | X | X | Ina |
|  |  | FALSE | Standby\_Denied OR Standby | ACC | X | X | X | X | ACC\_SB\_INFO |
|  |  | FALSE | Standby\_Denied OR Standby | CRUISE | X | X | X | X | NCC\_SB\_INFO |
|  |  | FALSE | Active | ACC | TRUE | X | X | X | ACC\_OVERRIDE |
|  |  | FALSE | Active | ACC | FALSE | FALSE | X | X | ACC\_CRUISE |
|  |  | FALSE | Active | ACC | FALSE | TRUE | X | X | ACC\_FOLLOW |
|  |  | FALSE | Active OR Active\_Que\_Assist | CRUISE | FALSE | X | X | X | NCC\_CRUISE |
| Normal or Crank | Enabled | FALSE | Active OR Active\_Que\_Assist | CRUISE | TRUE | X | X | X | NCC\_OVERRIDE |
| FALSE | Active\_Que\_Assist | ACC | TRUE | X | X | X | ACC\_OVERRIDE |
| FALSE | Active\_Que\_Assist | ACC | FALSE | FALSE | FALSE | NoDisplay | ACC\_CRUISE |
|  |  |
|  |  | FALSE | Active\_Que\_Assist | ACC | FALSE | FALSE | X | NoDisplay | ACC\_CRUISE |
|  |  | FALSE | Active\_Que\_Assist | ACC | FALSE | TRUE | FALSE | NoDisplay | ACC\_FOLLOW |
|  |  | FALSE | Active\_Que\_Assist | ACC | FALSE | TRUE | X | NoDisplay | ACC\_FOLLOW |
|  |  | FALSE | Active\_Que\_Assist | ACC | FALSE | FALSE | TRUE | NoDisplay | SGACC\_STOP\_NLV |
|  |  | FALSE | Active\_Que\_Assist | ACC | FALSE | FALSE | X | Stopped | SGACC\_STOP\_NLV |
|  |  | FALSE | Active\_Que\_Assist | ACC | FALSE | TRUE | TRUE | NoDisplay | SGACC\_STOP\_LV |
|  |  | FALSE | Active\_Que\_Assist | ACC | FALSE | TRUE | X | Stopped | SGACC\_STOP\_LV |
|  |  | FALSE | Active\_Que\_Assist | ACC | FALSE | X | X | ResumeReady | SGACC\_AUTO\_RES |
|  | Disabled | FALSE | Standby\_Denied OR Standby | CRUISE | X | X | X | X | NCC\_SB\_INFO |
|  | FALSE | Active OR Active\_Que\_Assist | CRUISE | FALSE | X | X | X | NCC\_CRUISE |
|  | FALSE | Active OR Active\_Que\_Assist | CRUISE | TRUE | X | X | X | NCC\_OVERRIDE |
|  | ALL OTHER CASES | | | | | | | | Ina |

Table 8: State Chart for ACC and Speed Control Set Speed Display for Thin ACC Display  
(Display with continuous On-Demand Screen)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **AccDeny\_B\_RqIpc** | **CcStat\_D\_Actl** | | **MetricActv\_B\_Actl** | **Veh\_V\_DsplyCcSet \*** | **AccStopMde\_B\_Dsply** | | **AccStopRes\_B\_Dsply** | | **AccStopStat\_D\_Dsply** | | **CcOvrrdActv\_B\_Actl** | | **CC\_Display\_Speed** | **CC\_Display\_Speed\_Units** |
|  | TRUE | X | | X | X | X | | X | | X | | X | | Ina | Ina |
| Normal or Crank | FALSE | Off | | X | X | X | | X | | X | | X | | Ina | Ina |
| FALSE | Denied | | X | X | X | | X | | X | | X | | Ina | Ina |
| FALSE | Standby\_Denied | | X | 0 | X | | X | | X | | X | | SET | Ina |
| FALSE | Standby\_Denied | | Metric | >0 | X | | X | | X | | X | | STANDBY | Metric |
| FALSE | Standby\_Denied | | English | >0 | X | | X | | X | | X | | STANDBY | English |
| FALSE | Standby | | X | 0 | X | | X | | X | | X | | SET | Ina |
| FALSE | Standby | | Metric | >0 | X | | X | | X | | X | | STANDBY | Metric |
| FALSE | Standby | | English | >0 | X | | X | | X | | X | | STANDBY | English |
| FALSE | Active ORActive\_Que\_Assist | | X | 0 | X | | X | | X | | X | | Ina | Ina |
| FALSE | Active ORActive\_Que\_Assist | | Metric | >0 | FALSE | | FALSE | | NoDisplay | | FALSE | | ACT | Metric |
| FALSE | Active ORActive\_Que\_Assist | | English | >0 | FALSE | | FALSE | | NoDisplay | | FALSE | | ACT | English |
| FALSE | Active ORActive\_Que\_Assist | | Metric | >0 | X | | X | | X | | TRUE | | OVERRIDE | Metric |
| FALSE | Active ORActive\_Que\_Assist | | English | >0 | X | | X | | X | | TRUE | | OVERRIDE | English |
| FALSE | Active ORActive\_Que\_Assist | | Metric | >0 | TRUE | | X | | NoDisplay | | FALSE | | OVERRIDE | Metric |
| FALSE | Active ORActive\_Que\_Assist | | English | >0 | TRUE | | X | | NoDisplay | | FALSE | | OVERRIDE | English |
| FALSE | Active OR Active\_Que\_Assist | | Metric | >0 | X | | X | | Stopped | | FALSE | | OVERRIDE | Metric |
| FALSE | Active OR Active\_Que\_Assist | | English | >0 | X | | X | | Stopped | | FALSE | | OVERRIDE | English |
| FALSE | Active ORActive\_Que\_Assist | | Metric | >0 | FALSE | | TRUE | | NoDisplay | | FALSE | | OVERRIDE | Metric |
| FALSE | Active ORActive\_Que\_Assist | | English | >0 | FALSE | | TRUE | | NoDisplay | | FALSE | | OVERRIDE | English |
| FALSE | Active OR Active\_Que\_Assist | | Metric | >0 | X | | X | | PressResume | | FALSE | | OVERRIDE | Metric |
| FALSE | Active OR Active\_Que\_Assist | | English | >0 | X | | X | | PressResume | | FALSE | | OVERRIDE | English |
| FALSE | Active OR Active\_Que\_Assist | | Metric | >0 | X | | X | | ResumeReady | | FALSE | | ACT | Metric |
| FALSE | Active OR Active\_Que\_Assist | | English | >0 | X | | X | | ResumeReady | | FALSE | | ACT | English |
| ALL OTHER CASES | |  | | |  |  | |  | |  | |  | Ina | Ina |

\*The embedded state conditions, Veh\_V\_DsplyCcSet = 'Unknown' and Veh\_V\_DsplyCcSet = 'Fault', shall be mapped to Veh\_V\_DsplyCcSet = 0 for use in the above table.

Table 9: State Chart for Pop-up Display for Thin ACC Display (Display with continuous On-Demand Screen)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ACC\_HUD\_Display** | **Adaptive\_Cruise\_Cfg** | **ADAS\_On\_Demand\_Screen** | **AccEnbl\_B\_RqDrv** | **AccMsgTxt\_D2\_Rq** | **AccStopRes\_B\_Dsply** | **AccStopStat\_D\_Dsply** | **AccTgap\_B\_Dsply** | **AccFllwMde\_B\_Dsply** | **ACC\_Display\_Popup** |
| Ina | Enabled | <> ACT | ACC | ACC\_Cancelled | X | X | X | X | ACC\_CANCEL |
| <> ACC\_Cancelled | TRUE | NoDisplay | X | X | SGACC\_RES\_READY |
| <> ACC\_Cancelled | X | PressResume | X | X | SGACC\_RES\_READY |
| <> ACC\_Cancelled | X | ResumeReady | X | X | SGACC\_AUTO\_RES |
| <> ACC\_Cancelled | FALSE | NoDisplay | Yes | No | ACC\_GAP\_NLV |
| <> ACC\_Cancelled | FALSE | NoDisplay | Yes | Yes | ACC\_GAP\_LV |
|  | | ALL OTHER CASES | | | | | | | Ina |

Table 10: Driver Assist On-Demand Screen (Displays with Continuous Driver Assist On-Demand Screen)

| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **ADAS\_On\_Demand\_Screen** | **AccEnbl\_B\_RqDrv** | **AccDeny\_B\_RqIpc** | **CcStat\_D\_Actl** | | **CcOvrrdActv\_B\_Actl** | **AccFllwMde\_B\_Dsply** | | **AccStopMde\_B\_Dsply** | | **AccStopRes\_B\_Dsply** | | **AccStopStat\_D\_Dsply** | **AccMsgTxt\_D2\_Rq** | **AccTgap\_B\_Dsply** | **ACC\_ADAS\_On\_Demand** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | TRUE | X | | X | X | | X | | X | | X | X | X | Ina |
|  |  |  |  | FALSE | Off OR Denied | | X | X | | X | | X | | X | X | X | Ina |
|  |  |  |  | FALSE | Standby\_ Denied OR Standby | | X | FALSE | | X | | X | | X | <> ACC\_ Cancelled | FALSE | ACC\_SB\_INFO\_NLV |
|  |  |  |  | FALSE | Standby\_ Denied OR Standby | | X | TRUE | | X | | X | | X | <> ACC\_ Cancelled | FALSE | ACC\_SB\_INFO\_LV |
|  |  |  |  | FALSE | Standby\_ Denied OR Standby | | X | X | | X | | X | | X | ACC\_ Cancelled | FALSE | ACC\_CANCEL\_NLV |
|  |  |  |  | FALSE | Standby\_ Denied OR Standby | | X | FALSE | | X | | X | | X | <> ACC\_ Cancelled | TRUE | ACC\_SB\_INFO\_NLV\_GAP |
|  |  |  |  | FALSE | Standby\_ Denied OR Standby | | X | TRUE | | X | | X | | X | <> ACC\_ Cancelled | TRUE | ACC\_SB\_INFO\_LV\_GAP |
|  |  | ACT |  | FALSE | Standby\_ Denied OR Standby | | X | X | | X | | X | | X | ACC\_ Cancelled | TRUE | ACC\_CANCEL\_NLV\_GAP |
|  | Enabled | ACC | FALSE | Active OR Active\_Que\_Assist | | TRUE | X | | X | | X | | X | X | FALSE | ACC\_OVERRIDE |
| Normal or Cranki | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | FALSE | | FALSE | | NoDisplay | X | FALSE | ACC\_CRUISE |
| FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | FALSE | | FALSE | | NoDisplay | X | FALSE | ACC\_FOLLOW |
| FALSE | Active OR Active\_Que\_Assist | | TRUE | X | | X | | X | | X | X | TRUE | ACC\_OVERRIDE\_GAP |
|  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | FALSE | | FALSE | | NoDisplay | X | TRUE | ACC\_CRUISE\_ GAP |
|  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | FALSE | | FALSE | | NoDisplay | X | TRUE | ACC\_FOLLOW\_  GAP |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | TRUE | | FALSE | | NoDisplay | X | FALSE | SGACC\_STOP\_ NLV |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | X | | X | | Stopped | X | FALSE | SGACC\_STOP\_ NLV |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | TRUE | | FALSE | | NoDisplay | X | FALSE | SGACC\_STOP\_ LV |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | X | | X | | Stopped | X | FALSE | SGACC\_STOP\_ LV |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | X | | TRUE | | NoDisplay | X | FALSE | SGACC\_RES\_ READY |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | X | | X | | PressResume | X | FALSE | SGACC\_RES\_ READY |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | X | | TRUE | | NoDisplay | X | FALSE | SGACC\_RES\_ READY\_NLV |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | X | | X | | PressResume | X | FALSE | SGACC\_RES\_ READY\_NLV |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | X | | X | | X | | ResumeReady | X | FALSE | SGACC\_AUTO\_RES |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | X | | X | | X | | ResumeReady | X | TRUE | SGACC\_AUTO\_RES\_GAP |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | TRUE | | FALSE | | NoDisplay | X | TRUE | SGACC\_STOP\_ NLV\_GAP |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | X | | X | | Stopped | X | TRUE | SGACC\_STOP\_ NLV\_GAP |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | TRUE | | FALSE | | NoDisplay | X | TRUE | SGACC\_STOP\_ LV\_GAP |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | X | | X | | Stopped | X | TRUE | SGACC\_STOP\_ LV\_GAP |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | X | | TRUE | | NoDisplay | X | TRUE | SGACC\_RES\_ READY\_GAP |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | TRUE | | X | | X | | PressResume | X | TRUE | SGACC\_RES\_ READY\_GAP |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | X | | TRUE | | NoDisplay | X | TRUE | SGACC\_RES\_ READY\_GAP\_NLV |
|  |  |  |  | FALSE | Active OR Active\_Que\_Assist | | FALSE | FALSE | | X | | X | | PressResume | X | TRUE | SGACC\_RES\_ READY\_GAP\_NLV |
|  | ALL OTHER CASES | | | | |  |  | |  | |  | |  |  |  |  | Ina |

Table 11: State Chart for Distance Indication Function Display for Thin ACC Display (Display with Continuous On-Demand Screen)

| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **~~ACC\_HUD\_Display~~** | **ADAS\_On\_Demand\_Screen** | **CcStat\_D\_Actl** | **FCW\_Cfg** | **FdaStat\_MC** | **AccTrgDist2\_D\_Dsply** | **Dist\_Func\_Disp\_On\_Demand** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Normal or Crank | Enabled |  | ACT | Off or Denied | FCW+ FDA | ON | DIST\_STANDBY | DI\_STANDBY |
|  | Off or Denied | FCW+ FDA | ON | DIST\_ACTIVE\_No\_Target | DI\_ACTIVE\_NLV |
| ~~Ina~~ | Off or Denied | FCW+ FDA | ON | ≥ DIST\_ACTIVE\_1\_Closest | DI\_ACTIVE\_LV |
| Disabled | X | FCW+ FDA | ON | DIST\_STANDBY | DI\_STANDBY |
| X | FCW+ FDA | ON | DIST\_ACTIVE\_No\_Target | DI\_ACTIVE\_NLV |
| X | FCW+ FDA | ON | ≥ DIST\_ACTIVE\_1\_Closest | DI\_ACTIVE\_LV |
| ALL OTHER CASES | | | | | | | Ina |

Dist\_Func\_Disp\_On\_Demand and ACC\_ADAS\_On\_Demand states are defined to ensure that the associated graphics do not occupy the same graphical space simultaneously (i.e. Distance Indication states will not be defined simultaneous with ACC Lead Vehicle or GAP graphics)

Table 12: State Chart for Distance Indication Telltale Display for Thin ACC Display (Display with Continuous On-Demand Screen)

| **Operational\_ Mode** | **FCW\_Cfg** | **FdaStat\_MC** | **AccTrgDist2\_D\_Dsply** | **Distance\_Alert\_Telltale** |
| --- | --- | --- | --- | --- |
| Normal | FCW+ FDA | ON | DIST\_ACTIVE\_1\_Closest | ON |
| ALL OTHER CASES | |  |  | OFF |

Table 13: State Chart for Display for Thin ACC Display (Display with continuous On-Demand Screen)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **AccDeny\_B\_RqIpc** | **CcStat\_D\_Actl** | **AccEnbl\_B\_RqDrv** | **IaccLamp\_D\_Rq** | **IACC\_Func\_Disp\_Thin** |
|  |  | TRUE | X | X | X | Ina |
|  |  | FALSE | Off OR Denied | X | X | Ina |
|  | Enabled | FALSE | X | CRUISE | X | Ina |
|  | FALSE | X | ACC | OFF | Ina |
| Normal |  | FALSE | Standby\_Denied OR Standby OR Active OR Active\_Que\_Assist | ACC | ON | ACT |
|  |  | ALL OTHER CASES | | | | Ina |

CGEA13\_CS\_CADS\_IPCDisplay-028:Req33v9 ACC Primary Displays - HUD

Req ID:

Purpose: [ACC] [HUD]

Verification Method:

**Req:**

The following state charts defines the graphic and textual displays for the primary ACC display area of the Advanced/Combiner HUD. For Definitions of the Input and Output parameters in the state chart, see req5

Table 14 defines the display state for the primary ACC and Normal Cruise Control features.

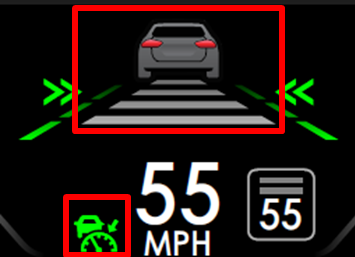
 

Table 15 defines the display state for the Distance Indication feature.

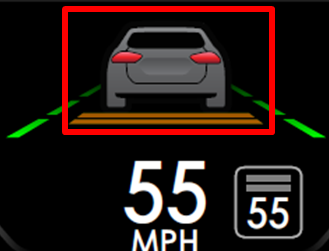
 

Figure 3 and Table 16 define the formatting of the digital set speed display.

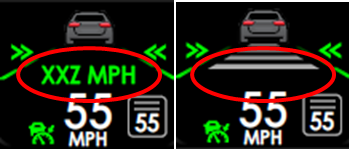


Table 17 defines conditions when the ACC GAP display shall be displayed

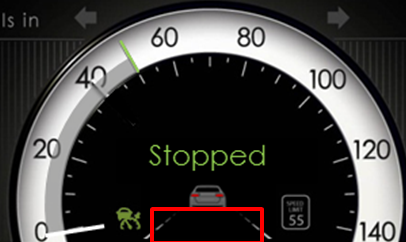
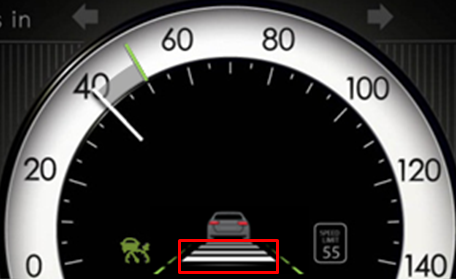
 

Table 18 defines the IACC (ACC+Speed Limit) content within the HUD



Table 14: State Chart for Main ACC and Normal Cruise Control Function Display

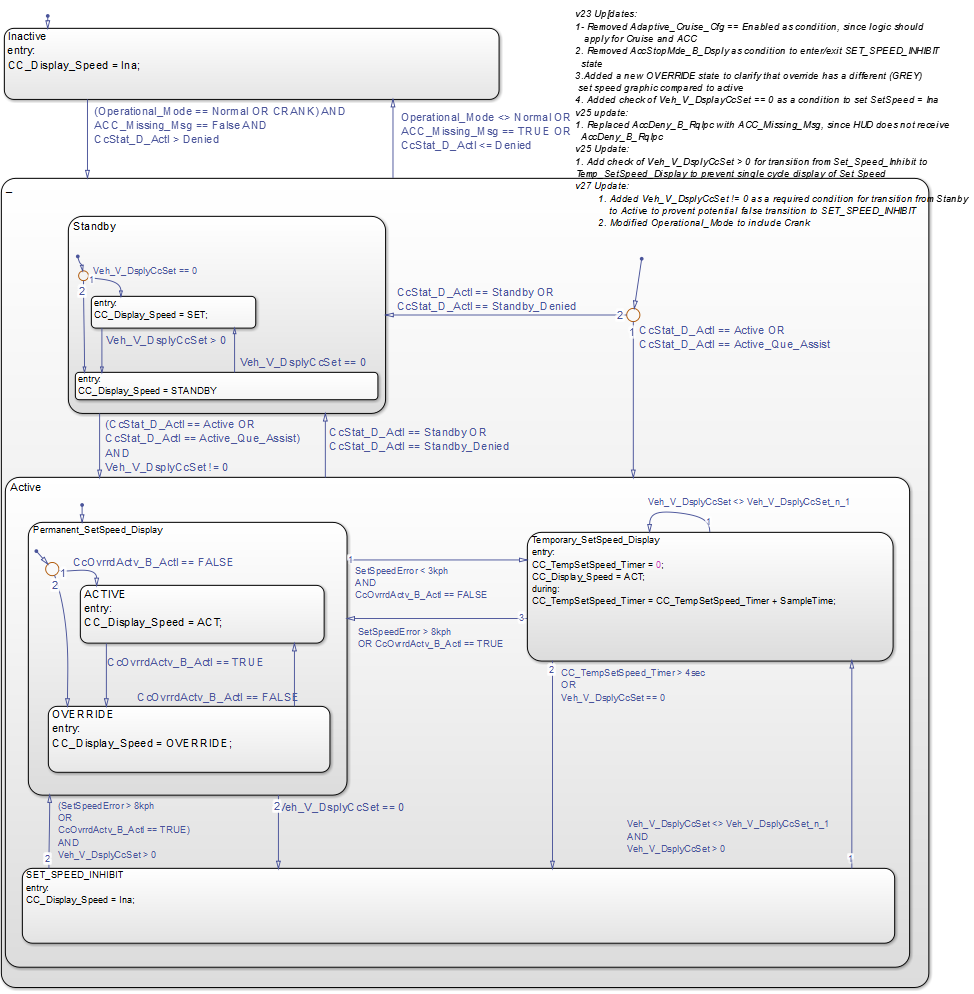
| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **ACC\_HUD\_Display** | **~~AccDeny\_B\_RqIpc~~ ACC\_Missing\_Msg** | **CcStat\_D\_Actl** | **AccEnbl\_B\_RqDrv** | **CcOvrrdActv\_B\_Actl** | **AccFllwMde\_B\_Dsply** | **AccStopMde\_B\_Dsply** | **AccStopRes\_B\_Dsply** | **AccStopStat\_D\_Dsply** | **AccMsgTxt\_D2\_Rq** | **CC\_Function\_HUD** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Normal or Crank | Enabled |  | TRUE | X | X | X | X | X | X | X | X | Ina |
|  | FALSE | Off | X | X | X | X | X | X | X | Ina |
|  | FALSE | Denied | X | X | X | X | X | X | X | Ina |
| FALSE | Standby\_Denied | ACC | X | FALSE | X | X | X | <> ACC\_ Cancelled | ACC\_SB\_INFO\_NLV |
| FALSE | Standby\_Denied | ACC | X | TRUE | X | X | X | <> ACC\_ Cancelled | ACC\_SB\_INFO\_LV |
|  | FALSE | Standby\_Denied | ACC | X | X | X | X | X | ACC\_ Cancelled | ACC\_CANCEL\_NLV |
|  | FALSE | Standby\_Denied | CRUISE | X | X | X | X | X | X | NCC\_SB\_INFO |
|  | FALSE | Standby | ACC | X | FALSE | X | X | X | <> ACC\_ Cancelled | ACC\_SB\_INFO\_NLV |
|  | FALSE | Standby | ACC | X | TRUE | X | X | X | <> ACC\_ Cancelled | ACC\_SB\_INFO\_LV |
| ACT | FALSE | Standby | ACC | X | X | X | X | X | ACC\_ Cancelled | ACC\_CANCEL\_NLV |
| FALSE | Standby | CRUISE | X | X | X | X | X | X | NCC\_SB\_INFO |
| FALSE | Active | ACC | TRUE | X | X | X | X | X | ACC\_OVERRIDE |
| FALSE | Active | ACC | FALSE | FALSE | X | FALSE | X | X | ACC\_CRUISE |
|  | FALSE | Active | ACC | FALSE | TRUE | X | FALSE | X | X | ACC\_FOLLOW |
|  | FALSE | Active | CRUISE | FALSE | X | X | X | X | X | NCC\_CRUISE |
|  | FALSE | Active | CRUISE | TRUE | X | X | X | X | X | NCC\_OVERRIDE |
|  | FALSE | Active\_Que\_Assist | ACC | TRUE | X | X | X | X | X | ACC\_OVERRIDE |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | FALSE | FALSE | FALSE | NoDisplay | X | ACC\_CRUISE |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | TRUE | FALSE | FALSE | NoDisplay | X | ACC\_FOLLOW |
|  | FALSE | Active\_Que\_Assist | CRUISE | FALSE | X | X | X | X | X | NCC\_CRUISE |
|  | FALSE | Active\_Que\_Assist | CRUISE | TRUE | X | X | X | X | X | NCC\_OVERRIDE |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | X | X | X | ResumeReady | X | SGACC\_AUTO\_RES |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | FALSE | TRUE | FALSE | NoDisplay | X | SGACC\_STOP\_NLV |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | FALSE | X | X | Stopped | X | SGACC\_STOP\_NLV |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | TRUE | TRUE | FALSE | NoDisplay | X | SGACC\_STOP\_LV |
|  | FALSE | Active\_Que\_Assist | ACC | FALSE | TRUE | X | X | Stopped | X | SGACC\_STOP\_LV |
|  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | TRUE | X | TRUE | NoDisplay | X | SGACC\_RES\_READY |
|  |  |  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | TRUE | X | X | PressResume | X | SGACC\_RES\_READY |
|  |  |  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | FALSE | X | TRUE | NoDisplay | X | SGACC\_RES\_READY\_NLV |
|  |  | FALSE | Active OR Active\_Que\_Assist | ACC | FALSE | FALSE | X | X | PressResume | X | SGACC\_RES\_READY\_NLV |
|  | Disabled |  | FALSE | Standby\_Denied OR Standby | CRUISE | X | X | X | X | X | X | NCC\_SB\_INFO |
|  |  | FALSE | Active OR Active\_Que\_Assist | CRUISE | FALSE | X | X | X | X | X | NCC\_CRUISE |
|  |  | FALSE | Active OR Active\_Que\_Assist | CRUISE | TRUE | X | X | X | X | X | NCC\_OVERRIDE |
|  | ALL OTHER CASES | | | | | | | | | | Ina |

Table 15: State Chart for Distance Indication Function Display

| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **DI\_HUD\_Display**  **~~ACC\_HUD\_Display~~** | **CcStat\_D\_Actl** | **FCW\_Cfg** | **FdaStat\_MC** | **AccTrgDist2\_D\_Dsply** | **Distance\_Function\_HUD** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Normal or Crank | Enabled |  | Off or Denied | FCW+ FDA | ON | DIST\_STANDBY | DI\_STANDBY |
|  | Off or Denied | FCW+ FDA | ON | DIST\_ACTIVE\_No\_Target | DI\_ACTIVE\_NLV |
| ACT | Off or Denied | FCW+ FDA | ON | ≥ DIST\_ACTIVE\_1\_Closest | DI\_ACTIVE\_LV |
| Disabled | X | FCW+ FDA | ON | DIST\_STANDBY | DI\_STANDBY |
| X | FCW+ FDA | ON | DIST\_ACTIVE\_No\_Target | DI\_ACTIVE\_NLV |
| X | FCW+ FDA | ON | ≥ DIST\_ACTIVE\_1\_Closest | DI\_ACTIVE\_LV |
| ALL OTHER CASES | | | | | | Ina |

Distance\_Function\_Display and CC\_Function\_HUD states are defined to ensure that the associated graphics do not occupy the same graphical space simultaneously (i.e. Distance Indication states will not be defined simultaneous with ACC Lead Vehicle or GAP graphics)

Figure 3: State Chart for ACC and Speed Control Set Speed Display – Digital HUD Set Speed Implementation with Redundant Cluster Set Speed.



\*The embedded states conditions, Veh\_V\_DsplyCcSet = 'Unknown' and Veh\_V\_DsplyCcSet = 'Fault', shall be mapped to Veh\_V\_DsplyCcSet = 0 for use in Figure 3.

Table 16: State Chart for ACC and Speed Control Set Speed Display Units

| **ACC\_HUD\_Display** | **CC\_Display\_Speed** | **MetricActv\_B\_Actl** | **CC\_Speed\_Units\_HUD** |
| --- | --- | --- | --- |
|  | Ina | X | Ina |
|  | SET | X | Ina |
| ACT | STANDBY | Metric | Metric |
| STANDBY | English | English |
|  | ACT | Metric | Metric |
|  | ACT | English | English |
|  | OVERRIDE | Metric | Metric |
|  | OVERRIDE | English | English |
| ALL OTHER CASES | | | Ina |

Table 17: State Chart for displays that support Temporary ACC Gap Display

| **ACC\_HUD\_Display** | **CC\_Function\_HUD ~~Display~~** | **AccTgap\_B\_Dsply** | **ACC\_Gap\_HUD** |
| --- | --- | --- | --- |
|  | ACC\_SB\_INFO\_NLV | Yes | ACT |
|  | ACC\_SB\_INFO\_LV | X | ACT |
|  | ACC\_CRUISE | Yes | ACT |
| ACT | ACC\_FOLLOW | X | ACT |
| ACC\_OVERRIDE | Yes | ACT |
|  | SGACC\_STOP\_NLV | Yes | ACT |
|  | SGACC\_STOP\_LV | X | ACT |
|  | SGACC\_AUTO\_RES | X | ACT |
|  | SGACC\_RES\_READY | X | ACT |
|  | SGACC\_RES\_READY\_NLV | X | ACT |
|  | ACC\_CANCEL\_NLV | X | ACT |
| ALL OTHER CASES | | | Ina |

Table 18: State Chart for Displays that support IACC (ACC+Speed Limit) function

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **ACC\_HUD\_Display** | **ACC\_Missing\_Msg ~~AccDeny\_B\_RqIpc~~** | **CcStat\_D\_Actl** | **AccEnbl\_B\_RqDrv** | **IaccLamp\_D\_Rq** | **IACC\_Func\_Disp\_HUD** |
|  |  | ACT | TRUE | X | X | X | Ina |
|  |  | FALSE | Off OR Denied | X | X | Ina |
|  |  | FALSE | X | CRUISE | X | Ina |
|  |  | FALSE | X | ACC | OFF | Ina |
| Normal or Crank | Enabled | FALSE | Standby\_Denied OR Standby OR Active OR Active\_Que\_Assist | ACC | ON | ACT |
|  |  |  | ALL OTHER CASES | | | | Ina |

CGEA13\_CS\_CADS\_IPCDisplay-026p1:Req2v13 ACC Warning Message Displays

Req ID:

Purpose: [ACC] [IPC]

Verification Method:

**Req:** The following state chart defines the ACC-relevant graphic and textual displays for the warning message display area of the IPC. For Definitions of the Input and Output parameters in the state chart, see req5

Table 19: State Chart for ACC Warning Display

| **Inputs** | | |  |  |  |  |  | | | | | **Warning Parameters** | **Warning Duration** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **ACC\_Msg\_NotMiss\_to\_Miss** | **HUD\_Cfg** | **HUD\_Mode** | **ACC\_HUD\_Display** | **CcStat\_D\_Actl** | **AccStopMde\_B\_Dsply** | **CadsAlignIncplt\_B\_Actl** | **AccEnbl\_ACC\_to\_NCC** | **AccMsgTxt\_D2\_Rq** | **CadsRadrBlck\_B\_Actl** | **ACC\_Display\_Warn\_Req** | **Duration** |
|  | X | FALSE | X | X | X | X | X | TRUE | X\*\* | No\_Text | X | ACC\_RADAR\_NOT\_ALIGN | While Condition is TRUE (Not Resettable) |
|  |  | TRUE | X | X | X | Active\* | FALSE\* | X | X | X | X | ACC\_NA | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | TRUE | X | X | X | Active\_Que\_ Assist\* | FALSE\* | X | X | X | X | ACC\_NA | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | TRUE | X | X | X | Active\_Que\_ Assist\* | TRUE\* | X | X | X | X | ACC\_APPLY\_BRAKE | While Condition is TRUE (Resettable) or Soft Warning |
| Normal | Enabled | FALSE | X | X | X | X | X | FALSE | TRUE | X | X | NCC\_ENABLE | 4sec |
| FALSE | X | X | Ina | X | X | FALSE | FALSE | Press\_Brake\_ to\_Hold | X | ACC\_APPLY\_BRAKE | While Condition is TRUE (Resettable) or Soft Warning |
| FALSE | FCW\_ HUD | X | X | X | X | FALSE | FALSE | Brake\_ Capacity\_ Warning | X | ACC\_BRAKE\_CAPACITY | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | FALSE | Adv\_Comb\_HUD | Active | X | X | X | FALSE | FALSE | Brake\_ Capacity\_ Warning | X | ACC\_BRAKE\_CAPACITY | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | FALSE | No\_HUD | X | X | X | X | FALSE | FALSE | Brake\_ Capacity\_ Warning | X | ACC\_BRAKE\_CAP\_FLASH | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | FALSE | Adv\_Comb\_HUD | OFF or Pending | X | X | X | FALSE | FALSE | Brake\_ Capacity\_ Warning | X | ACC\_BRAKE\_CAP\_FLASH | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | FALSE | X | X | X ~~Ina~~ | X | X | FALSE | FALSE | ACC\_ Unavailable | TRUE | ACC\_BLOCK | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | FALSE | X | X | X ~~Ina~~ | X | X | FALSE | FALSE | ACC\_ Unavailable | FALSE | ACC\_NA | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | ~~FALSE~~ | ~~X~~ | ~~X~~ | ~~Ina~~ | ~~X~~ | ~~X~~ | ~~FALSE~~ | ~~FALSE~~ | ~~Shift\_Down~~ | ~~FALSE~~ | ~~ACC\_SHIFT\_ DOWN~~ | ~~While Condition is TRUE (Resettable) or Soft Warning~~ |
|  |  | FALSE | X | X | X | X | X | FALSE | FALSE | NCC\_Enabled\_Warning | FALSE | NCC\_ENABLE | 4sec |
|  |  | FALSE | X | X | Ina | X | X | FALSE | FALSE | Only\_ Following\_in\_ Low\_Spd | FALSE | ACC\_FOLLOW\_ONLY | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | FALSE | X | X | X | X | X | FALSE | FALSE | IACC\_Unavailable | FALSE | IACC\_NA | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | FALSE | X | X | X | X | X | FALSE | FALSE | TJA\_Unavailable | FALSE | TJA\_NA | While Condition is TRUE (Resettable) or Soft Warning |
|  |  | FALSE | X | X | X | X | X | FALSE | FALSE | Brakes\_Warm | FALSE | CRUISE\_BRAKE\_ COOLING | While Condition is TRUE (Resettable) or Soft Warning |
| ALL OTHER CASES | | | |  |  |  |  |  | | | | Ina | N/A |

\*For these conditions, the defined signal value is the last known good value (before signal communication is lost)

\*\* Since this warning is Not Resettable, it may not be possible to set AccEnbl\_ACC\_to\_NCC = TRUE

The Cluster flashing ACC Warning, ACC\_BRAKE\_CAP\_FLASH, shall cycle between 2 color-inverted images at frequency of 4Hz-5Hz with a 50% Duty Cycle.

CGEA13\_CS\_CADS\_IPCDisplay-025p1:Req31v5 ACC HUD Warning Message Displays

Req ID:

Purpose: [ACC] [HUD]

Verification Method:

**Req:** The following state chart defines the ACC-relevant graphic displays for the warning message display area of the Advanced/Combiner HUD. For Definitions of the Input and Output parameters in the state chart, see req5.

Table 20: State Chart for ACC HUD Warning Display

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Inputs** | | | | | **Warning Parameters** | **Warning Duration** |
| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **ACC\_HUD\_Display** | **AccMsgTxt\_D2\_Rq** | **~~CadsRadrBlck\_B\_Actl~~** | **ACC\_HUD\_Warn\_Req** | **Duration** |
| Normal | Enabled | X | Brake\_ Capacity\_ Warning | ~~X~~ | ACC\_BRAKE\_CAPACITY | 1.5sec |
| ACT | Only\_ Following\_in\_Low\_Spd | ~~X~~ | ACC\_FOLLOW\_ONLY | While Condition is TRUE |
| ACT | Press\_Brake\_ to\_Hold | ~~X~~ | ACC\_APPLY\_BRAKE | While Condition is TRUE |
| ALL OTHER CASES | | | | | Ina | N/A |

The HUD ACC\_BRAKE\_CAPACITY warning graphics shall be common with the FCW HUD Warning, as defined in req32

If a HUD failure state exists, which only impacts the Red color of the the display, a non-Red warning shall be displayed for the ACC\_BRAKE\_CAPACITY warning graphic.

CGEA13\_CS\_CADS\_IPCDisplay-027:Req3v5 ACC Menu Setting Displays

Req ID: Previously U38x\_CS\_CADS\_IPCDisplay-005:Req3v4

Purpose: [ACC] [IPC]

Verification Method:

**Req:**The following state chart defines the ACC-relevant menu display of the IPC. For Definitions of the Input and Output parameters in the state chart, see req5

Table 21: State Chart for ACC Menu Display

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Inputs** |  |  |  |  |  |  |  | **Display Parameters** |
| **Operational\_ Mode** | **Settings\_Menu\_Cfg** | **Adaptive\_Cruise\_Cfg** | **ACC\_Menu\_Cfg** | **IACC\_Cfg** | **iACC\_ACCAutoSetSpeedOnOff** | **CcStat\_D\_Actl** | **AccDeny\_B\_RqIpc** | **ACC\_Menu\_Setting** |
|  |  |  | FALSE | X | X | X | X | Ina |
|  |  |  | TRUE | FALSE | X | Denied | X | ACC\_NotAvailable |
|  |  |  | TRUE | FALSE | X | Standby\_Denied | FALSE | ACC |
|  |  |  | TRUE | FALSE | X | Standby | FALSE | ACC |
|  |  |  | TRUE | FALSE | X | Off | FALSE | ACC |
| Normal | ~~Enabled~~ Cluster | Enabled | TRUE | FALSE | X | Active | FALSE | ACC |
| TRUE | FALSE | X | Active\_Que\_Assist | FALSE | ACC |
| TRUE | FALSE | X | X | TRUE | ACC\_NotAvailable |
|  |  |  | TRUE | TRUE | X | Denied | X | IACC\_NotAvailable |
|  |  |  | TRUE | TRUE | ON | Standby\_Denied | FALSE | IACC |
|  |  |  | TRUE | TRUE | ON | Standby | FALSE | IACC |
|  |  |  | TRUE | TRUE | ON | Off | FALSE | IACC |
|  |  |  | TRUE | TRUE | ON | Active | FALSE | IACC |
|  |  |  | TRUE | TRUE | ON | Active\_Que\_Assist | FALSE | IACC |
|  |  |  | TRUE | TRUE | X | X | TRUE | IACC\_NotAvailable |
|  |  |  | TRUE | TRUE | OFF | Standby\_Denied | FALSE | IACC\_RestrictTol |
|  |  |  | TRUE | TRUE | OFF | Standby | FALSE | IACC\_RestrictTol |
|  |  |  | TRUE | TRUE | OFF | Off | FALSE | IACC\_RestrictTol |
|  |  |  | TRUE | TRUE | OFF | Active | FALSE | IACC\_RestrictTol |
|  |  |  | TRUE | TRUE | OFF | Active\_Que\_Assist | FALSE | IACC\_RestrictTol |
| ALL OTHER CASES | | |  |  |  |  |  | Ina |

CGEA13\_CS\_CADS\_IPCDisplay-027p1:Req4v5 ACC Audible Warning Settings

Req ID: Previously CGEA12\_D-car\_CS\_CADS\_IPCDisplay-005:Req4v4

Purpose: [ACC] [IPC]

Verification Method:

**Req:**

The following state chart defines the ACC-relevant chime ~~and mute~~ settings for the IPC. For Definitions of the Input and Output parameters in the state chart, see req5

Table 22: State Chart for ACC Chimes Levels

| **Inputs** | | |  | **Warning Parameters** |
| --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Adaptive\_Cruise\_Cfg** | **AccWarn\_D\_Dsply** | **ACC\_Display\_Warn\_Req** | **Active\_Chime\_Status\_Flag** |
|  |  | Brake\_Cap\_Warn | X | ACC\_High\_Priority\_Chime\_Status\_Flag |
| Normal | Enabled | BrakeReleaseWarn\_In\_StopMd | X | ACC\_Low\_Priority\_Chime\_Status\_Flag |
| Cancel\_Warn | X | ACC\_Low\_Priority\_Chime\_Status\_Flag |
| No\_Warning | ACC\_NA | Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag |
|  |  | No\_Warning | ACC\_APPLY\_BRAKE | ACC\_Apply\_Brake\_Warning\_Chime\_Status\_Flag  ~~ACC\_Low\_Priority\_Chime\_Status\_Flag~~ |
|  |  | No\_Warning | NCC\_ENABLE | Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag |
|  |  | No\_Warning | ACC\_BLOCK | Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag |
|  |  | No\_Warning | IACC\_NA | Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag |
|  |  | No\_Warning | TJA\_NA | Message\_Center\_Soft\_Warning\_Chime\_Status\_Flag |
| All Other Cases | | | | Ina |

CGEA13\_CS\_CADS\_IPCDisplay-001:Req26v1 ACC Diagnostics Settings

Req ID: Previously CGEA12\_D-car\_CS\_CADS\_IPCDisplay-002:Req26v1

Purpose: [ACC] [IPC]

Verification Method:

**Req: Deleted**

CGEA13\_CS\_CADS\_IPCDisplay-25:Req35v4 Distance Alert RTT Display

Req ID: Previously CGEA13\_CS\_CADS\_IPCDisplay-017p3:Req35v2

Purpose: [ACC] [IPC]

Verification Method:

**Req:**

For program applications that may not have a Head-up Display (either Advanced/Combiner OR FCW light bar) and do not support continuous Distance Indication display (i.e. only display DI in an ODI screen), a Distance Alert RTT shall be implemented:

**Indicator Graphics / Display Format**



For actual symbol definition refer to database # K.15 of the 03-0685 ARL requirement

**Indicator Color Coordinates:**

Red - Reference SDS IL-0017/IS-0379

Table 24: State Chart for Distance Indication Function Display

| **Operational\_ Mode** | **FCW\_Cfg** | **HUD\_Cfg** | **FdaStat\_MC** | **FCW\_Telltale** | **AccTrgDist2\_D\_Dsply** | | **Distance\_Alert\_Telltale** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Normal | FCW+ FDA | No\_HUD | ON | OFF | DIST\_ACTIVE\_1\_Closest | | ON |
| ALL OTHER CASES | | |  |  | |  | OFF |

CGEA13\_CS\_CADS\_IPCDisplay-23:Req36v1 Downshift Warning

Req ID:

Purpose: [ACC] [IPC][HUD]

Verification Method:

**Req:** On Vehicles equipped with both Adaptive Cruise Control and Manual Transmissions, Down\_Shift\_Indicator\_Cfg shall be set to TRUE and the IPC/HUD shall display the Downshift\_RTT based on the strategy defined in the ‘Upshift Downshift Indicator RTT CGEA1.3 STSS’.

CGEA13\_CS\_CADS\_IPCDisplay-028:Req5v22 ACC Parameter Definitions

Req ID: Previously U38x\_CS\_CADS\_IPCDisplay-007:Req5v6

Purpose: [ACC] [IPC AND HUD]

Verification Method:

**Req:**

The CAN Inputs which are relevant to the ACC display strategy are defined below:

Table 25: Parameter definition of CAN signal inputs

|  |  |  |  |
| --- | --- | --- | --- |
| **CAN Inputs** | | | |
| **Signal Name** | **Defalt Value  (Startup or Batt Conn)** | **Required Receiver** | **Requirement Reference** |
| Ignition\_Status | Not Defined Here | IPC | See CAN Spec for Signal Encoding |
| ElPw\_D\_Stat | Not Defined Here | IPC | See CAN Spec for Signal Encoding |
| PwPckTq\_D\_Stat | Not Defined Here | IPC | See CAN Spec for Signal Encoding |
| CcOvrrdActv\_B\_Actl | Cruise\_Req\_Not\_Overridden (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| CcStat\_D\_Actl | Off (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| CcStat\_D\_Actl\_UB | No (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| Veh\_V\_DsplyCcSet | 0 (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| AccFllwMde\_B\_Dsply | No (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| CadsRadrBlck\_B\_Actl | No (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| CadsAlignIncplt\_B\_Actl | No (0x0) | IPC | See CAN Spec for Signal Encoding |
| AccMsgTxt\_D2\_Rq | No\_Text (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| AccTGap\_B\_Dsply | No (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| AccTGap\_D\_Dsply | Time\_Gap\_3 (0x3) | IPC, HUD | See CAN Spec for Signal Encoding |
| AccWarn\_D\_Dsply | No\_Warning (0x0) | IPC | See CAN Spec for Signal Encoding |
| AccMemEnbl\_B\_RqDrv | ACC\_Selected (0x1) | IPC | See CAN Spec for Signal Encoding |
| AccStopMde\_B\_Dsply | No (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| AccStopRes\_B\_Dsply | No (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| AccStopStat\_D\_Dsply | NoDisplay (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| AccTrgDist2\_D\_Dsply | DIST\_OFF (0x0) | IPC, HUD | See CAN Spec for Signal Encoding |
| AccEnbl\_B\_RqDrv | ACC\_Selected (0x1) | HUD | See CAN Spec for Signal Encoding |
| AccDeny\_B\_RqIpc | No (0x0) | HUD | See CAN Spec for Signal Encoding |

The CAN Outputs which are relevant to the ACC display strategy are defined below:

Table 26: Parameter definition of CAN signal outputs

|  |  |  |
| --- | --- | --- |
| **CAN Outputs** | | |
| **Signal Name** | **Defalt Value  (Startup or Batt Conn)** | **Requirement Reference** |
| AccDeny\_B\_RqIpc | No (0x0) | See CAN Spec for Signal Encoding |
| MetricActv\_B\_Actl | Not Defined Here | See CAN Spec for Signal Encoding |
| AccEnbl\_B\_RqDrv | ACC\_Selected (0x1) | See CAN Spec for Signal Encoding |
| DISPLAY\_SPEED\_OFFSET | 0 kph (0x0) | See CAN Spec for Signal Encoding |
| DISPLAY\_SPEED\_SCALING | 100% (0x0) | See CAN Spec for Signal Encoding |

The display parameters which are relevant to the ACC display strategy are defined below:

Table 27: Parameter definition of display parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Display Parameters** | | | | |
| **Parameter Name** | **Definition** | **Detail Meaning** | **Default Value  (Startup or Batt Conn)** | **Req Ref** |
| CC\_Display\_Speed | Defines the displayed ACC/CC Set Speed in the message center | Ina (0x0): Set Speed not displayed ACT (0x1): Displayed set speed shall equal Veh\_V\_DsplyCcSet.  SET (0x2): The text 'SET" is displayed in the Set Speed location  OVERRIDE (0x3): The Set Speed is displayed in a shading that indicates ACC is in Override  STANDBY (0x4): The Set Speed is displayed in a shading that indicates ACC is not active | Ina (0x0) | Req1 |
| CC\_Display\_Speed\_Analog | Defines the Analog displayed ACC/CC Set Speed in the speedometer | Ina (0x0): Set Speed not displayed ACT (0x1): Displayed set speed shall equal Veh\_V\_DsplyCcSet  STANDBY (0x3): The Set Speed is displayed in a shading that indicates ACC is not active  OVERRIDE (0x4): The Set Speed is displayed in a shading that indicates ACC is in Override | Ina (0x0) | Req1 |
| CC\_Display\_RedundantSpeed | Defines the Redundant Digital displayed ACC/CC Set Speed for analog set speed implementations | Ina (0x0): Set Speed not displayed ACT (0x1): Displayed set speed shall equal Veh\_V\_DsplyCcSet.  SET (0x2): The text 'SET" is displayed in the Set Speed location  STANDBY (0x3): The Set Speed is displayed in a shading that indicates ACC is not active  OVERRIDE (0x4): The Set Speed is displayed in a shading that indicates ACC is in Override | Ina (0x0) | Req1 |
| CC\_Display\_Speed\_Units | Defines whether Set Speed is displayed with kph or MPH | Ina (0x0): Units not displayed English (0x1): MPH Metric (0x2): km/h | Ina (0x0) | Req1 |
| CC\_Speed\_Units\_HUD | Defines whether Set Speed is displayed with kph or MPH in the HUD | Ina (0x0): Units not displayed English (0x1): MPH Metric (0x2): km/h | Ina (0x0) | Req1 |
| CC\_Function\_Display | Defines whether the ACC Function Display is in one of the following formats | o Ina (0x0): Not displayed o ACC\_SB\_INFO\_NLV (0x1): ACC Standby Information: Continuous display indication that ACC is in standby. The lead vehicle is NOT displayed. The Gap setting may be displayed. o ACC\_SB\_INFO\_LV (0x2): ACC Standby Information: Continuous display indication that ACC is in standby. The lead vehicle IS displayed. The Gap setting may be displayed. o ACC\_CRUISE (0x3): Continuous display indication that ACC is active and there is NOT a lead vehicle. The Gap setting may be displayed.  o ACC\_FOLLOW (0x4): Continuous display indication that ACC is active and there IS a lead vehicle. The Gap setting may be displayed. o ACC\_OVERRIDE (0x5): Continuous display indication that ACC is active and the driver is overriding and there is NOT a lead vehicle. The Gap setting may be displayed. o NCC\_SB\_INFO (0x6): Continuous indication that Normal Cruise Control is in standby. The Gap setting is not displayed. o NCC\_CRUISE (0x7): Continuous indication that Normal Cruise Control is Active. The Gap setting is not displayed. o NCC\_OVERRIDE (0x8): Continuous indication that Normal Cruise Control is Active and the driver is overriding. The Gap setting is not displayed. o SGACC\_STOP\_NLV (0x9): Stop&Go ACC is Active and stopped and No Lead Vehicle: Continuous display indication that ACC is Active and Stopped and there is NOT a lead vehicle. The Gap setting may be displayed o SGACC\_STOP\_LV (0xA): Stop&Go ACC is Active and stopped and a Lead Vehicle id detected: Continuous display indication that ACC is Active and Stopped and there IS a lead vehicle. The Gap setting may be displayed o SGACC\_RES\_READY (0xB): Stop&Go ACC is Active but is inhibited from accelerating until the driver presses the RESUME button. Continuous display indication that ACC is Active but will not accelerate to set speed and may be resumed through a RESUME button press, The Gap setting may be displayed. The lead vehicle is displayed o ACC\_CANCEL\_NLV (0xC): ACC Automatically Cancelled Information: Display indication that ACC has automatically cancelled. The lead vehicle is NOT displayed. The Gap setting may be displayed.  o SGACC\_RES\_READY\_NLV (0xD): Stop&Go ACC is Active but is inhibited from accelerating until the driver presses the RESUME button. Continuous display indication that ACC is Active but will not accelerate to set speed and may be resumed through a RESUME button press, The Gap setting may be displayed. The lead vehicle is NOT displayed  o SGACC\_AUTO\_RES (0xE): Stop&Go ACC is Active and is stopped but could automatically accelerate from a stop. Continuous display indication that ACC is Active and Stopped but may accelerate to set speed without a RESUME button press. The Gap setting may be displayed. The lead vehicle IS displayed | Ina (0x0) | Req1 |
| CC\_Function\_HUD | Defines whether the ACC Function Display in the HUD is in one of the following formats | o Ina (0x0): Not displayed o ACC\_SB\_INFO\_NLV (0x1): ACC Standby Information: Continuous display indication that ACC is in standby. The lead vehicle is NOT displayed. The Gap setting may be displayed. o ACC\_SB\_INFO\_LV (0x2): ACC Standby Information: Continuous display indication that ACC is in standby. The lead vehicle IS displayed. The Gap setting may be displayed. o ACC\_CRUISE (0x3): Continuous display indication that ACC is active and there is NOT a lead vehicle. The Gap setting may be displayed.  o ACC\_FOLLOW (0x4): Continuous display indication that ACC is active and there IS a lead vehicle. The Gap setting may be displayed. o ACC\_OVERRIDE (0x5): Continuous display indication that ACC is active and the driver is overriding and there is NOT a lead vehicle. The Gap setting may be displayed. o NCC\_SB\_INFO (0x6): Continuous indication that Normal Cruise Control is in standby. The Gap setting is not displayed. o NCC\_CRUISE (0x7): Continuous indication that Normal Cruise Control is Active. The Gap setting is not displayed. o NCC\_OVERRIDE (0x8): Continuous indication that Normal Cruise Control is Active and the driver is overriding. The Gap setting is not displayed. o SGACC\_STOP\_NLV (0x9): Stop&Go ACC is Active and stopped and No Lead Vehicle: Continuous display indication that ACC is Active and Stopped and there is NOT a lead vehicle. The Gap setting may be displayed o SGACC\_STOP\_LV (0xA): Stop&Go ACC is Active and stopped and a Lead Vehicle id detected: Continuous display indication that ACC is Active and Stopped and there IS a lead vehicle. The Gap setting may be displayed o SGACC\_RES\_READY (0xB): Stop&Go ACC is Active but is inhibited from accelerating until the driver presses the RESUME button. Continuous display indication that ACC is Active but will not accelerate to set speed and may be resumed through a RESUME button press, The Gap setting may be displayed. The lead vehicle is displayed o ACC\_CANCEL\_NLV (0xC): ACC Automatically Cancelled Information: Display indication that ACC has automatically cancelled. The lead vehicle is NOT displayed. The Gap setting may be displayed. o SGACC\_RES\_READY\_NLV (0xD): Stop&Go ACC is Active but is inhibited from accelerating until the driver presses the RESUME button. Continuous display indication that ACC is Active but will not accelerate to set speed and may be resumed through a RESUME button press, The Gap setting may be displayed. The lead vehicle is NOT displayed o SGACC\_AUTO\_RES (0xE): Stop&Go ACC is Active and is stopped but could automatically accelerate from a stop. Continuous display indication that ACC is Active and Stopped but may accelerate to set speed without a RESUME button press. The Gap setting may be displayed. The lead vehicle IS displayed | Ina (0x0) | Req1 |
| Distance\_Function\_Display | Defines whether the Distance Indication Function Display is in one of the following formats | o Ina (0x0): Not displayed  o DI\_STANDBY (0xD): Distance Indication Standby: Continuous display indication that DI is in standby. The lead vehicle is NOT displayed.  o DI\_ACTIVE\_NLV (0xE): Distance Indication Active: Continuous display indication that DI is in Active. The lead vehicle is NOT displayed. o DI\_ACTIVE\_LV (0xF): Distance Indication Active: Continuous display indication that DI is in Active. The lead vehicle is displayed as defined by AccTrgDist2\_D\_Dsply. | Ina (0x0) | Req1 |
| Distance\_Function\_HUD | Defines whether the Distance Indication Function Display in the HUD is in one of the following formats | o Ina (0x0): Not displayed  o DI\_STANDBY (0xD): Distance Indication Standby: Continuous display indication that DI is in standby. The lead vehicle is NOT displayed.  o DI\_ACTIVE\_NLV (0xE): Distance Indication Active: Continuous display indication that DI is in Active. The lead vehicle is NOT displayed. o DI\_ACTIVE\_LV (0xF): Distance Indication Active: Continuous display indication that DI is in Active. The lead vehicle is displayed as defined by AccTrgDist2\_D\_Dsply. | Ina (0x0) | Req1 |
| ACC\_Display\_Warn\_Req | Defines ACC Warning messages (Text and/or Graphics) to be displayed as follows | o Ina (0x0): No ACC-specific Message ~~o W816 - ACC\_MALF (0x1): "CRUISE MALFUNCTION" Warning Text~~ o W818- ACC\_BLOCK (0x2):  "ADAPTIVE CRUISE UNAVAILABLE – FRONT SENSOR  BLOCKED" Warning Text  o W814 - ACC\_NA (0x3): "CRUISE NOT AVAILABLE" Warning Text  o W1000 NCC\_ENABLE (0x5): "NORMAL CRUISE ACTIVE - AUTOMATIC BRAKING TURNED OFF" Warning Text o W1001 - ACC\_RADAR\_NOT\_ALIGN (0x6): "FRONT SENSOR NOT ALIGNED" Warning Text o W1430 – ACC\_SHIFT\_DOWN (0x7): "SHIFT DOWN" and Down Arrow Graphic o W1432 – ACC\_FOLLOW\_ONLY (0x9): "Adaptive Cruise – Speed too low to activate" o W1431- ACC\_APPLY\_BRAKE (0xA): "Adaptive Cruise – Driver Resume Control'  o W1081 - ACC\_BRAKE\_CAPACITY (0xB): "ACC" text and Collision Warning graphic o W3555 - ACC\_BRAKE\_CAP\_FLASH (0xC): Flashing Red "ACC" text and Collision Warning graphic o W3533 - IACC\_NA (0xD): ‘Adaptive Cruise with Speed Sign Recognition Unavailable‘ o W3564 - TJA\_NA (0xE): ‘Adaptive Cruise with Lane Centering Unavailable‘ o W999 – CRUISE\_BRAKE\_COOLING (0xF): ‘Cruise Control Not Available Brakes Need Cooling‘ | Ina (0x0) | Req2 |
| ACC\_Menu\_Setting | Defines the Cruise Control menu options display strategy in one of the following formats | o Ina (0x0): No ACC/Cruise Control Menu Settings o ACC (0x1): Standard ACC Menu Setting (Choice of ‘Normal’ or ‘Adaptive’ Cruise Control o ACC\_NotAvailable (0x2): Cruise menu displayed, but setting change (‘Normal’ or ‘Adaptive’) is restricted  o IACC (0x3): IACC Menu Setting including:  -Choice of ‘Normal’ or ‘Adaptive’ or ‘Intelligent (Speed Limit)’  - Selection of Speed Limit Offset  o IACC\_NotAvailable (0x4): IACC menus displayed, but all setting changes (‘Normal’,’Adaptive’,’Intelligent,’Offset’) are restricted  o IACC\_RestrictTol(0x5): IACC menus displayed, but Offset setting is restricted | Ina (0x0) | Req3 |
| ACC\_SC\_Req | Defines the ACC-specific messages to display in the System Check sequence | o Ina (0x0): No ACC message in System Check sequence o ACC\_MALF\_SC (0x1): 'CRUISE MALFUNCTION' in System Check sequence o ACC\_BLOCK\_SC (0x2): ADAPTIVE CRUISE UNAVAILABLE – FRONT SENSOR BLOCKED" Warning Text and Amber Front Sensor Graphic o ACC\_NA\_SC (0x3): "CRUISE NOT AVAILABLE" Warning Text o ACC\_RADAR\_NOT\_ALIGN\_SC (0x4): FRONT SENSOR NOT ALIGNED" Warning Text | Ina (0x0) | Req26 |
| ACC\_Gap\_HUD | Defined conditions when the ACC Time Gap Graphics are to be displayed in the HUD | o Ina (0x0): No ACC GAP displayed o ACT (0x1): ACC GAP Displayed | Ina (0x0) | Req1 |
| ACC\_Display\_Gap | Defined conditions when the ACC Time Gap Graphics are to be displayed (ONLY for implementations that support Temporary GAP display) | o Ina (0x0): No ACC GAP displayed o ACT (0x1): ACC GAP Displayed | Ina (0x0) | Req1 |
| ACC\_HUD\_Warn\_Req | Defines HUD ACC Warning messages to be displayed as follows | o Ina: No ACC-specific Message  o ACC\_BLOCK: “Front Sensor Blocked” Text  o ACC\_NA "Not Available" Warning Text o ACC\_SHIFT\_DOWN: "SHIFT DOWN" Text o ACC\_FOLLOW\_ONLY: "Speed too low to activate" Text o ACC\_APPLY\_BRAKE: "Driver Resume Control' Text o ACC\_BRAKE\_CAPACITY: Red Flashing Collision Warning graphic | Ina (0x0) | Req31 |
| Distance\_Alert\_Telltale | Defines whether the Distance Alert RTT is to be activated | o OFF (0x0): DA RTT not active  o ON (0x1): DA RTT active | OFF (0x0) | Req35 |
| CC\_Func\_Disp\_Thin | Defines whether the ACC Function Display is in one of the following formats (Thin Display Format) | o Ina (0x0): Not displayed o ACC\_SB\_INFO (0x1): ACC RTT Shown in Grey: Continuous display indication that ACC is in standby. o ACC\_CRUISE (0x3): Continuous display indication that ACC is active and there is NOT a lead vehicle.  o ACC\_FOLLOW (0x4): Continuous display indication that ACC is active and there IS a lead vehicle. o ACC\_OVERRIDE (0x5): Continuous display indication that ACC is active and the driver is overriding and there is NOT a lead vehicle. o NCC\_SB\_INFO (0x6): Cruise RTT Shown in Grey: Continuous indication that Normal Cruise Control is in standby. o NCC\_CRUISE (0x7): Continuous indication that Normal Cruise Control is Active. o NCC\_OVERRIDE (0x8): Continuous indication that Normal Cruise Control is Active and the driver is overriding. o SGACC\_STOP\_NLV (0x9): Stop&Go ACC is Active and stopped and No Lead Vehicle: Continuous display indication that ACC is Active and Stopped and there is NOT a lead vehicle. Set Speed shown with Strikethrough or similar. o SGACC\_STOP\_LV (0xA): Stop&Go ACC is Active and stopped and a Lead Vehicle id detected: Continuous display indication that ACC is Active and Stopped and there IS a lead vehicle. Set Speed shown with Strikethrough or similar.  o SGACC\_AUTO\_RES (0xB): Stop&Go ACC is Active and is stopped but could automatically accelerate from a stop. Continuous display indication that ACC is Active and Stopped but may accelerate to set speed without a RESUME button press. The Gap setting may be displayed. The lead vehicle IS displayed | Ina (0x0) | Req1 |
| ACC\_Display\_Popup | Defines what is displayed in an ACC Pop-Up (Thin Display Format) | o Ina (0x0): Not displayed o ACC\_CANCEL (0x1): ACC Automatically Cancelled Information: Display indication that ACC has automatically cancelled. The lead vehicle is NOT displayed. The Gap setting is displayed.  o ACC\_GAP\_NLV (0x2): Current GAP setting is displayed. The lead vehicle is NOT displayed.  o ACC\_GAP\_LV (0x3): Current GAP setting is displayed. The lead vehicle IS displayed.  o SGACC\_RES\_READY (0x4): Stop&Go ACC is Active and stopped and can Resume from a Stop. Continuous display indication that ACC is Active and Stopped and may be resumed through driver action, The Gap setting is displayed. | Ina (0x0) | Req1 |
| ACC\_ADAS\_On\_Demand | Defines what is displayed in the Driver Assist On-Demand Screen (Thin Display Format) | o Ina (0x0): Not displayed  o ACC\_SB\_INFO\_NLV (0x1): ACC Standby Information: Continuous display indication that ACC is in standby. The lead vehicle is NOT displayed. The Gap setting is displayed.  o ACC\_SB\_INFO\_LV (0x2): ACC Standby Information: Continuous display indication that ACC is in standby. The lead vehicle IS displayed. The Gap setting is displayed.  o ACC\_SB\_INFO\_NLV\_GAP (0x3): ACC Standby Information: Continuous display indication that ACC is in standby. The lead vehicle is NOT displayed. The Gap setting is Highlighted to indicate change.  o ACC\_SB\_INFO\_LV\_GAP (0x4): ACC Standby Information: Continuous display indication that ACC is in standby. The lead vehicle IS displayed. The Gap setting is Highlighted to indicate change.  o ACC\_CRUISE (0x5): Continuous display indication that ACC is active and there is NOT a lead vehicle. The Gap setting is displayed.  o ACC\_FOLLOW (0x6): Continuous display indication that ACC is active and there IS a lead vehicle. The Gap setting is displayed.  o ACC\_OVERRIDE (0x7): Continuous display indication that ACC is active and the driver is overriding and there is NOT a lead vehicle. The Gap setting is displayed.  o ACC\_CRUISE\_GAP (0x8): Continuous display indication that ACC is active and there is NOT a lead vehicle. The Gap setting is Highlighted to indicate change.  o ACC\_FOLLOW\_GAP (0x9): Continuous display indication that ACC is active and there IS a lead vehicle. The Gap setting is Highlighted to indicate change.  o ACC\_OVERRIDE\_GAP (0xA): Continuous display indication that ACC is active and the driver is overriding and there is NOT a lead vehicle. The Gap setting is Highlighted to indicate change.  o SGACC\_STOP\_NLV (0xB): Stop&Go ACC is Active and stopped and No Lead Vehicle: Continuous display indication that ACC is Active and Stopped and there is NOT a lead vehicle. The Gap setting is displayed  o SGACC\_STOP\_LV (0xC): Stop&Go ACC is Active and stopped and a Lead Vehicle id detected: Continuous display indication that ACC is Active and Stopped and there IS a lead vehicle. The Gap setting is displayed  o SGACC\_RES\_READY (0xD): Stop&Go ACC is Active and stopped and can Resume from a Stop. Continuous display indication that ACC is Active and Stopped and may be resumed through driver action, The Gap setting is displayed  o SGACC\_STOP\_NLV\_GAP (0xE): Stop&Go ACC is Active and stopped and No Lead Vehicle: Continuous display indication that ACC is Active and Stopped and there is NOT a lead vehicle. The Gap setting is Highlighted to indicate change.  o SGACC\_STOP\_LV\_GAP (0xF): Stop&Go ACC is Active and stopped and a Lead Vehicle id detected: Continuous display indication that ACC is Active and Stopped and there IS a lead vehicle. The Gap setting is Highlighted to indicate change.  o SGACC\_RES\_READY\_GAP (0x10): Stop&Go ACC is Active and stopped and can Resume from a Stop. Continuous display indication that ACC is Active and Stopped and may be resumed through driver action, The Gap setting is Highlighted to indicate change.  o ACC\_CANCEL\_NLV\_GAP (0x11): ACC Automatically Cancelled Information: Display indication that ACC has automatically cancelled. The lead vehicle is NOT displayed. The Gap setting is Highlighted to indicate change.  o ACC\_CANCEL\_NLV\_GAP (0x12): ACC Automatically Cancelled Information: Display indication that ACC has automatically cancelled. The lead vehicle is NOT displayed. The Gap setting is Highlighted to indicate change.  o SGACC\_AUTO\_RES (0x13): Stop&Go ACC is Active and is stopped but could automatically accelerate from a stop. Continuous display indication that ACC is Active and Stopped but may accelerate to set speed without a RESUME button press. The Gap setting is NOT displayed. The lead vehicle IS displayed.  o SGACC\_AUTO\_RES\_GAP (0x14): Stop&Go ACC is Active and is stopped but may automatically accelerate from a stop. Continuous display indication that ACC is Active and Stopped but may accelerate to set speed without a RESUME button press. The Gap setting IS displayed. The lead vehicle IS displayed. | Ina (0x0) | Req1 |
| Dist\_Func\_Disp\_On\_Demand | Defines whether the Distance Indication Function Display is in one of the following formats | o Ina (0x0): Not displayed  o DI\_STANDBY (0xD): Distance Indication Standby: Continuous display indication that DI is in standby. The lead vehicle is NOT displayed.  o DI\_ACTIVE\_NLV (0xE): Distance Indication Active: Continuous display indication that DI is in Active. The lead vehicle is NOT displayed. o DI\_ACTIVE\_LV (0xF): Distance Indication Active: Continuous display indication that DI is in Active. The lead vehicle is displayed as defined by AccTrgDist2\_D\_Dsply. | Ina (0x0) | Req1 |
| IACC\_Func\_Disp | Defines whether the IACC (ACC+Speed Limit) Overlay Function Display is in one of the following formats | o Ina (0x0): IACC Overlay not displayed o ACT (0x1): IACC Overlay displayed | Ina (0x0) | Req1 |
| IACC\_Func\_Disp\_Thin | Defines whether the IACC (ACC+Speed Limit) Overlay Function Display is in one of the following formats (Thin Display Format) | o Ina (0x0): IACC Overlay not displayed o ACT (0x1): IACC Overlay displayed | Ina (0x0) | Req1 |
| IACC\_Func\_Disp\_HUD | Defines whether the HUD IACC (ACC+Speed Limit) Overlay Function Display is in one of the following formats | o Ina (0x0): IACC Overlay not displayed o ACT (0x1): IACC Overlay displayed | Ina (0x0) | Req33 |

The ACC display internal parameters which are relevant to the ACC display strategy are defined below:

Table 28: Internal Parameter definitions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Internal Parameters** | | | | |
| **Parameter Name** | **Definition** | **Detail Meaning** | **Default Value  (Startup or Batt Conn)** | **Requirement Reference** |
| ACC\_Missing\_Msg | Defines when the ACC-relevent CAN messages are missing (for detailed definition of encoding, see req13) | FALSE (0x0): ACC-relevent CAN messages are not missing TRUE (0x1): ACC-relevent CAN messages are missing | FALSE (0x0) | Req29 |
| ACC\_Msg\_NotMiss\_to\_Miss | Defines when ACC\_ Missing\_Msg has transitioned from FALSE (0x0) to TRUE (0x1) | o FALSE (0x0): ACC\_Missing\_Msg has NOT transitioned from FALSE to TRUE o TRUE (0x1): ACC\_Missing\_Msg HAS transitioned from FALSE to TRUE | FALSE (0x0) | Req29. Req2, Req4 |
| AccEnbl\_ACC\_to\_NCC | Shall be set to 'TRUE' when the CAN signal, AccMemEnbl\_B\_RqDrv transitions from 'Adaptive\_Cruise' to 'Normal\_Cruise'.  Otherwise, shall be set to 'FALSE' | FALSE (0x0): Driver menu selection has NOT transitioned from the ACC preference to the NCC preference TRUE (0x1): Driver menu selection HAS transitioned from the ACC preference to the NCC preference | FALSE (0x0) | Req2, Req4 |
| ACC\_Menu\_Cfg | A calibratable parameter to enable or disable the ACC Menu strategy | o FALSE (0x0): The menu layout does not include the ACC Menu Selections o TRUE (0x1): The menu layout does include the ACC Menu Selections | Use Stored Value | Req3 |
| IACC\_Cfg | A calibratable parameter to enable or disable the incremental IACC (ACC+Speed Limit) Menu strategy | o FALSE (0x0): The menu layout does not include the IACC Menu Selections (ACC+Speed Limit, Speed Limit Offset) o TRUE (0x1): The menu layout does include the IACC Menu Selections (ACC+Speed Limit, Speed Limit Offset) | Use Stored Value | Req3 |
| Active\_Chime\_Status\_Flag | Defines the ACC feature chime request. To be used by the master chime arbiter to define the Audio Chime request and/or cluster chime driver | See Audio Generated DNA Chimes- Cluster Chime Arbitrator for detailed definitions. | Ina (0x0) | Req4 |
| Operational\_Mode | 4 state indicator for cluster operational mode | Sleep Limited Normal Crank | Limited | Req1, Req2, Req3, Req4 |
| Adaptive\_Cruise\_Cfg | State Indicator for feature presence controlled via CAN at EOL at VO plant. Defaulted to Enabled at supplier manufacturing. | Enabled Disabled | Stored Value | Req1, Req2, Req3, Req4 |
| CC\_RedundantSpeed\_Timer | Timer to control duration of redundant digital set speed display |  | 0 | Req1 |
| SetSpeedError | Absolute value of the error between the displayed set speed value and the displayed vehicle speed (converted to kph) | 0-200kph | 0 | Req1 |
| CC\_TempSetSpeed\_Timer | Timer to control the duration of the temporary digital Set Speed display |  | 0 | Req1 |
| Veh\_V\_DsplyCcSet\_n\_1 | Value of CAN signal, Veh\_V\_DsplyCcSet, at the prior sample time. |  | 0 | Req1 |
| ACC\_HUD\_Display | State indication of whether Advanced/Combiner HUD is active and capable of displaying ACC information | Ina:  Not Equipped OR  (HUD\_ADAS\_OnOff == CruiseControl&LaneKeepOFF ~~OR (HUD\_ADAS\_OnOff == CruiseControlOFF)~~  AND HUD\_Cruise\_Control == OFF\*) OR  HUD\_Mode == OFF OR  HUD\_Mode == Pending  ACT:  (HUD\_ADAS\_OnOff == (CruiseControl&LaneKeepON OR CruiseControlOnly)) OR HUD\_Cruise\_Control == ON\*) AND HUD\_Mode == Active  \*see HUD\_Memory\_Save\_and\_Recall STSS | Ina | Req1, Req2, Req31, Req33 |
| DI\_HUD\_Display | State indication of whether Advanced/Combiner HUD is active and capable of displaying Distance Indication information | Ina:  Not Equipped OR  (HUD\_ADAS\_OnOff == CruiseControl&LaneKeepOFF AND HUD\_Distance\_Indication == OFF) OR  HUD\_Mode == OFF OR  HUD\_Mode == Pending  ACT:  (HUD\_ADAS\_OnOff == (CruiseControl&LaneKeepON OR CruiseControlOnly)) OR HUD\_Distance\_Indication == ON)\* AND HUD\_Mode == Active  \*see HUD\_Memory\_Save\_and\_Recall STSS | Ina | Req1, Req2, Req31, Req33 |
| HUD\_Cfg | Configuration indication of whether an Advanced/Combiner HUD, an FCW HUD (aka CHMSL HUD), or no HUD is equipped on the vehicle. | No\_HUD  FCW\_HUD  Adv\_Comb\_HUD **(Includes Combiner and Windshield HUDs)** | No\_HUD | Req2, Req14,  Req35 |
| ADAS\_On\_Demand\_Screen | State indication of whether a Driver Assist On-Demand screen is selected by the driver. | Not\_Supported: Driver Assist On-Demand Screen NOT supported  Ina: Driver Assist On-Demand Screen NOT Selected by customer.  ACT: Driver Assist On-Demand Screen Selected | Not\_Supported | Req1 |
| HUD\_Mode | State indication of Advanced/Combiner HUD. | OFF: HUD is not active (HudActv\_D\_Stat == Inactive OR  HudActv\_D\_Stat == Error OR HudActv\_D\_Stat == Invalid\*\*)  Pending: HUD is in-process of activating (HudActv\_D\_Stat == Pending\*\*)  Active: HUD is capable of displaying information (HudActv\_D\_Stat == Active\*\*)  \*\*see CHUD\_Welcome\_Farewell\_Strategy STSS  Note: For HUD implementations with displays that are always operational during the drive cycle, it is acceptable to set HUD\_Mode == Active. | OFF | Req14 |
| iACC\_ACCAutoSetSpeedOnOff | State indication of whether IACC (ACC + Speed Sign Recognition) is enabled or disabled | OFF  ON | OFF | Req3 |
| Settings\_Menu\_Cfg | Configures cluster to display items in the Settings menu (Set to “cluster” at cluster supplier manufacturer plant) | ~~DISABLED~~  ~~ENABLED~~  Cluster  CenterStack | Use Stored Value |  |

Table 29: Parameter definition of ACC Gap Parameters

|  |  |
| --- | --- |
| **AccTGap\_D\_Dsply State** | **Display Representation** |
| Not\_Used | Ina |
| Time\_Gap\_1 | ACC Gap Shortest Setting (1 graphical bar) |
| Time\_Gap\_2 | ACC Gap Normal Setting (2 graphical bars) |
| Time\_Gap\_3 | ACC Gap Long Setting (3 graphical bars) |
| Time\_Gap\_4 | ACC Gap Longest Setting (4 graphical bars) |
| Time\_Gap\_5 (Not Used) | ACC Gap Longest Setting (4 graphical bars) |
| Undefined\_1 | Ina |
| Undefined\_2 | Ina |

Table 30: Parameter definition of Distance Indication Gap Parameters

|  |  |  |
| --- | --- | --- |
| **AccTrgDist2\_D\_Dsply State** | **Display Representation** | **Sample Graphic** |
| DIST\_OFF | No Distance Indication Graphics |  |
| DIST\_STANDBY | Distance Indication Standby Graphic |  |
| DIST\_ACTIVE\_ No\_Target | Distance Indication No Car Detected Graphic |  |
| DIST\_ACTIVE\_1\_Closest | Distance Indication Gap Shortest Setting 1 (Red graphic) |  |
| DIST\_ACTIVE\_2 | Distance Indication Gap Setting 2 (Yellow graphic) |  |
| DIST\_ACTIVE\_3 | Distance Indication Gap Setting 3 (Yellow graphic) |  |
| DIST\_ACTIVE\_4 | Distance Indication Gap Setting 4 (Yellow graphic) |  |
| DIST\_ACTIVE\_5 | Distance Indication Gap Setting 5 (Yellow graphic) |  |
| DIST\_ACTIVE\_6 | Distance Indication Gap Setting 6 (Yellow graphic) |  |
| DIST\_ACTIVE\_7 | Distance Indication Gap Setting 7 (Yellow graphic) |  |
| DIST\_ACTIVE\_8 | Distance Indication Gap Setting 8 (Yellow graphic) |  |
| DIST\_ACTIVE\_9 | Distance Indication Gap Setting 9 (Yellow graphic) |  |
| DIST\_ACTIVE\_10 | Distance Indication Gap Setting 10 (Grey graphic) |  |
| DIST\_ACTIVE\_11 | Distance Indication Gap Setting 11 (Grey graphic) |  |
| DIST\_ACTIVE\_12 | Distance Indication Gap Setting 12 (Grey graphic) |  |
| DIST\_ACTIVE\_13\_Farthest | Distance Indication Gap Setting 13 (Grey graphic) |  |

## ACC Performance and Reliability

U38x\_CS\_CADS\_IPCDisplay-006:Req6v2 Set Speed Scaling and Offset

Req ID:

Purpose: [ACC] [IPC]

Verification Method:

**Req:**

The IC-defined Speedometer display value on vehicles equipped with ACC shall be based on a continuous linear scaling of the measured ground speed for all ground speeds between than 25kph and 180kph. The speedometer scaling function at this speed range shall be based on the equation:



Where:

*ScalingFactor* = Linear percentage scaling from the measured speed based on speedometer graphics, tolerance, and country of destination

*Offset* = Constant offset from the measured speed, defined in kph, based on speedometer graphics, tolerance, and country of destination

DISPLAY\_SPEED\_SCALING and DISPLAY\_SPEED\_OFFSET are determined using stored variables. The Speedo\_Cal\_Cfg variable is VO EOL programmed. The Scaling and Offset variables are determined based upon the speedometer cluster graphics and the destination. These four variables are determined during the design phase of the program and stored in Flash ROM or EEPROM. They are calculated as follows:

EC\_Speedo\_Scaling = Integer((((((1 + Lower Speedometer System Tolerance for EC)/

(1+ Lower Tolerance of Input to Cluster))-1)\*100)+0.25)\*2)

Non-EC\_Speedo\_Scaling = Integer((((((1 + Lower Speedometer System Tolerance for Non-EC)/

(1+ Lower Tolerance of Input to Cluster))-1)\*100)+0.25)\*2)

EC\_Speedo\_Offset = Integer(((Speedo Manufacturing Capability in Degrees \* Cluster Graphics Angular Degrees per km/h)+0.25)\*2)

Non-EC\_Speedo\_Offset = EC\_Speedo\_Offset = Integer(((Speedo Manufacturing Capability in Degrees \* Cluster Graphics Angular Degrees per km/h)+0.25)\*2)

EXAMPLES:

EC\_Speedo\_Scaling = Integer((((((1 + -0.00)/(1+ -0.035))-1)\*100)+0.25)\*2) = 7

Non-EC\_Speedo\_Scaling = Integer((((((1 + -0.03)/(1+ -0.035))-1)\*100)+0.25)\*2) = 1

EC\_Speedo\_Offset = Integer(((1\*1.10318)+0.25)\*2) = 2

Non-EC\_Speedo\_Offset = Integer(((1\*1.10318)+0.25)\*2) = 2

Table 31: ACC DISPLAY\_SPEED\_XXX State Matrix

|  |  |  |
| --- | --- | --- |
| **Speedo\_Cal\_Cfg** | **DISPLAY\_SPEED\_SCALING** | **DISPLAY\_SPEED\_OFFSET** |
| Non-EC (0x0) | Non-EC\_Speedo\_Scaling | Non-EC\_Speedo\_Offset |
| EC (0x1) | EC\_Speedo\_Scaling | EC\_Speedo\_Offset |

CGEA13\_CS\_CADS\_IPCDisplay-018:Req12v1 Speedometer Accuracy

Req ID: previously U38x\_CS\_CADS\_IPCDisplay-006:Req12v3

Purpose: [ACC] [IPC] [HUD]

Verification Method:

**Req:**

For vehicle speeds between 25kph and 180kph, the 3-sigma error between the calculated estimated Display Speed (see equation below) and the speedometer-displayed vehicle speed shall be between ±1kph.



Where:

Veh\_V\_ActlEng = HS\_CAN Engine Vehicle Speed signal

Display\_Speed\_Scaling = IPC HS-CAN signal for Market-specific Vehicle Speed Scaling factor

Display\_Speed\_Offset = IPC HS-CAN signal for Market-specific Vehicle Speed Offset factor

The Advanced/Combiner HUD (if equipped) shall use speed compensation strategy and calibrations that are common with the IPC.

CGEA13\_CS\_CADS\_IPCDisplay-018:Req7v1 ACC Response Time

Req ID:

Purpose: [ACC] [IPC] [HUD]

Verification Method:

**Req:**

The IPC shall respond to the ACC Audible Warnings and Mute requests, within 20 milliseconds from when the CAN-signal is received.

The IPC and HUD shall display information about ACC time gap, set speed, system mode and warnings within 100 milliseconds from the signal is received.

CGEA13\_CS\_CADS\_IPCDisplay-0022:Req8v3 ACC Setting Synchronization

Req ID:

Purpose: [ACC] [IPC]

Verification Method:

References: Based on CS\_CADS\_CADSDriverInfoIF-005:Req3v4

**Req:**

1. If the user does not change the Cruise Control Menu Settings AND Operational\_ Mode = 'Normal', the IC shall set the output signal, AccEnbl\_B\_RqDrv, equal to the input signal, AccMemEnbl\_B\_RqDrv.
2. Upon a user change of the Cruise Control Menu settings, the signal, AccEnbl\_B\_RqDrv, shall be updated to reflect the current user selection, independent of the value of AccMemEnbl\_B\_RqDrv.

If “Normal” is selected AccEnbl\_B\_RqDrv shall be set to 0x0 (Normal Cruise)

If “Adaptive” or “Intelligent (ACC+Speed Sign Recognition)” are selected AccEnbl\_B\_RqDrv shall be set to 0x1 (Adaptive Cruise)  
  
Following a user menu change, AccEnbl\_B\_RqDrv shall remain equal to the last user selection for 700ms. After this time has been exceeded, the IC shall set the output signal AccEnbl\_B\_RqDrv equal to the input signal, AccMemEnbl\_B\_RqDrv.

The above strategy shall only be implemented if the ACC menu strategy is enabled (i.e. ACC\_Menu\_Cfg = TRUE) and ACC is configured (Adaptive\_Cruise\_Cfg = Enabled). Otherwise, if ACC is not configured, then AccEnbl\_B\_RqDrv shall be set to 'Normal\_Cruise'. If ACC is configured and the ACC Menu Strategy is disabled, then AccEnbl\_B\_RqDrv shall be set to 'Adaptive\_Cruise'.

CGEA13\_CS\_CADS\_IPCDisplay-027p2:Req9v4 Enabling criteria for displaying ACC-related information and for detection of ACC-related errors

Req ID: Previously U38x\_CS\_CADS\_IPCDisplay-002:Req9v2

Purpose: To ensure that the displaying of ACC-related information and the error detection related to signals from other nodes can not be made before these nodes are expected to transmit meaningful ACC-related signals.   
[ACC] [IPC] [HUD]

Verification Method: Review and test

**Req:**(a) The display of ACC-related warning messages that are triggered by received CAN signals shall be allowed if, and only if, the IPC is in state C (as described below). ~~Otherwise, the IPC shall provide the same information as for 'ACC is in the off state'~~.

(b) For any ACC-related error detection mechanism that is based on CAN signals received from other nodes, error detection and resulting entry into the denied mode shall be possible if, and only if, the IPC is in state C (as described below). This requirement overrules any other requirement that describes when ACC shall be denied by the IPC.



State Transition Conditions, X and Y, are defined as follows:

X = (IPC has completed its initialization) AND

(Ignition\_Status == 'Run') AND

PwPckTq\_D\_Stat <> 'StartInPrgrss\_TqNotAvail'

Y = 1 second timer

The Advanced/Combiner HUD (if equipped) shall follow the same enabling criteria as defined above for the IPC.

CGEA13\_CS\_CADS\_IPCDisplay-021:Req10v3 ACC denial

Req ID: Based on U38x\_CS\_CADS\_IPCDisplay-009:Req10v5

Purpose: [ACC] [IPC]

Verification Method:

**Req:**

When the IPC has detected a condition that should result in the ACC function being denied, it shall transmit CAN signal AccDeny\_B\_RqIpc = TRUE. Information about the cause for the denial, i.e. an identification of the detected error, shall be stored as a DTC. Each of the following errors shall have a unique DTC:

* Internal IPC error detected (according to req11 ACC internal IPC error detection")
* Lost Communications with the CCM or IPMA\* (see req13)
* ACC configuration fault (see req29)
* Lost Communications with PCM / GWM (See req13)

When all reasons to set ACC denied has disappeared the IPC shall directly set

AccDeny\_B\_RqIpc =FALSE.

\* Note: B479 and later programs are migrating from a CCM-based implementation to an IPMA-based implementation . As such, DTCs should be defined for the appropriate module ID.

CGEA13\_CS\_CADS\_IPCDisplay-022:Req29v3 IPC ACC Configuration Errors

Reference: Previously U38x\_CS\_CADS\_IPCDisplay-007:Req29v1

*Purpose:* [ACC] [IPC] [HUD]

*Ver. Meth:*

**Req:**As defined in the flowchart in Figure 4, the IPC and advanced/combiner HUD (if equipped) shall check for consistency with the IPC configuration settings. This configuration check shall only be performed under the following conditions:

* The IPC/HUD is in state C (as defined in Req9)



Figure 4: ACC Configuration validity check flowchart

\*Note: AccEnble\_B\_RqDrv may be used in the above flowchart in-place of AccMemEnbl\_B\_RqDrv for HUD applications.

U38x\_CS\_CADS\_IPCDisplay-009:Req11v2 ACC internal IPC error detection

Req ID: Based on CS\_CADS\_CADSDriverInfoIF-018:Req56v2

Purpose: [ACC] [IPC]

Verification Method:

ACC shall be denied (i.e. AccDeny\_B\_RqIpc =True) when the IPC detects memory errors (as defined in the ECU Software Requirements), which may impact proper ACC display function. If the error is later reliably determined to have disappeared (for instance after a restart), ACC shall no longer remain denied, unless another requirement demands that ACC is denied.

ACC shall not be denied (i.e. AccDeny\_B\_RqIpc = False) due to an IPC restart, unless another requirement demands that ACC is denied.

CGEA13\_CS\_CADS\_IPCDisplay-025:Req13v7 ACC Missing Message

Req ID: Previously U38x\_CS\_CADS\_IPCDisplay-007:Req13v2

Purpose: [ACC] [IPC] [HUD]

Verification Method:

**Req:**

As defined in the flowcharts in Figure 5 and Figure 6, the IPC and advanced/combiner HUD (if equipped) shall monitor the ~~CCM~~IPMA and PCM CAN messages. This monitoring shall only be performed under the following conditions:

* The IPC/HUD is in state C (as defined in Req9)

The internal flag, ACC\_Msg\_NotMiss\_to\_Miss, shall be set TRUE when ACC\_Missing\_Msg has transitioned from FALSE (0x0) to TRUE (0x1). Othewise, ACC\_Msg\_NotMiss\_to\_Miss shall be set to FALSE. The logic for the parameter ACC\_Missing\_Msg is defined in the flowchart in Figure 5 and Figure 6.



Figure 5: IPMA Communications check flowchart



Figure 6: PCM Communications check flowchart

\* Note: It is acceptable for legacy implementations (implementations with carryover diagnostics SW) to use DTC C100:00 instead of C146:00.

CGEA13\_CS\_CADS\_IPCDisplay-001:Req24v1 ACC Audible Warning, sound type

Req ID: Previously U38x\_CS\_CADS\_IPCDisplay-001:Req24v1

Purpose: [ACC] [IPC]

Verification Method:

**Req:**

For detailed definitions of the ACC\_HIGH\_PRIORITY, ACC\_LOW\_PRIORITY, and ACC\_BRAKE\_RELEASE chimes, see the Warning Chime Specification