



**Research & Vehicle Technology**  
**“Infotainment Systems Product Development”**

**Feature – Vehicle Settings**

**APIM Infotainment Subsystem Part Specific  
Specification (SPSS)**

Version 1.24

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Version Date: November 2, 2020

**FORD CONFIDENTIAL**



## Revision History

Date	Version	Notes
May 30, 2013	1.0	Initial Release
October 24, 2013	1.1	
	VS-GREQ-304479-Network connection password failure (HMI)	bjohns69 - New Requirement
	VS-GREQ-304480-Network connection using WPS-push button (HMI)	bjohns69 - New Requirement
	VS-GREQ-304481-Network connection using WPS-PIN (HMI)	bjohns69 - New Requirement
	VS-GREQ-304482-Wi-Fi direct feature control (functional)	bjohns69 - New Requirement
	VS-GREQ-304483-Wi-Fi direct configuration parameters (functional)	bjohns69 - New Requirement
	VS-GREQ-304484-Wi-Fi direct connection options (HMI)	bjohns69 - New Requirement
	VS-GREQ-304485-Wi-Fi direct outgoing (HMI)	bjohns69 - New Requirement
	VS-GREQ-304486-Wi-Fi direct incoming (HMI)	bjohns69 - New Requirement
	VS-GREQ-304487-Wi-Fi network availability notification (functional)	bjohns69 - New Requirement
	VS-GREQ-304488-Wi-Fi network availability notification (HMI)	bjohns69 - New Requirement
	VS-GREQ-304489-Wi-Fi Network connectivity status (HMI)	bjohns69 - New Requirement
	VS-GREQ-304490-WEP/WPA Security Keys/Passwords	bjohns69 - New Requirement
	VS-GREQ-304491-Security keys (HMI)	bjohns69 - New Requirement
March 14, 2014	1.2	
	AS-GREQ-050371 - Automatic Software Update	bjohns69 - New Requirement
	VS-GREQ-025326-Wi-Fi network availability notification (HMI)	bjohns69 - Revise Requirement
	VS-GUC-291869 - Configure Automatic Software Update	bjohns69 - New Use Case
	VS-UC-REQ-025261/B-The user would like to search/rescan/refresh the list of Wi-Fi direct compatible device (TcSE ROIN-291844)	bjohns69 - Revise Use Case
	VS-FUR-REQ-052061/A-Automatic Software Update, trigger 1	bjohns69 - New Requirement
	VS-FUR-REQ-052062/A-Automatic Software Update, trigger 2	bjohns69 - New Requirement
	VS-FUR-REQ-052063/A-Automatic Software Update, trigger 3	bjohns69 - New Requirement
	VS-FUR-REQ-052064/A-Automatic Software Update, trigger 4	bjohns69 - New Requirement
	VS-FUR-REQ-052065/A-Wi-Fi Signal Strength Presentation	bjohns69 - New Requirement
	VS-FUR-REQ-025294/B-Wi-Fi chip power state requirements (TcSE ROIN-296184-1)	bjohns69 - New Requirement
	VS-FUR-REQ-052066/A-Wi-Fi Keep last Wi-Fi mode after ignition	bjohns69 - New Requirement
	VS-FUR-REQ-025326/B-Wi-Fi network availability notification (HMI)	bjohns69 - Revise Requirement
May 9, 2014	1.3	
	MD-REQ-023414/B-CntrStk_D_RqAssoc (TcSE ROIN-284870-1)	bjohns69 - Added new literal for Cancel Keypad Code.
	VS-SD-REQ-086469/A-Cancel Keypad Code Edit	bjohns69 - Initial Release - Added new sequence diagram for Cancel Keypad Code
	VS-UC-REQ-025253/B-User would like to see a list of Wi-Fi network(s) within range of their current location (TcSE ROIN-291836)	bjohns69 - Modified Use Case
	VS-UC-REQ-025282/B-User ignores the Network availability notification (TcSE ROIN-291865)	bjohns69 - Revised scenario description and post-condition for trigger. Added "conditions that triggered it change."
	VS-FUR-REQ-025326/B-Wi-Fi network availability notification (HMI) (TcSE ROIN-304488)	bjohns69 - Revised to focus on trigger conditions are met and icon display on screen. Two minute time out was changed.
	VS-UC-REQ-025264/B-User Wi-Fi network(s) availability notification based on analytics X (TcSE ROIN-291847)	bjohns69 - Changed the scenario description and post conditions. Revised post condition, "The user may act on this



		notification by searching and selecting a network to connect to."
	VS-UC-REQ-025283/A-User dismiss/ deletes the Network availability notification (TcSE ROIN-291866)	bjohns69 - removed Use Case
	VS-FUR-REQ-086700/A-Wi-Fi network availability notification Default Setting (functional)	bjohns69 - Added a requirement to clarify the trigger for "network availability notification" feature
	VS-FUR-REQ-086699/A-Wi-Fi Network Availability Notification trigger (Functional)	bjohns69 - Added a requirement to clarify the default setting for the "network availability notification" feature
	VS-FRD-REQ-025441/B-Vehicle Settings (CGEA) (TcSE ROIN-293313-1)	bjohns69 - New release for changes to
August 18, 2014	1.4	
	VS-UC-REQ-025259/B-User would like to find more information about the Wi-Fi network currently connected (TcSE ROIN-291842)	bjohns69 - Modified Use Case text
	VS-UC-REQ-025267/B-User would like to know his/her current Wi-Fi network connectivity status while away from the Wi-Fi settings HMI (TcSE ROIN-291850)	bjohns69 - Revise Use Case
	VS-FUR-REQ-052061/A-Automatic Software Update, trigger 1	bjohns69 - Added new Use Case
	VS-FUR-REQ-025325/B-Wi-Fi network availability notification (functional) (TcSE ROIN-304487)	bjohns69 - Added to requirement. "The option is only available when the Wi-Fi feature is ON."
	VS-FUN-REQ-093981/A-Charge Port Cable Unlock	bjohns69 - Added new function.
	VS-UC-REQ-093980/A-Unlock Charge Port Cord	bjohns69 - New use case to add unlock charge port cable connector.
	VS-ACT-REQ-093982/A-Unlock Charge Port Cord	bjohns69 - Added new Activity Diagram.
	VS-SD-REQ-093983/A-Unlock Charge Port Cord	bjohns69 - Added new sequence Diagram.
	VS-SD-REQ-023442/B-Set Keypad Code for current user (TcSE ROIN-129661-2)	bjohns69 - Modified diagram to clarify signal literals.
	VS-SD-REQ-023443/B-Erase Keypad Code from current user (TcSE ROIN-129691-1)	bjohns69 - Modified diagram to clarify signal literals.
November 12, 2014	1.5	Updates for 12/24, added Valet Mode and Charge Port Cable Unlock
	VS-FUN-REQ-096818/A-Set Valet Mode	bjohns69 - New Function for Valet Mode
	VS-UC-REQ-096810/A-Set Valet Mode	bjohns69 - New use case to activate valet mode.
	VS-ACT-REQ-096820/A-Set Valet Mode	bjohns69 - Added new activity diagram for Valet Mode
	VS-SD-REQ-097279/A-Set Valet Mode	bjohns69 - Sequence Diagram for Valet Mode
	VS-FUN-REQ-025228/B-Ambient Lighting- Set Intensity (TcSE ROIN-292320-1)	BJOHNS69 - Added new requirement to explain HMI interface.
	VS-HMI-REQ-097951/A-Ambient Lighting Intensity	BJOHNS69 - Added new requirement to explain HMI interface.
	VS-FUN-REQ-025239/B-Set 12/24 hour mode setting (TcSE ROIN-292339-1)	rpaquet2 - Added new requirements to clarify how to implement 12/24 hour mode setting.
	VS-SR-REQ-099559/A-12/24 Hour Status Storage	rpaquet2 - Added new requirement to cover what some modules are doing and provide direction to remaining modules on how to handle error.
	VS-SR-REQ-099560/A-12/24 Hour Default Setting	rpaquet2 - Added new requirement to cover what some modules are doing and provide direction to remaining modules on how to handle error.
	VS-SR-REQ-099558/A-12/24 Hour Mode Error Handling	rpaquet2 - Added new requirement to cover what some modules are doing and provide direction to remaining modules on how to handle error.
	VS-SD-REQ-023442/B-Set Keypad Code for current user (TcSE ROIN-129661-2)	bjohns69 - Modified diagram to clarify correct signal literals.
	VS-SD-REQ-023443/B-Erase Keypad Code from current user (TcSE ROIN-129691-1)	bjohns69 - Modified diagram to clarify correct signal literals.
	VS-FUN-REQ-093981/A-Charge Port Cable Unlock	bjohns69 - Added new function.
	VS-UC-REQ-093980/A-Unlock Charge Port Cord	bjohns69 - New use case to add unlock charge port cable connector.
	VS-ACT-REQ-093982/A-Unlock Charge Port Cord	bjohns69 - Added new Activity Diagram.
	VS-SD-REQ-093983/A-Unlock Charge Port Cord	bjohns69 - Added new sequence Diagram.
	VS-FUR-REQ-104343/A-Valet Mode Infotainment Operation	<jmyslin2 / Karensa Ruffin> New requirement for Valet Mode
December 9, 2014	1.6	
	VS-FUR-REQ-115767/A-Manual Disconnection	<Hanan Ahmed> New requirement for Manual Disconnecting



December 16, 2014	1.7	
January 16, 2015	1.8	Implementation of fixes for ambient lighting
	VS-SR-REQ-117709/A-Turning ON and OFF Ambient Lighting	<jmyslin2 / aaldalla> Updated ambient lighting requirement for how to turning ON and OFF ambient lighting
	MD-REQ-025388/B-LightAmbColor_No_Rq (TcSE ROIN-297407)	<jmyslin2> Updated so that 0x00 is Invalid / NoDataExitsfrom OFF so this doesn't cause a reset to OFF at start-up with the init value 0x0
	MD-REQ-025389/B-LightAmbIntsty_No_Rq (TcSE ROIN-297420)	<jmyslin2> Update requirement to match what is already in production where 0x0 0% intensity also means Ambient Lighting OFF
	MD-REQ-025388/B-LightAmbColor_No_Rq (TcSE ROIN-297407)	<jmyslin2> Updated so that 0x00 is Invalid / NoDataExitsfrom OFF so this doesn't cause a reset to OFF at start-up with the init value 0x0
	MD-REQ-025389/B-LightAmbIntsty_No_Rq (TcSE ROIN-297420)	<jmyslin2> Update requirement to match what is already in production where 0x0 0% intensity also means Ambient Lighting OFF
	VS-SR-REQ-117709/C-Turning ON and OFF Ambient Lighting	<jmyslin2> Updated strategy for Turning ON and OFF Ambient Lighting
	VS-FUR-REQ-104343/B-Valet Mode Infotainment Operation	<KRuffin / Jmyslin2> added additional clarifications to the valet mode requirement regarding maintaining its valet mode state
January 30, 2015	1.9	
	VS-FUR-REQ-052065/B-Wi-Fi Signal Strength Presentation	<Hanan Ahmed> Updated Requirement
March 17, 2015	1.10	
	VS-UC-REQ-025207/B-Set Language (TcSE ROIN-290599)	<jmyslin2> Clarified language use case
	VS-UC-REQ-025208/B-Selected Language not available on both Displays (TcSE ROIN-290600)	<jmyslin2> Updated the Language Use Case
	VS-SR-REQ-025209/B-Language Truth Table (TcSE ROIN-141542-3)	<jmyslin2> added clarifications to the requirement
	VS-FUR-REQ-052065/B-Wi-Fi Signal Strength Presentation	<Hanan Ahmed> Updated Requirement
	VSv2-FUN-REQ-131582/A-Charge Cord Unlock	<Karensa Ruffin / Jason Myslinski> Updated Charge Cord Unlock New Function
	VS-UC-REQ-130593/A-Unlock Charge Cord from Centerstack	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130595/A-User tries to access Centerstack Charge Car Unlock HMI when Not in Run	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130596/A-Charge Cord Centerstack HMI when Ignition changes out of Run to OFF or Accessory	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130598/A-User tries to Unlock from the Centerstack but Charge Cord is Not Unlocked	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130653/A-Charging Completes	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130654/A-Charge Cord is Not Connected	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130656/A-User selects Unlock from Hard Button	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-SR-REQ-135143/A-Language following a B+ reset to Language Servers	<jmyslin2> added requirement on B+ reset to modules
	VS-FUR-REQ-136296/A-Master Reset Language	<jmyslin2> New requirement for Master Reset and Language
	VS-UC-REQ-025254/C-User would like to find out more information about a Wi-Fi network (TcSE ROIN-291837)+	<Hanan Ahmed> removed WEP and added Fair for signal strength description.
	VS-UC-REQ-025257/B-User would like to connect to a Wi-Fi Network using Wi-Fi Protected Setup (WPS) using the router's WPS Push-Button-Method (TcSE ROIN-291840)	<Hanan Ahmed> Editorial changes; wpsshould be wi-fi protected setup
	VS-UC-REQ-025259/C-User would like to find more information about the Wi-Fi network currently connected (TcSE ROIN-291842)+	<Hanan Ahmed> deleted WEP and added "Fair" option for signal strength description
	VS-UC-REQ-025260/B-User would like to see a list of Wi-Fi direct devices within range of their current location (TcSE ROIN-291843)+	<Hanan Ahmed> deleted use case "to list wifi direct devices"
	VS-UC-REQ-025261/C-The user would like to search/rescan/refresh the list of Wi-Fi direct compatible device (TcSE ROIN-291844)	<Hanan Ahmed> deleted refresh for wifi direct devices



VS-UC-REQ-025262/B-The user would like to connect to a Wi-Fi direct compatible device (outgoing) (TcSE ROIN-291845)	<Hanan Ahmed> deleted wifi direct related use case
VS-UC-REQ-025263/B-The user would like to accept/dedine to connect to a Wi-Fi direct compatible device (incoming) (TcSE ROIN-291846)	<Hanan Ahmed> deleted wifi direct use case
VS-UC-REQ-025274/B-WPS association time expires (TcSE ROIN-291857)	<Hanan Ahmed> editorial; changed wifi protected security to wifi protected setup
VS-UC-REQ-025275/B-System's WPS Random PIN message expires (TcSE ROIN-291858)	<Hanan Ahmed> editorial; changed wifi protected security to wifi protected setup
VS-UC-REQ-025277/B-No Wi-Fi Direct capable devices available (TcSE ROIN-291860)	<Hanan Ahmed> deleted wifi direct related use case
VS-UC-REQ-025278/B-No New Wi-Fi Direct capable devices available after refresh (TcSE ROIN-291861)	<Hanan Ahmed> deleted wifi direct related use case
VS-FUR-REQ-025291/B-GPS location accuracy (TcSE ROIN-296181-1)	<Hanan Ahmed> removed the requirement
VS-FUR-REQ-025300/B-Wi-Fi client configuration parameters (TcSE ROIN-296190-1)+	<Hanan Ahmed> deleted WEP
VS-FUR-REQ-025303/B-Wireless network(s) information APIs (TcSE ROIN-296193-1)	<Hanan Ahmed> deleted GPS coordinates from the requirement
VS-FUR-REQ-025306/B-Wireless network Functionality (TcSE ROIN-296196-1)	<Hanan Ahmed> deleted WEP and power configuration. made the requirements specific to plant provisioning
VS-FUR-REQ-025312/B-Security Keys/Password support (TcSE ROIN-296202-1)+	<Hanan Ahmed> removed WEP
VS-FUR-REQ-025314/B-Wi-Fi alliance security profiles & WPS certification (TcSE ROIN-296204-1)+	<Hanan Ahmed> deleted WEP
VS-FUR-REQ-025314/C-Wi-Fi alliance security profiles & WPS certification (TcSE ROIN-296204-1)	<Hanan Ahmed> WEP security support is limited to client mode, AP mode does not support WEP security
VS-FUR-REQ-025321/B-Wi-Fi direct configuration parameters (functional) (TcSE ROIN-304483)	<Hanan Ahmed> deleted wifi direct requirement
VS-FUR-REQ-025322/B-Wi-Fi direct connection options (HMI) (TcSE ROIN-304484)	<Hanan Ahmed> deleted wifi direct interface requirement
VS-FUR-REQ-134635/A-AAAA	<Hanan Ahmed> new requirement
VS-FUR-REQ-025327/B-Wi-Fi Network connectivity status (HMI) (TcSE ROIN-304489)	<Hanan Ahmed> deleted requirement part on icon for different wifi modes
VS-FUR-REQ-025328/B-WEP/WPA Security Keys/Passwords (TcSE ROIN-304490)+	<Hanan Ahmed> deleted WEP security
VS-FUR-REQ-025329/B-Security keys (HMI) (TcSE ROIN-304491)	<Hanan Ahmed> deleted HMI requirements for AP mode

December 9, 2015

1.11

VS-SR-REQ-193890/A-Enhanced Memory - Language for Active Personality Profile	<jmyslin2> New requirement to support Enhanced Memory for Languages
ENMEM-REQ-105569/B-Driver Profiles Deleted During Master Reset+	<jmyslin2> Master Reset requirement for when there is enhanced memory.
ENMEM-REQ-105569/C-Driver Profiles Deleted During Master Reset	cwu3: Rephrased to clarify confusion. Deleted repeated statements of other requirement to make this requirement unique.
VSv2-FUN-REQ-192195/A-Ambient Lighting - Variant2	<jmyslin2> Updated Ambient Lighting Variant 2 which would be used whenever Enhanced Memory is supported it would be configured ON.  It could be used when enhanced memory is not on a vehicle too if supplier is configured for it (only if BCM on vehicle supports too).

April 12, 2016

1.12

MD-REQ-025377/B-Disp_LangSel.Rq (TcSE ROIN-297357)+	<jmyslin2> Updated to add Thai and Indian English
MD-REQ-025450/B-Disp_LangSel.St (TcSE ROIN-297360)+	<jmyslin2> updated to add Indian English and Thai
MD-REQ-025450/B-Disp_LangSel.St (TcSE ROIN-297360)+	<jmyslin2> updated to add Indian English and Thai
MD-REQ-025377/B-Disp_LangSel.Rq (TcSE ROIN-297357)+	<jmyslin2> Updated to add Thai and Indian English
VS-UC-REQ-025349/B-Master Reset (TcSE ROIN-296294)	<jmyslin2> No impact to SYNC Gen 3 but updating use case since AHU will now use SDARS_FactoryReset_Rq signal to also setting the audio settings to the default settings
VS-SR-REQ-015044/C-Master Reset request to the infotainment components (TcSE ROIN-174375-1)+	<jmyslin2> There is no change to SYNC Gen 3 so update for clarification only since SYNC Gen 3 sends FactoryReset_Rq = RestoreFactoryDefaults whenever a master reset is





		initiated. The AHU will now also reset the Audio Settings(ex Bass, Treble, Balance etc.) when FactoryReset_Rq= RestoreFactoryDefaults in addition to resetting SDARS.
	VS-SR-REQ-213252/B-Master Reset request to the TCU (Telematic Control Unit)	<jmyslin2 / aaldalla> Updated for master reset and sending the factory reset signal to the TCU
May 6, 2016	1.13	
	MD-REQ-025377/D-Disp_LangSel.Rq (TcSE ROIN-297357)+	<JM> Updated so support new strategy for language request signals since the old CAN signals maxed out on size
	MD-REQ-025377/J-Disp_LangSel.Rq (TcSE ROIN-297357)	<jmyslin2> <jmyslin2> language strategy updates with two signals
	MD-REQ-025450/D-Disp_LangSel.St (TcSE ROIN-297360)+	<JM> Updated the Language Status signal strategy
	MD-REQ-025450/K-Disp_LangSel.St (TcSE ROIN-297360)	<jmyslin2> language strategy updates with two signals
	MD-REQ-025450/D-Disp_LangSel.St (TcSE ROIN-297360)+	<JM> Updated the Language Status signal strategy
	MD-REQ-025450/K-Disp_LangSel.St (TcSE ROIN-297360)	<jmyslin2> language strategy updates with two signals
	MD-REQ-025377/D-Disp_LangSel.Rq (TcSE ROIN-297357)+	<JM> Updated so support new strategy for language request signals since the old CAN signals maxed out on size
	MD-REQ-025377/J-Disp_LangSel.Rq (TcSE ROIN-297357)	<jmyslin2> <jmyslin2> language strategy updates with two signals
October 5, 2016	1.14	
	VS-FUN-REQ-025246/D-Charge Port Light Ring (TcSE ROIN-292385-1)	<Karensa Harkins / jmyslin2> Updated Charge Port Light Ring with Variant 2 CAN signal so SYNC can send the right signal depending on what Variant it is configured for
	VS-SR-REQ-238151/A-ChargePortLightRing_St signal	<Karensa Harkins / jmyslin2> New requirement for Charge Port Light Ring since the Client will now have two different CAN signals it can send depending on the vehicle
	ENMEM-REQ-105569/D-Driver Profiles Deleted During Master Reset	MBORREL4: Updated to include PaaK
	VS-FUR-REQ-104343/C-Valet Mode Infotainment Operation+	<Jmyslin2> Updated for Valet Mode for receivers of the Valet Mode CAN signal
February 2, 2017	1.15	
	VS-SR-REQ-025225/E-Ambient Lighting - Color Change Request Latency (TcSE ROIN-141572-1)	<jmyslin2> Clarification to Ambient Lighting requirement
	VS-SR-REQ-025230/D-Ambient Lighting - Intensity Change Request Latency (TcSE ROIN-141573-1)	<jmyslin2> Clarification to Ambient Lighting requirement
November 16, 2018	1.16	
	VS-FRD-REQ-025441/D-Vehicle Settings (CGEA) (TcSE ROIN-293313-1)	<jmyslin2> added General Requirement which would be needed for APIM 4.2 if the Cluster is integrated in the APIM
	MD-REQ-243934/B-Disp_Miles_Kilometers.St	<jmyslin2> Clarification only
	MD-REQ-025516/C-DISP_Miles_Kilometers_Rq (TcSE ROIN-273811)	sberg15: editorial changes only. No content change.
	MD-REQ-276458/A-Vehicle_Speed.St+	<jmyslin2> created MD
	MD-REQ-276458/B-Vehicle_Speed.St	<jmyslin2> MD clarification
	MD-REQ-276459/A-Vehicle_Speed_QF	<jmyslin2> created MD
	MD-REQ-213361/C-FactoryReset_Rq	<jmyslin2> Clarification only, no change to modules
	MD-REQ-222036/B-FactoryReset.St	<jmyslin2> Updated MD with clarification only - no change that would cause a module change
	MD-REQ-025377/M-Disp_LangSel.Rq (TcSE ROIN-297357)+	<jmyslin2> Clarified requirement for error condition on what to do with receiving two language requests when should not be
	MD-REQ-025377/N-Disp_LangSel.Rq (TcSE ROIN-297357)	<jmyslin2> clarification on sending the same language twice
	MD-REQ-025452/B-LanguageUpdate.Rsp (TcSE ROIN-297376)	<jmyslin2> grammar update only. No content change
	MD-REQ-025379/B-Bezel_Beeps.Rq (TcSE ROIN-297362)	<jmyslin2> added clarificatin to signal MD. No content change
	MD-REQ-025385/B-Bezel_Beeps.St (TcSE ROIN-297423)	<jmyslin2> Clarification only to signal MD. No content change to MD
	MD-REQ-025386/B-Bezel_Beeps_Supported.St (TcSE ROIN-297429)	<jmyslin2> added clarification to signal MD. No content change
	MD-REQ-025381/B-TimeAdjust.Rq (TcSE ROIN-297370)	<jmyslin2> updated grammer. No content change
	MD-REQ-025462/B-VehTimeFormat.St (TcSE ROIN-297375)	<jmyslin2> Grammar update only. No content change
	MD-REQ-097285/C-ValetMode_St	<jmyslin2> grammer update. No content change
	MD-REQ-025380/B-Disp_Temperature.Rq (TcSE ROIN-297369)	<jmyslin2> Gammar updates. No content change



MD-REQ-025453/B-Disp_Temperature.St (TcSE ROIN-297374)	<jmyslin2> Grammar updates only. No content change
MD-REQ-025388/C-LightAmbColor_No_Rq (TcSE ROIN-297407)	<jmyslin2> Grammar change only. No content change
MD-REQ-025389/C-LightAmbIntsty_No_Rq (TcSE ROIN-297420)	<jmyslin2> Grammar updates. No content change
MD-REQ-025456/D-LightAmbColor_No_Actl (TcSE ROIN-297421)	<jmyslin2> Grammar updates. No content change
MD-REQ-025457/D-LightAmbIntsty_No_Actl (TcSE ROIN-297422)	<jmyslin2> grammar updates. No content change
MD-REQ-192193/C-LightAmbColor_No_Actl - Variant 2	<jmyslin2> Grammar updates. No content change
MD-REQ-192194/C-LightAmbIntsty_No_Actl - Variant 2	<jmyslin2> Grammar updates. No content change
MD-REQ-192189/B-LightAmbColor_No_Rq - Variant 2	<jmyslin2> Grammar updates. No content change
MD-REQ-192190/B-LightAmbIntsty_No_Rq - Variant 2	<jmyslin2> Grammar updates only. No content change
MD-REQ-023414/C-CntrStk_D_RqAssoc (TcSE ROIN-284870-1)	<jmyslin2> added clarifications. No content change
MD-REQ-023415/B-CntrStkKeycodeActl (TcSE ROIN-284871-1)	<jmyslin2> Updated with code BCM uses to decode the signal
MD-REQ-023425/B-AssocConfirm_D_Actl (TcSE ROIN-284863-1)	<jmyslin2> update text. No content change
MD-REQ-093985/B-ChargePortUnlock_Rq	<jmyslin2> grammar updates. No content change
MD-REQ-132658/B-ChrgCrdLck_D_Stat	<jmyslin2> Change signal type to MD. No content change
VS-IIR-REQ-276699/A-Logical Signal mapping to CMDB - Vehicle Settings/ Settings in Centerstack+	<jmyslin2> Power Management logical signal mapping table r
VS-IIR-REQ-276699/B-Logical Signal mapping to CMDB - Vehicle Settings/ Settings in Centerstack+	<jmyslin2> Work in Progress
VS-IIR-REQ-276699/C-Logical to Physical CAN signal mapping - Vehicle Settings/ Settings in Centerstack+	<jmyslin2> Work in Progress
VS-IIR-REQ-276699/D-Logical to Physical CAN signal mapping - Vehicle Settings/ Settings in Centerstack+	<jmyslin2> added VDM FBMP signals
VS-IIR-REQ-276699/E-Logical to Physical CAN signal mapping - Vehicle Settings	<jmyslin2> added VDM and CCM Feature.St signals
VS-CLD-REQ-025448/D-Keypad Server / External Personalization Function (TcSE ROIN-293526-1)	<jmyslin2> updated name, no content change
VS-CLD-REQ-025447/D-Keypad Client / Personalization Client (TcSE ROIN-293524-1)	<jmyslin2> Updated name, no content change
VS-CLD-REQ-025442/B-Vehicle Settings Client (TcSE ROIN-141546-2)	<jmyslin2> Removed deleted requirement 025432. No content change
VS-CLD-REQ-025443/B-Vehicle Settings Server (TcSE ROIN-141547-2)	<jmyslin2> Moved 025434 to Distance function
STR-076407/C-Functional Definition (TcSE ROIN-293395)	<jmyslin2> No content change. Grouped Ambient Lighting to make more clear
VS-FUN-REQ-025206/C-Set Language (TcSE ROIN-292323-1)	<jmyslin2> added signal MD's to function
VS-SR-REQ-193890/B-Enhanced Memory - Language for Active Personality Profile	<jmyslin2> Added clarification for B+ resets
VS-FUN-REQ-025213/C-Set Distance Units (TcSE ROIN-292327-1)	<jmyslin2> added Distance interface MD's - no content change
VS-FUN-REQ-025218/C-Set Temperature Units (TcSE ROIN-292331-1)	<jmyslin2> added MD's in interface Requirement for Temperature
VSv2-FUN-REQ-025223/C-Ambient Lighting- Set Color (TcSE ROIN-292314-1)	<jmyslin2> added MD's, no content change
VSv2-FUN-REQ-025228/C-Ambient Lighting- Set Intensity (TcSE ROIN-292320-1)	<jmyslin2> added MD's, no content change
VS-FUN-REQ-025233/C-Touch Panel Beeps Settings (TcSE ROIN-292335-1)	<jmyslin2> added MD's, no content change
VS-FUN-REQ-025239/C-Set 12/24 hour mode setting (TcSE ROIN-292339-1)	<jmyslin2> added MD, no content change
VS-FUN-REQ-025246/E-Charge Port Light Ring (TcSE ROIN-292385-1)	<jmyslin2> moved MD, no content change
VSv2-FUN-REQ-131582/B-Charge Cord Unlock	<jmyslin2> Charge Cord Unlock
VS-SD-REQ-132666/B-Unlock Charge Port from Infotainment HMI	<jmyslin2> updated sequence diagram to use the correct name for the request signal. No content change
VS-FUN-REQ-023435/C-Edit Keypad Code (TcSE ROIN-284424-1)	<jmyslin2> Added MD, no content change
VSv2-FUN-REQ-331323/A-Edit Keypad Code - Variant 2	<jmyslin2> Updated KeyPad interface. Needed for 7 button press keypads and supports 5 digit keypad
MD-REQ-331324/A-CntrStk2_D_RqAssoc	<jmyslin2> added clarifications. No content change
MD-REQ-330676/A-KeyPadCodeDgtX_D_Stat	<jmyslin2> New requirement, supports 7 button press keypad



VS-UC-REQ-331327/A-Set Keypad Code for Current User	<jmyslin2> New use case for Keypad variant2
VS-UC-REQ-331328/A-Erase Keypad Code from Current User	<jmyslin2> New use case for Keypad variant2
VS-UC-REQ-331329/A-Invalid Keypad Code Entry	<jmyslin2> New use case for Keypad variant2
VS-UC-REQ-331330/A-Invalid Duplicate Keypad Code Entry	<jmyslin2> New use case for Keypad variant2
VS-UC-REQ-331331/A-Cancel Keypad Set Process	<jmyslin2> New use case for Keypad variant2
VS-SR-REQ-331337/A-Keypad Client supporting both Variant 1 and Variant 2 request signals at the same time	<jmyslin2> new keypad requirement
VS-SR-REQ-331338/A-Number of digits in Keypad	<jmyslin2> New requirement for Keypad Variant2
VS-SD-REQ-331333/A-Set Keypad Code for current user	<jmyslin2> New sequence diagram for Keypad variant 2
VS-SD-REQ-331334/A-Erase Keypad Code from current user	<jmyslin2> New sequence diagram for Keypad variant 2
VS-SD-REQ-331335/A-Cancel Keypad Code Edit	<jmyslin2> New sequence diagram for Keypad variant 2
VS-FUN-REQ-025341/D-Master Reset to Factory Defaults - APIM (TcSE ROIN-296290-1)	<jmyslin2> added MD's, no content change
VS-FUN-REQ-096818/D-Set Valet Mode	<jmyslin2> added MD's, no content change
STR-076408/B-Appendix: Reference Documents (TcSE ROIN-293422)	<jmyslin2> added reference specs. No content change

February 1, 2019

1.17

STR-180687/E-Interface Requirements	<jmyslin2> added MD's for new functions
MD-REQ-338982/A-Long Term Reset_B2_Rq	<jmyslin2> New MD for Long Term Reset setting
MD-REQ-341180/A-BattTracLoThres_D_Stat	<jmyslin2> New MD for Low Battery Alert status signal
MD-REQ-341183/A-BattTracLoThres_D_Rq	<jmyslin2> New MD for Low Battery Alert request signal
MD-REQ-341190/A-SpeedoMajorUnit_D_Config	<jmyslin2> New MD for Low Battery Alert status signal
MD-REQ-339666/A-PrplSnd_D_Rq	<jmyslin2> New MD for Propulsion Sound request setting
MD-REQ-339747/A-PrplSnd_D_Stat	<jmyslin2> New MD for Propulsion Sound status signal
MD-REQ-339730/A-LghtAmbDrvMde_D_Rq	<jmyslin2> New MD for Ambient Lighting Auto/Manual Drive Mode request
MD-REQ-340538/A-LghtAmbDrvMde_B_Stat	<jmyslin2> New MD for Ambient Lighting Auto/Manual Drive Mode status
VS-IIR-REQ-276699/F-Logical to Physical CAN signal mapping - Vehicle Settings	<jmyslin2> added new signals
VS-FUN-REQ-334503/A-Drive History Reset	<jmyslin2> New Function for Drive History setting
VS-CLD-REQ-339750/A-Drive History Client	<jmyslin2> New Class Description for Drive History Client
VS-CLD-REQ-342947/A-Drive History Server	<jmyslin2> New class description for Drive History Server
VS-SR-REQ-334504/A-Drive History Reset	<jmyslin2> New requirement for Drive History
VS-CLD-REQ-341184/A-Low Battery Alert Client	<jmyslin2> New class description for Low Battery Alert Client
VS-CLD-REQ-341185/A-Low Battery Alert Server	<jmyslin2> new class description for low battery alert server
VS-REQ-341338/A-Low Battery Alert Server functional requirement	<jmyslin2> New Low Battery Alert Server requirement
VS-REQ-341290/A-Low Battery Alert Client functional requirement	<jmyslin2> New Low Battery Alert Client functional requirement
VS-HMI-REQ-342159/A-HMI display options for Low Battery Alert - Low Battery Alert Client	<jmyslin2> HMI requirement for display options
VS-SR-REQ-341887/A-Selecting a Low Battery Alert Setting via the HMI	<jmyslin2> New requirement for setting Low Battery Alert via the HMI
VS-SR-REQ-341178/A-Mapping Table - Speedometer Major Units	<jmyslin2> Added requirement for Cluster speedometer major units
VS-SD-REQ-341844/A-Low Battery Alert Setting Selection	<jmyslin2> new sequence diagram for selecting a Low Battery Alert setting
VS-FUN-REQ-339665/A-Propulsion Sound	<jmyslin2> New Function for propulsion sound setting
VS-CLD-REQ-339751/A-Propulsion Sound Client	<jmyslin2> New class description for propulsion sound client
VS-CLD-REQ-339752/A-Propulsion Mode Server	<jmyslin2> new class description for the propulsion mode server
VS-UC-REQ-340217/A-User Enables Propulsion Sound Setting	<jmyslin2> new use case for enabling propulsion sound
VS-UC-REQ-340218/A-User Disables Propulsion Sound Setting	<jmyslin2> use case for disabling propulsion sound
VS-SR-REQ-339667/A-Propulsion Sound Client requesting change to propulsion sound	<jmyslin2> New requirement for Propulsion Sound
VS-TMR-REQ-339748/A-T_PrplSnd_Rsp	<jmyslin2> added timing for propulsion sound setting request and response
VS-SD-REQ-340180/A-Propulsion Sound set to Enabled via the HMI	<jmyslin2> Propulsion Sound Enabled sequence diagram
VS-SD-REQ-340184/A-Propulsion Sound set to Disabled via the HMI	jmyslin2: New Propulsion Sound Disabled sequence diagram





VS-FUN-REQ-339729/A-Drive Mode Auto/Manual Ambient Lighting setting	<jmyslin2> New Function for Drive Mode Auto/Manual Ambient Lighting setting
VS-CLD-REQ-340540/A-Ambient Lighting Drive Mode Client	<jmyslin2> New class description for Ambient Lighting Drive Mode Client
VS-CLD-REQ-340542/A-Ambient Lighting Drive Mode Server	<jmyslin2> New Ambient Lighting Drive Mode Server class description
VS-UC-REQ-340546/A-User Enables Auto Ambient Lighting via HMI Setting	<jmyslin2> New use case for the user enabling Auto Ambient Lighting via the HMI setting
VS-UC-REQ-340547/A-User Disables Auto Ambient Lighting via HMI Setting	<jmyslin2> New use case for user disabling Auto Ambient Lighting via the HMI setting
VS-UC-REQ-340548/A-User changes color while in Auto Ambient Lighting	<jmyslin2> New use case for the user changing color while in Auto Ambient Lighting
VS-UC-REQ-340551/A-User changes color while in Manual Ambient Lighting	<jmyslin2> New use case for when the user changes color while in manual ambient lighting
VS-UC-REQ-340569/A-Drive Mode change while in Auto Ambient Lighting mode	New use case for Drive Mode change while in Auto Ambient Lighting mode
VS-SR-REQ-341024/A-Ambient Lighting Strategy required to be used when supporting Automatic/Manual Ambient Lighting Drive Mode	<jmyslin2> New requirement for supporting Ambient Lighting strategy variant 2 when supporting the Auto/Manual Ambient Lighting setting
VS-REQ-341020/A-Ambient Lighting Drive Mode Server functional requirement	<jmyslin2> New requirement for Ambient Lighting Drive Mode Servers supporting Auto/Manual mode
VS-REQ-341017/A-Ambient Lighting Drive Mode Client functional requirement	<jmyslin2> new requirement for Ambient Lighting Drive Mode Client
VS-SR-REQ-341018/A-Enabling/Disabling Ambient Lighting Auto/Manual setting via the HMI	<jmyslin2> New requirement for Enable / Disabling Ambient Lightings Auto/Manual setting
VS-TMR-REQ-340545/A-T_LghtAmbDrvMde_Rsp	<jmyslin2> added timing for ambient lighting drive mode setting request and response
VS-SD-REQ-341028/A-Ambient Lighting Drive Mode set to Automatic via the HMI	<jmyslin2> New sequence diagram for Ambient Lighting Drive Mode set to Manual via the HMI
VS-SD-REQ-341027/A-Ambient Lighting Drive Mode set to Manual via the HMI	<jmyslin2> New sequence diagram for setting Ambient Lighting Drive Mode to Manual
VS-SD-REQ-341050/A-User changes ambient lighting color while in auto mode	<jmyslin2> New sequence diagram for user changing color in auto mode

May 20, 2019

1.18

VS-IIR-REQ-276699/G-Logical to Physical CAN signal mapping - Vehicle Settings	<jmyslin2> added LongTermReset_B_RqMnu
MD-REQ-025450/M-Disp_LangSel.St (TcSE ROIN-297360)	asimukhi: revised to update the Logical-Physical Mapping Attachment I
MD-REQ-338982/B-LongTermReset_B_RqMnu	<jmyslin2> updated name. No content change
MD-REQ-341180/B-BattTracLoThres_D_Stat	<jmyslin2> Clarification only. KPH to Km/h
MD-REQ-341183/B-BattTracLoThres_D_Rq	<jmyslin2> Clarification only. KPH to Km/h
MD-REQ-347056/A-Ecoldl_D_Rq	<jmyslin2> New MD for Eco-Idle signal request
MD-REQ-347057/A-Ecoldl_D_Stat	<jmyslin2> New MD for Eco-Idle status signal
VS-CLD-REQ-347054/A-Eco-Idle Client	<jmyslin2> New Class Description for Eco-Idle Client
VS-CLD-REQ-347055/A-Eco-Idle Server	<jmyslin2> New Class description for Eco-Idle Server
ENMEM-REQ-105569/E-Driver Profiles Deleted During Master Reset	MBORREL4: Updated for DSM Decouple
VS-SR-REQ-334504/B-Drive History Reset	<jmyslin2> updated signal name only. No content change
VS-SR-REQ-341178/B-Mapping Table - Speedometer Major Units	<jmyslin2> Clarification only. Changed KPH to Km/h
VS-FUN-REQ-347046/A-Eco-Idle	<jmyslin2> New function for Eco-Idle
VS-UC-REQ-347814/A-User Enables Eco-Idle Setting	<jmyslin2> new Eco-Idle use case
VS-UC-REQ-347815/A-User Disables Eco-Idle Setting	<jmyslin2> New Eco-Idle use case
VS-SR-REQ-347812/A-Eco-Idle Setting change	<jmyslin2> new requirement for Eco-Idle setting
VS-TMR-REQ-347813/A-T_Ecoldl_Rsp	<jmyslin2> New Eco-Idle timing requirement
VS-SD-REQ-347816/A-Eco-Idle set to Enabled via the HMI	<jmyslin2> New Eco-Idle sequence diagram
VS-SD-REQ-347817/A-Eco-Idle set to Disabled via the HMI	<jmyslin2> New Eco-Idle sequence diagram

October 30, 2019

1.19

VS-IIR-REQ-276699/H-Logical to Physical CAN signal mapping - Vehicle Settings	<jmyslin2> added Eco-Idle signal mapping
MD-REQ-365621/A-EngExhMdeHrEnbl_D_Rq	<jmyslin2> New quiet time MD
MD-REQ-365620/A-EngExhMdeHrEnbl_D_Stat	<jmyslin2> New quiet time MD
MD-REQ-365623/A-EngExhMdeHrStrt_D_Rq	<jmyslin2> New quiet time MD
MD-REQ-365626/A-EngExhMdeHrStrt_D_Stat	<jmyslin2> New Quiet Time MD
MD-REQ-365627/A-EngExhMdeHrEnd_D_Rq	<jmyslin2> New Quiet Time End MD request signal



MD-REQ-365628/A-EngExhMdeHrEnd_D_Stat	<jmyslin2> New Quiet Time End MD status signal
VS-CLD-REQ-339752/B-Propulsion Sound Server	<jmyslin2> corrected typo in title name. Changed name from Propulsion Mode Server to Propulsion Sound Server. No content change, clarification only.
VS-CLD-REQ-362990/A-Quiet Time Client	<jmyslin2> New class description for Quiet Time Client
VS-CLD-REQ-362991/A-Quiet Time Server	<jmyslin2> New Class Description for the Quiet Time Server
STR-076407/F-Functional Definition (TcSE ROIN-293395)	<jmyslin2> added new Quiet Time for exhaust mode function
VS-FUN-REQ-362897/A-Quiet Time for Exhaust Mode	<jmyslin2> New Quiet Time function
VS-UC-REQ-365616/A-User Enabled Quiet Time Setting	<jmyslin2> New Quiet Time use case
VS-UC-REQ-365617/A-User Disabled Quiet Time Setting	<jmyslin2> New use case for disabling quiet time
VS-UC-REQ-365618/A-User changes Quiet Time start and end times	<jmyslin2> New use case Quiet Time start and end times
VS-SR-REQ-365809/A-Quiet Time Enable/Disable Setting change	<jmyslin2> New Quiet Time setting requirement
VS-SR-REQ-365811/A-Quiet Time Start and End time Setting change	<jmyslin2> New Quiet Time start and end time setting change requirement
VS-TMR-REQ-365810/A-T_QuietTime_Rsp	<jmyslin2> New Quiet Time timing requirement
VS-SR-REQ-365642/A-HMI Speed Limited	<jmyslin2> New Quiet Time speed limited requirement
VS-SD-REQ-365814/A-Quiet Time set to Enabled via the HMI	<jmyslin2> New sequence diagram for setting Quiet Time to Enabled
VS-SD-REQ-365815/A-Quiet Time set to Disabled via the HMI	<jmyslin2> New sequence diagram for setting Quiet Time to Disabled
VS-SD-REQ-365816/A-Quiet Start Time set via the HMI	<jmyslin2> New sequence diagram to set the Quiet Time Start Time via the HMI
VS-SD-REQ-365820/A-Quiet End Time set via the HMI	<jmyslin2> New sequence diagram to set the End Time via the HMI

## January 10, 2020

## 1.20

MD-REQ-339747/B-PrplSnd_D_Stat	jmyslin2: updated MD to include Faulty state
VS-FUN-REQ-025341/E-Master Reset to Factory Defaults - APIM (TcSE ROIN-296290-1)	<jmyslin2> added a requirement for Master Reset when a MyKey is used
VS-SR-REQ-362537/A-Master Reset Setting when MyKey is active	<jmyslin2> New master reset requirement when MyKey is active
VS-SR-REQ-372580/A-Propulsion Sound Faulty state	jmyslin2 - New requirement for Faulty state

## February 14, 2020

## 1.21

VS-IIR-REQ-276699/I-Logical to Physical CAN signal mapping - Vehicle Settings	jmyslin2: added Trail Turn Assist signals
MD-REQ-132658/C-ChrgCrdLck_D_Stat	jmyslin2: added clarification to the requirement
MD-REQ-375908/A-TurnAssstSwch_D_Stat	jmyslin2: New MD for the Trail Turn Assist feature
MD-REQ-375918/A-OrtaSwchLamp_B_Rq	jmyslin2: New MD for the Trail Turn Assist feature
VS-CLD-REQ-375893/A-Trail Turn Assist Client	jmyslin2: added new Trail Turn Assist class description
VS-CLD-REQ-375896/A-Trail Turn Assist Server	jmyslin2: New Trail Turn Server class description
STR-076407/G-Functional Definition (TcSE ROIN-293395)	jmyslin2: added Trail Turn Assist function
VS-FUN-REQ-375892/A-Trail Turn Assist	jmyslin2: New Trail Turn Assist function
STR-718722/A-Overview	jmyslin2: provide an overview of the Trail Turn Assist feature
STR-718724/A-Physical Mapping of Classes	jmyslin2: mapping of physical classes
VS-UC-REQ-375924/A-User Enables Trail Turn Assist	jmyslin2: new Trail Turn Assist Use Case
VS-UC-REQ-375925/A-User Disables Trail Turn Assist	jmyslin2: new Use Case for Trail Turn Assist
VS-SR-REQ-375934/A-Trail Turn Assist Setting Soft Button Pressed / Not Pressed Handling	jmyslin2: new Trailer Turn Assist requirement
VS-SR-REQ-375946/A-Trail Turn Assist Settings Change	jmyslin2: new Trail Turn Assist requirement
VS-TMR-REQ-375949/A-T_TrailTurnAssst_Rsp	jmyslin2: new Trail Turn Assist timing requirement
VS-SR-REQ-375947/A-Conditions for setting TurnAssstSwch_D_Stat signal to Faulty	jmyslin2: New Trail Turn Assist requirement
VS-SD-REQ-375951/A-Trail Turn Assist set to Enabled via the HMI	jmyslin2: new sequence diagram for the Trail Turn Assist feature
VS-SD-REQ-375952/A-Trail Turn Assist set to Disabled via the HMI	jmyslin2: new Trail Turn Assist sequence diagram

## February 25, 2020

## 1.22

VS-IIR-REQ-276699/J-Logical to Physical CAN signal mapping - Vehicle Settings	jmyslin2: added clear exit assist signals
MD-REQ-354255/A-ClrExitAsstEnbl_D_RqMnu	<jmyslin2> New MD for Clear Exit Assist
MD-REQ-354256/A-ClrExitAsst_D_Stat	<jmyslin2> New MD for Clear Exit Assist
MD-REQ-359587/A-ClrExitAsstMsgTxt2_D_Rq	jmyslin2: New MD for Clear Exit Assist



MD-REQ-359588/A-ClrExitAssstActv_B_Rq	jmyslin2: New MD for Clear Exit Assist
VS-CLD-REQ-359585/A-ClearExitAssist Warning Client	<jmyslin2> New class description for Clear Exit Assist
VS-CLD-REQ-359586/A-ClearExitAssist Warning Server	<jmyslin2> New Class Description for Clear Exit Assist
STR-076407/H-Functional Definition (TcSE ROIN-293395)	jmyslin2: added clear exit assist functions
STR-731065/A-Clear Exit Assist	jmyslin2: added Clear Exit Assist functions
VS-FUN-REQ-354248/A-Clear Exit Assist Setting	<jmyslin2> New function for clear exit assist
VS-SR-REQ-354328/A-ClearExitAssist Setting change	<jmyslin2> New requirement for Clear Exit Assist
VS-FUN-REQ-359558/A-Clear Exit Assist Warning	<jmyslin2> New Clear Exit Assist Warning function created
PWRMAN-CLD-REQ-359656/A-Infotainment System Master	<jmyslin2> New Class Description
VS-SR-REQ-359973/A-Clear Exit Assist warning HMI	<jmyslin2> New Clear Exit Assist requirement
PWRMAN-SR-REQ-359648/A-Clear Exit Assist Power Moding	<jmyslin2> New clear exit assist power mode requirement
PWRMAN-SR-REQ-359676/A-MMInactive Sleep_Standby Clear Exit Assist Power Mode Diagram	<jmyslin2> New Clear Exit Assist power mode requirement

March 19, 2020

1.23

VS-CLD-REQ-354250/A-ClearExitAssist SettingsClient	<jmyslin2> New class description
VS-CLD-REQ-354251/A-ClearExitAssist SettingsServer	<jmyslin2> New class description
VS-UC-REQ-354326/A-User Enables Clear Exit Assist Setting	<jmyslin2> New use case Clear Exist Assist setting
VS-UC-REQ-354327/A-User Disables Clear Exit Assist Setting	<jmyslin2> New Clear Exit Assist use case
VS-TMR-REQ-354329/A-T_ClrExitAssst_Rsp	<Jmyslin2> New clear exit assist timing requirement
VS-SR-REQ-354254/A-MyKey settings	<jmyslin2> New MyKey requirement for Clear Exit Assist
VS-SD-REQ-354580/A-ClearExitAssist set to Enabled via the HMI	<jmyslin2> New Sequence Diagram for Clear Exit Assist
VS-SD-REQ-354581/A-ClearExitAssist set to Disabled via the HMI	<jmyslin2> New Sequence Diagram for Clear Exit Assist
VS-UC-REQ-362233/A-Activate Clear Exit Assist HMI Warning while the ignition is in Run/Acc	<jmyslin2> New Clear Exit Assist warning use case
VS-UC-REQ-362289/A-Second Clear Exit Assist HMI Warning while the ignition is in Run/Acc	<jmyslin2> New Clear Exit Assist Warning use case
VS-UC-REQ-362287/A-Activate Clear Exit Assist HMI Warning when in Delayed Accessory	<jmyslin2> New Clear Exit Assist Warning use case
VS-UC-REQ-362259/A-Activate Clear Exit Assist HMI Warning when exiting the vehicle causing DA to end and CEA timer has not expired	<jmyslin2> New Clear Exit Assist warning use case
VS-UC-REQ-362293/A-No Clear Exit Assist HMI Warning when exiting the vehicle and CEA timer expired	<jmyslin2> New Clear Exit Assist Warning use case
VS-UC-REQ-362296/A-Activate Clear Exit Assist HMI Warning when entering and exiting the vehicle when the CEA timer has not expired	<jmyslin2> New Clear Exit Assist Warning use case
VS-UC-REQ-362295/A-No Clear Exit Assist HMI Warning when entering and exiting vehicle with CEA timer expired	<jmyslin2> New Clear Exit Assist Warning use case
VS-SD-REQ-361333/A-Clear Exist Assist HMI Warning Event	<jmyslin2> added Clear Exit Assist HMI warning sequence diagram
MD-REQ-383981/A-TjaLaneBiasEnbl_D_RqMnu	jmyslin2: New MD for the Lane Biasing
MD-REQ-383982/A-TjaLaneBiasEnbl_D_Stat	jmyslin2: New MD for the Lane Biasing
VS-CLD-REQ-383974/A-Lane Biasing SettingsClient	jmyslin2: new Lane Biasing class description
VS-CLD-REQ-383975/A-Lane Biasing SettingsServer	jmyslin2: new Lane Biasing class description
STR-076407/I-Functional Definition (TcSE ROIN-293395)	jmyslin2: added Lane Biasing setting
VS-FUN-REQ-383899/A-Lane Biasing Setting (Highway Assist)	jmyslin2: new Lane Biasing function
STR-742173/A-Physical Mapping of Classes	jmyslin2: mapping of physical classes
VS-UC-REQ-383983/A-User Enables Lane Biasing Setting	jmyslin2: new Lane Biasing use case
VS-UC-REQ-383987/A-User Disables Lane Biasing Setting	jmyslin2: New use case for Lane Biasing
VS-SR-REQ-384253/A-Lane Biasing Setting change	jmyslin2: new Lane Biasing requirement
VS-TMR-REQ-384254/A-T_LaneBias_Rsp	Jmyslin2: New Lane Biasing timing requirement
VS-REQ-384257/A-Lane Biasing set to Enabled via the HMI	jmyslin2: New Lane Biasing Sequence Diagram
VS-REQ-384276/A-Lane Biasing set to Disabled via the HMI	jmyslin2: new lane biasing sequence diagram

November 2, 2020

1.24

VS-IIR-REQ-276699/K-Logical to Physical CAN signal mapping - Vehicle Settings	jmyslin2: added Lane Biasing signals, auto-config lighting signals
MD-REQ-025377/O-Disp_LangSel.Rq (TcSE ROIN-297357)	jmyslin2: Added Ukrainian
MD-REQ-025450/N-Disp_LangSel.St (TcSE ROIN-297360)	jmyslin2: added Ukrainian



MD-REQ-399907/A-laccCrvVCtlEnbl_D_Rq	jmyslin2: New Curve Speed Control MD
MD-REQ-399906/A-laccCrvVCtlEnbl_D_Stat	jmyslin2: New Curve Speed Control MD
VS-CLD-REQ-392418/A-Curve Speed Control Settings Client	jmyslin2: New ClassDescription
VS-CLD-REQ-392419/A-Curve Speed Control Settings Server	jmyslin2: new ClassDescription
VS-SR-REQ-331337/B-Keypad Clientsupporting both Variant 1 and Variant 2 request signalsat the same time	jmyslin2: Updated requirementfor what to do when the new keypad signal valuesare set (ex set back to Null)
VS-FUN-REQ-392197/A-Curve Speed Control - Intelligent Adaptive Cruise Control	jmyslin2: new function curve speed control
VS-UC-REQ-399909/A-User EnablesCurve Speed Control Setting	jmyslin2: New Curve Speed Control Use Case
VS-UC-REQ-399910/A-User DisablesCurve Speed Control Setting	jmyslin2: new Curve Speed Control use case
VS-SR-REQ-400065/A-Curve Speed Control Setting change	jmyslin2: new Curve Speed Control setting
VS-TMR-REQ-400066/A-T_CurveSpeedControl_Rsp	jmyslin2: new Curve Speed Control timing requirement
VS-SD-REQ-400195/A-Curve Speed Control set to Enabled via the HMI	jmyslin2: New Curve Speed Control sequence diagram
VS-SD-REQ-400196/A-Curve Speed Control set to Disabled via the HMI	jmyslin2: New Curve Speed Control sequence diagram



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# 1 Architectural Design

## 1.1 Interface Requirements

### 1.1.1 VS-IIR-REQ-276699/K-Logical to Physical CAN signal mapping - Vehicle Settings

This Vehicle Settings & Settings in Centerstack deployment table maps the Settings logical signals to the physical CAN signals.

Note: This is for reference only. If there is a conflict between the name in the CAN signal name column and what is found in the actual CAN dB then the CAN dB takes precedent. Please bring to Ford's attention if there is a conflict.

Logical Signal Name	CAN signal name
ChrgCrdLck_D_Stat	ChrgCordLck_D_Stat
ChargePortUnlock_Rq	ChrgCordUnlock_B_Rq
AssocConfirm_D_Actl	AssocConfirm_D_Actl
CntrStkKeycodeActl	CntrStkKeycodeActl
Cntrstk_D_RqAssoc	Cntrstk_D_RqAssoc
ChargePortLightRing_St	CenterStackRing_D_Actl – Variant 1 ChrgStatDsply_D_Rq – Variant 2
LightAmbIntsty_No_Actl	LightAmbIntsty_No_Actl
LightAmbColor_No_Actl	LightAmbColor_No_Actl
LightAmbIntsty_No_Rq	LightAmbIntsty_No_Rq
LightAmbColor_No_Rq	LightAmbColor_No_Rq
Disp_Temperature.St	Mc_VehUnitTempUsrSel_St
Disp_Temperature.Rq	Disp_VehUnitTempUsrSel
ValetMode_St	ValetMode_D_Stat
TimeAdjust.Rq	SetTimeFormat
VehTimeFormat.St	Mc_VehFormatUsrSel_St
Bezel_Beeps_Supported.St	Bezel_Beeps_Supported
Bezel_Beeps.Rq	Bezel_Beeps_Rq
Bezel_Beeps.st	Bezel_Beep_St
LanguageUpdate.Rsp	LangUpdate_Rsp – Cluster Disp_LangUpdate_Rsp – Infotainment System Master (ex APIM, CHR...)
DISP_LangSel.St	Disp_LangSel_St – Infotainment (APIM, CHR, CTR..) Disp_LangSel2_St – Infotainment (APIM, CHR, CTR..) Mc_VehLangUsrSel_St - Cluster
DISP_LangSel.Rq	Disp_LangSel_Rq – Infotainment (APIM, CHR, CTR..) Disp_LangSel2_Rq - Infotainment (APIM, CHR, CTR..) Mc_LangSel_Rq - Cluster McLangSel2_Rq - Cluster
FactoryReset.St	FactoryReset_St – TCU SDARS_Factory_Reset_St - AHU
FactoryReset_Rq	FactoryReset_Rq – TCU SDARS_FactoryReset_Rq – AHU / DSP_AMP (more than just SDARS – See SPSS)
Vehicle_Speed.St	Veh_V_ActlEng
Vehicle_Speed_QF	VehVActlEng_D_Qf
DISP_Mile_Kilometers.Rq	Disp_VehUntTripCoUsrSel (pre Settings in the Centerstack)
Disp_Miles_Kilometers.St	Mc_VehUntTrpCoUsrSel_St
HMIAudioMode	HMI_HMIMode_St
KeyPadCodeDgtX_D_Stat	KeyPadCodeDgtX_D_Stat (were X represents 1 – 7 for the 7 signals)
CntrStk2_D_RqAssoc	CntrStk2_D_RqAssoc
LongTermReset_B_RqMnu	LongTermReset_B_RqMnu (older SPSS specifications have the logical signal as LongTermReset_B2_Rq)





BattTracLoThres_D_Stat	BattTracLoThres_D_Stat
BattTracLoThres_D_Rq	BattTracLoThres_D_Rq
SpeedoMajorUnit_D_Confg	SpeedoMajorUnit_D_Confg
PrplSnd_D_Rq	PrplSnd_D_Rq
PrplSnd_D_Stat	PrplSnd_D_Stat
LghtAmbDrvMde_D_Rq	LghtAmbDrvMde_D_Rq
LghtAmbDrvMde_B_Stat	LghtAmbDrvMde_B_Stat
Ecoldl_D_Rq	Ecoldl_D_Rq
Ecoldl_D_Stat	Ecoldl_D_Stat
EngExhMdeHrEnbl_D_Rq	EngExhMdeHrEnbl_D_Rq
EngExhMdeHrEnbl_D_Stat	EngExhMdeHrEnbl_D_Stat
EngExhMdeHrStrt_D_Rq	EngExhMdeHrStrt_D_Rq
EngExhMdeHrStrt_D_Stat	EngExhMdeHrStrt_D_Stat
EngExhMdeHrEnd_D_Rq	EngExhMdeHrEnd_D_Rq
EngExhMdeHrEnd_D_Stat	EngExhMdeHrEnd_D_Stat
TurnAsstSwch_D_Stat	TurnAsstSwch_D_Stat
OrtaSwchLamp_B_Rq	OrtaSwchLamp_B_Rq
ClrExitAsstEnbl_D_RqMnu	ClrExitAsstEnbl_D_RqMnu
ClrExitAsst_D_Stat	ClrExitAsst_D_Stat
ClrExitAsstMsgTxt2_D_Rq	ClrExitAsstMsgTxt2_D_Rq
ClrExitAsstActv_B_Rq	ClrExitAsstActv_B_Rq
TjaLaneBiasEnbl_D_RqMnu	TjaLaneBiasEnbl_D_RqMnu
TjaLaneBiasEnbl_D_Stat	TjaLaneBiasEnbl_D_Stat
GfhbMnu_D_Rq	GfhbMnu_D_Rq
AhbcMnu_D_Rq	AhbcMnu_D_Rq

**1.1.2 MD-REQ-243934/B-Disp\_Miles\_Kilometers.St****Message Type:** Status

Signal from the Vehicle Settings Server stating what the setting is for Distance units.

Logical Signal Name	Literals	Value	Description
Disp_Miles_Kilometers.St	Metric (kilometers)	0x0	
	Imperial (miles)	0x1	

**1.1.3 MD-REQ-025516/C-DISP\_Miles\_Kilometers\_Rq (TcSE ROIN-273811)****Message Type:** Request

This method is used to request a status change of Distance Unit.

Name	Literals	Value	Description
Mode	-	-	
	Metric	0x0	The parameter "Metric" is used to request the distance unit kilometers.
	Imperial	0x1	The parameter "Imperial" is used to request the distance unit miles.
	Inactive	0x3	

**1.1.4 MD-REQ-276458/B-Vehicle\_Speed.St****Message Type:** Status

Signal with the current status of the Vehicle Speed

Logical Signal Name	Literals	Value	Description
Vehicle_Speed.St	See info-CAN database for signal details	See info-CAN database for signal details	

**1.1.5 MD-REQ-276459/A-Vehicle\_Speed\_QF****Message Type:** Status

Signal with the Vehicle Speed Quality Factor

Logical Signal Name	Literals	Value	Description
Vehicle_Speed_QF	Faulty	0x0	
	No_Data_Exists	0x1	
	Not_Within_Specifications	0x2	
	OK	0x3	

**1.1.6 MD-REQ-213361/C-FactoryReset\_Rq****Message Type:** Request

Signal sent by the Master Reset Client to initiate a Master Reset

Logical Signal Name	Literals	Value	Description
FactoryReset_Rq	Inactive	0x0	
	ResetFactoryDefaults	0x1	

**1.1.7 MD-REQ-222036/B-FactoryReset.St****Message Type:** Status

Signal sent by the Master Reset Server indicating that the master reset default settings were restored for a master reset event

Logical Signal Name	Literals	Value	Description
FactoryReset.St	Inactive	0x0	
	FactoryDefaultsRestored	0x1	
	Reserved	0x2	
	Reserved	0x3	

**1.1.8 MD-REQ-025377/O-Disp\_LangSel.Rq (TcSE ROIN-297357)****Message Type:** Request

This Signal requests the change of the Language displayed.

Name	Value	Description
Disp_LangSel.Rq	-	
	int <i>Language</i> 0x00 Invalid 0x01 Unknown 0x02 UK English 0x03 NA English 0x04 German 0x05 Italian 0x06 EU French 0x07 Cana French 0x08 EU Spanish 0x09 Mex Spanish 0x0A Turkish 0x0B Russian 0x0C Dutch 0x0D Flemish 0x0E Polish 0x0F Czech 0x10 Greek 0x11 Hungarian 0x12 Swedish 0x13 Danish 0x14 Norwegian	Request from Vehicle Settings Client to update Language displayed.



	0x15 Finish 0x16 EU Portuguese 0x17 Braz Portuguese 0x18 Japanese 0x19 AU_English 0x1A Korean 0x1B Mandarin Chinese 0x1C Taiwanese 0x1D Arabic 0x1E Slovak 0x1F Thai 0x20 Indian English <a href="#">0x21 Ukrainian</a>	
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**Note:**

For HS3 Language Request signals 0x191 Disp\_LangSel.Rq (ex. APIM/CHR) and 0x193 McLangSel.Rq (ex. Cluster) they are 5 bit signals and maxed out with 0x1F Thai. The new Language Request signals created Disp\_LangSel2.Rq and McLangSel2.Rq are bigger in size (7 bits) to allow for more encodings but still include all the encodings the 5 bit signals had.

If the transmitter of the Infotainment language request signal supports one common CAN dB then infotainment language request client for a language request will send both language request signals 0x191 Disp\_LangSel.Rq 5 bit signal and Disp\_LangSel2.Rq 7 bit signal set to the language requested.

- If a language request is needed for an encoding that is supported by Disp\_LangSel2.Rq but not Disp\_LangSel.Rq (ex Indian English) then only Disp\_LangSel2.Rq would request the language.

If the transmitter of the infotainment language request signals has a CAN dB that only supports one Language request signal then only that language request signal would be supported (either support just the 5 bit Disp\_LangSel.Rq or 7 bit Disp\_LangSel2.Rq signal).

The receiver of the infotainment language request signal (ex Cluster) will have its CAN dB set-up so only one language request signal is received in its CAN dB for a particular program (will only receive the 5 bit Disp\_LangSel.Rq signal or 7 bit Disp\_LangSel2.Rq signal).

- Exception: If the Ford D&R for the receiver of the infotainment language request signal has explicitly asked for a CAN dB with both infotainment language request signals to support common software across multiple programs (0x191 Disp\_LangSel.Rq 5 bit signal and Disp\_LangSel2.Rq 7 bit signal) then the receiver of those signals will need to have a configuration bit such that only one of the signals can be used at a time (ex. program X only uses Disp\_LangSel2.Rq while program Y only uses Disp\_LangSel.Rq).

The Cluster transmitter of the language request signal will support only one language request signal in its CAN dB for a particular program (will only send the 5 bit McLangSel.Rq or 7 bit McLangSel2.Rq signal). The other language signal not used would be set to 0x0 Inactive/Invalid.

- Exception: If the Ford D&R for the transmitter of the Cluster language request signals (McLangSel.Rq 5 bit signal and McLangSel2.Rq 7 bit signal) has explicitly asked for a CAN dB with both cluster language request signals to support common software across multiple programs then the Cluster will need to have a configuration bit such that only one of the signals can be used at a time.
- If in an error condition the receiving module gets both language request signals from the same module at the same time then the last language request signal received set to a language would be supported. The Cluster Ford D&R or supplier needs to bring to the CAN dB teams attention if their module is receiving both language request signals if they are only supposed to be receiving one language request signal so this can be corrected in their CAN dB.
- The Cluster is only supposed to send one language request at a time and that is what receiver would expect. If the receiver of 0x193 McLangSel.Rq or McLangSel2.Rq gets both signal set to a language at the same time then bring the issue to the Cluster D&R's attention so this could be corrected.



Reference the CAN dB for the latest and in case any conflict in signal names the CAN dB takes precedent.

### 1.1.9 MD-REQ-025450/N-Disp\_LangSel.St (TcSE ROIN-297360)

Message Type: Status

This Signal gives status of the Language displayed.

Name	Value	Description
Disp_LangSel.St	-	
	int <i>Language</i>	Status update from the
	0x00 Invalid	Vehicle Language
	0x01 Unknown	settings server stating
	0x02 UK English	what the current
	0x03 NA English	language setting is for
	0x04 German	the Vehicle Language
	0x05 Italian	Server which sends out
	0x06 EU French	the status message.
	0x07 Cana French	
	0x08 EU Spanish	
	0x09 Mex Spanish	
	0x0A Turkish	
	0x0B Russian	
	0x0C Dutch	
	0x0D Flemish	
	0x0E Polish	
	0x0F Czech	
	0x10 Greek	
	0x11 Hungarian	
	0x12 Swedish	
	0x13 Danish	
	0x14 Norwegian	
	0x15 Finish	
	0x16 EU Portuguese	
	0x17 Braz Portuguese	
	0x18 Japanese	
	0x19 AU_English	
	0x1A Korean	
	0x1B Mandarin Chinese	
	0x1C Taiwanese	
	0x1D Arabic	
	0x1E Slovak	
	0x1F Thai	
	0x20 Indian English	
	<a href="#">0x21 Ukrainian</a>	

Note:





The Infotainment Language status HS3 signal 0x229 Disp\_LangSel.St (ex APIM, CHR, MFD...) is a 5 bit signal and maxed out with 0x1F Thai. The new Infotainment Language Status HS3 signal is Disp\_LangSel2.St and is bigger in size (7 bits) to allow for more encodings but still include all the encodings the 5 bit signals had.

If the transmitter of the Infotainment Language status signal supports one common CAN dB then the transmitter of the infotainment language status signal will have to support sending both language status signals Disp\_LangSel.St 5 bit signal and Disp\_LangSel2.St 7 bit signal with both status signals set to the active language.

- If Disp\_LangSel2.St is set to a language that Disp\_LangSel.St does not have an encoding for then Disp\_LangSel.St would be set to 0x0 Inactive (ex. if Indian English was the active language).

If the transmitter of the Infotainment Language status signal has a CAN dB that only supports one language status signal then only that language status signal would be supported (either support just the 5 bit Disp\_LangSel.St or 7 bit Disp\_LangSel2.St).

The receiver of the infotainment language status signals (Disp\_LangSel.St 5 bit signal and Disp\_LangSel2.St 7 bit signal) should only receive one of the language status signals in their CAN dB.

- If the Ford D&R or supplier of a module receiving the infotainment language status message notices that both infotainment language status signals Disp\_LangSel.St 5 bit signal and Disp\_LangSel2.St 7 bit signal in their CAN dB bring to Ford's attention as the CAN dB would need to be corrected.
  - Exception: If the Ford D&R for the receiver of the infotainment language signal has explicitly asked for a CAN dB with both infotainment language signals to support common software across multiple programs (Disp\_LangSel.St 5 bit signal and Disp\_LangSel2.St 7 bit signal) then the receiver of those signals will need to have a configuration bit such that only one of the signals is can be used at a time (ex. program X only uses Disp\_LangSel2.St and program Y only uses Disp\_LangSel.St).

The Cluster language status HS3 signal 0x2FD Mc\_VehLangUsrSel.St is a 6 bit signal and is not currently maxed out so there is only one Cluster language status signal at the time this was written.

As a general practice if the receiving module just needs to receive one language status signal in a vehicle to know what language to be used then the Cluster Mc\_VehLangUsrSel.St signal should be used.

Reference the CAN dB for the latest and in case any conflict in signal names the CAN dB takes precedent.

#### 1.1.10 MD-REQ-025452/B-LanguageUpdate.Rsp (TcSE ROIN-297376)

**Message Type:** Response

Response signal from Vehicle settings Language server to the Vehicle settings Client in response to the Disp\_LangSel.Rq method. Signal informs the Client if the Language that was requested to change is supported by that server or not. This signal allows the Client to take an action if the language is not supported by the server.

Logical Signal Name	Literals	Value	Description
LanguageUpdate.Rsp	Inactive	0x0	
	Language_Updated	0x1	
	Language_Not_Supported	0x2	

#### 1.1.11 MD-REQ-025379/B-Bezel\_Beeps.Rq (TcSE ROIN-297362)

**Message Type:** Request

This signal requests to change the Bezel Beeps settings.

Logical Signal Name	Literals	Value	Description
Bezel_Beeps.Rq	Inactive	0x0	
	Enabled	0x1	
	Disabled	0x2	

**1.1.12 MD-REQ-025385/B-Bezel\_Beeps.St (TcSE ROIN-297423)****Message Type:** Status

This signal provides the status of Bezel Beeps settings (Enabled/ Disabled).

Logical Signal Name	Literals	Value	Description
Bezel_Beeps.St	Invalid	0x0	
	Enabled	0x1	
	Disabled	0x2	

**1.1.13 MD-REQ-025386/B-Bezel\_Beeps\_Supported.St (TcSE ROIN-297429)****Message Type:** Status

Signal from the Vehicle Settings Beep Server telling the Vehicle Settings Beep Client if Bezel Beeps are supported or not supported

Logical Signal Name	Literals	Value	Description
Bezel_Beeps_Supported.St	Invalid	0x0	
	Supported	0x1	
	Not Supported	0x2	

**1.1.14 MD-REQ-025381/B-TimeAdjust.Rq (TcSE ROIN-297370)****Message Type:** Request

This signal requests to change the setting for 12/24 hour mode.

Logical Signal Name	Literals	Value	Description
TimeAdjust.Rq	Inactive	0x0	
	12h_mode	0x1	
	24h_mode	0x2	

**1.1.15 MD-REQ-025462/B-VehTimeFormat.St (TcSE ROIN-297375)****Message Type:** Status

Signal by the Vehicle Settings Server to provide the status of the 12/24 hour time mode setting.

Logical Signal Name	Literals	Value	Description
VehTimeFormat.St	Invalid	0x0	
	12h_mode	0x1	
	24h_mode	0x2	

**1.1.16 MD-REQ-097285/C-ValetMode\_St****Message Type:** Status

Signal used to indicate the Valet Mode Status.



Logical Signal Name	Literals	Value	Description
ValetMode_St	Invalid / Null	0x0	
	OFF	0x1	
	ON	0x2	
	Not Used	0x3	

**1.1.17 MD-REQ-025380/B-Disp\_Temperature.Rq (TcSE ROIN-297369)****Message Type:** Request

This signal requests to change the temperature units displayed.

Logical Signal Name	Literals	Value	Description
DISP_Temperature.Rq	Celsius	0x0	
	Fahrenheit	0x1	
	Inactive	0x3	

**1.1.18 MD-REQ-025453/B-Disp\_Temperature.St (TcSE ROIN-297374)****Message Type:** Status

Signal from the Vehicle Settings Server stating what the setting is for temperature units.

Logical Signal Name	Literals	Value	Description
DISP_Temperature.St	Celsius	0x0	
	Fahrenheit	0x1	

**1.1.19 MD-REQ-025388/C-LightAmbColor\_No\_Rq (TcSE ROIN-297407)****Message Type:** Request

This signal requests selection of color for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq	Invalid / No Data Exits	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	



	Reserved	0x11 to 0xFF	
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**1.1.20 MD-REQ-025389/C-LightAmbIntsty\_No\_Rq (TcSE ROIN-297420)****Message Type:** Request

This signal requests selection of intensity for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Rq	0% Intensity / Ambient Lighting OFF	0x0	
	1% Intensity	0x1	
	2% Intensity	0x2	
	cont.		
	100% Intensity	0x64	
	Reserved	0xFF	

**1.1.21 MD-REQ-025456/D-LightAmbColor\_No\_Actl (TcSE ROIN-297421)****Message Type:** Status

This signal from Ext Vehicle Settings Function to the Vehicle Settings Client gives the status of the ambient lighting color.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl	OFF / Inactive / No Data Exists	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Cont	0x04 – 0xFF	separate document defines what the Color ID's are

**1.1.22 MD-REQ-025457/D-LightAmbIntsty\_No\_Actl (TcSE ROIN-297422)****Message Type:** Status

This signal from the Ext Vehicle Settings Function to the Vehicle Settings Client gives the status of Ambient Lighting Intensity

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Actl	0% Intensity / Ambient Lighting OFF	0x00	
	1% intensity	0x01	
	2% intensity	0x02	
	cont		
	100% intensity	0x64	
	Reserved	0x65 – 0xFF	

**1.1.23 MD-REQ-192193/C-LightAmbColor\_No\_Actl - Variant 2****Message Type:** Status



This signal gives status of ambient lighting color (variant 2) status.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Cont.	0x04 – 0xFF	Reference separate document with the ambient light Colors and Color ID's used

#### 1.1.24 MD-REQ-192194/C-LightAmbIntsty\_No\_Actl - Variant 2

**Message Type:** Status

This signal gives the status of Ambient Lighting Intensity.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Actl – Variant 2	0% Intensity / Ambient Lighting OFF	0x00	
	1% Intensity / Ambient Lighting ON	0x01	
	2% Intensity / Ambient Lighting ON	0x02	
	3% Intensity / Ambient Lighting ON	0x03	
	cont.		
	100% Intensity / Ambient Lighting ON	0x64	

#### 1.1.25 MD-REQ-192189/B-LightAmbColor\_No\_Rq - Variant 2

**Message Type:** Request

The Ambient Lighting Client uses this signal to request the color selection for ambient lighting from the Ambient Lighting Server.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	
	Reserved	0x11 to 0xFF	



**1.1.26 MD-REQ-192190/B-LightAmbIntsty\_No\_Rq - Variant 2****Message Type:** Request

This signal requests the selection of intensity for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Rq – Variant 2	Inactive / No Data Exits	0x00	
	0% Intensity / Ambient Lighting OFF	0x01	
	1% Intensity	0x02	
	2% Intensity	0x03	
	3% Intensity	0x04	
	cont.	...	
	100% Intensity	0x65	
	Ambient Lighting Turn ON	0x66	

**1.1.27 MD-REQ-025392/C-ChargePortLightRing\_St (TcSE ROIN-270412)**

If the CharePortLightRingClient supports both variants of the Charge Port Light Ring signals below then when selecting Charge Port Light Ring HMI the signal that will get updated will depend on what variant Charge Port Light Ring is configured for.

Variant 1 of ChargePortLightRing\_St:*CAN Signal Name: CenterStackRing\_D\_Actl*

Value	Equal
0x0	Null
0x1	Off
0x2	On
0x3	LimitedOn

Variant 2 of ChargePortLightRing\_St:*CAN Signal Name: ChrgStatDsply\_D\_Rq*

Value	Equal
0x0	Off
0x1	On (default)
0x2	NotUsed_1
0x3	NotUsed_2

**1.1.28 MD-REQ-023414/C-CntrStk\_D\_RqAssoc (TcSE ROIN-284870-1)****Message Type:** Request

Note: Request signal from the Keypad Client / Personality Client to the Keypad Server with the keycode operation requested to be performed.

Logical Signal Name	Literals	Value	Description
	CHECK_KEYCODE	0x0	
	ERASE_KEYCODE	0x1	



CntrStk_D_RqAssoc	KEY	0x2	
	NULL	0x3	
	RKE	0x4	
	SET_KEYCODE	0x5	
	Cancel	0x6	
	Not Used	0x7	

### 1.1.29 MD-REQ-023415/B-CntrStkKeycodeActl (TcSE ROIN-284871-1)

Message Type: Request

Note: Keycode signal from the Keypad Client / Personality Client to the Keypad Server / PersonalizationFunction Server to be used for verifying factory keycode or for changing current keycode.

Logical Signal Name	Literals	Value	Description
CntrStkKeycodeActl	Keycode	0x0000 – 0xFFFF	See table below for decoding

CntrStkKeycodeActl

Note:  
The Keycode entered from the center stack to the personalization.  
This is a bit encoded CAN signal.

001 = 1/2 button pressed  
010 = 3/4 button pressed  
011 = 5/6 button pressed  
100 = 7/8 button pressed  
101 = 9/0 button pressed

000, 110, 111 are Invalid entries.

CntrStkKeycodeActl

Note:  
Bit 15 is ignored  
Bits 14 - 12 : First button pressed  
Bits 11 - 9 : Second button pressed  
Bits 8 - 6 : Third button pressed  
Bits 5 - 3 : Fourth button pressed  
Bits 2 - 0 : Fifth button pressed  
Where, bit 0 is the right most bit of this CAN signal.

Example of decoding the Keycode from the CAN signal:

CAN Signal Value: 0x58D1

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
0	1	0	1	1	0	0	0

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	1	0	1	0	0	0	1

Bit 15 is ignored.  
Bits 14 – 12: (9/0) First Button Pressed  
Bits 11 - 9 : (7/8) Second button pressed  
Bits 8 - 6 : (5/6) Third button pressed  
Bits 5 - 3 : (3/4) Fourth button pressed  
Bits 2 - 0 : (1/0) Fifth button pressed

**1.1.30 MD-REQ-023425/B-AssocConfirm\_D\_Actl (TcSE ROIN-284863-1)**

Message Type: Status

Note: Keypad Server / PersonalizationFunction Server communicates the state of the requested keycode association

Logical Signal Name	Literals	Value	Description
AssocConfirm_D_Actl	None	0x0	
	DISASSOCIATE	0x1	
	DUPLICATE	0x2	
	ERASE	0x3	
	IN_PROGRESS	0x4	
	KEYCODE_ACCEPTED	0x5	
	KEYCODE_REJECTED	0x6	
	ASSOCIATE	0x7	

**1.1.31 MD-REQ-093985/B-ChargePortUnlock\_Rq**

Message Type: Request

This signal is requested by the Charge Port Unlock Client for the Charge Port Unlock Server to unlock the charge port connector.

Logical Signal Name	Literals	Value	Description
ChargePortUnlock_Rq	No_Request	0x0	
	Unlock Request	0x1	

**1.1.32 MD-REQ-132658/C-ChrgCrdLck\_D\_Stat**

Message Type: Response and Status

This signal reports the status of the Charge Port Unlock Server

Literals	Value	Description
Inactive / Retain	0x0	Retain treat same as Inactive. <a href="#">This supports requirement "IFS-MMCAN-REQ-015112-Invalid-NoDataExists", when in this state the charge port unlock client remembers the last state.</a>
Unlocked	0x1	
Locked	0x2	
UnlockInProgress	0x3	
Unlocked / LockInProgress	0x4	This will say when the Lock is in Progress but to be treated as Unlocked by the Charge Port Unlock Client
Locked / Unlock_Fail	0x5	Unlock_Fail is treated the same as status set to Locked for the Charge Port Unlock Client
Unlocked / Lock_Fail	0x6	Lock_Fail is treated the same as status set to Unlocked for the Charge Port Unlock Client
Locked / Faulty	0x7	Faulty is treated the same as status set to Locked for the Charge Port Unlock Client

**1.1.33 MD-REQ-338982/B-LongTermReset\_B\_RqMnu**

Message Type: Request

Note: Request signal from the Drive History Client to the Drive History Server to reset the long term drive history information

Logical Signal Name	Literals	Value	Description
LongTermReset_B_RqMnu	OFF	0x0	
	ON	0x1	

Note: init value in the CAN dB for this signal should be 0x0 OFF

**1.1.34 MD-REQ-341180/B-BattTracLoThres\_D\_Stat**

Message Type: Status

Note: Status signal from the Low Battery Alert Server with the status of the Low Battery Alert function

Logical Signal Name	Literals	Value	Description
BattTracLoThres_D_Stat	Null	0x0	
	20 mi / 32 km	0x1	Cluster speedometer major speed scale units MPH
	30 mi / 48 km	0x2	
	50 mi / 80 km	0x3	
	30 km / 18 mi	0x4	Cluster speedometer major speed scale units Km/h
	50 km / 31 mi	0x5	
	80 km / 50 mi	0x6	
	Not Used	0x7	

**1.1.35 MD-REQ-341183/B-BattTracLoThres\_D\_Rq**

Message Type: Request

Note: Request signal from the Low Battery Alert Client to the Low Battery Alert Server to set the feature

Logical Signal Name	Literals	Value	Description
BattTracLoThres_D_Rq	Null	0x0	
	20 mi / 32 km	0x1	Cluster speedometer major speed scale units MPH
	30 mi / 48 km	0x2	
	50 mi / 80 km	0x3	
	30 km / 18 mi	0x4	Cluster speedometer major speed scale units Km/h
	50 km / 31 mi	0x5	
	80 km / 50 mi	0x6	
	Not Used	0x7	

**1.1.36 MD-REQ-341190/A-SpeedoMajorUnit\_D\_Confg**

Message Type: Status



Note: Status signal from the Low Battery Alert Client with the status of the speedometer speed scale units

Logical Signal Name	Literals	Value	Description
SpeedoMajorUnit_D_Confg	Null	0x0	
	MPH	0x1	
	KPH	0x2	
	Not Used	0x3	

#### 1.1.37 MD-REQ-339666/A-PrplSnd\_D\_Rq

Message Type: Request

Note: Request signal from the Propulsion Sound Client to the Propulsion Sound Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
PrplSnd_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

#### 1.1.38 MD-REQ-339747/B-PrplSnd\_D\_Stat

Message Type: Status

Note: Status signal from the Propulsion Sound Server with the status of Propulsion Sound feature

Logical Signal Name	Literals	Value	Description
PrplSnd_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	
	<a href="#">Faulty</a>	<a href="#">0x3</a>	

#### 1.1.39 MD-REQ-339730/A-LghtAmbDrvMde\_D\_Rq

Message Type: Request

Note: Request signal from the Ambient Lighting Drive Mode Client to the Ambient Lighting Drive Mode Server to select if Ambient Lighting is tied to Drive Mode or not.

Logical Signal Name	Literals	Value	Description
LghtAmbDrvMde_D_Rq	Null	0x0	
	Manual	0x1	
	Automatic	0x2	



**1.1.40 MD-REQ-340538/A-LghtAmbDrvMde\_B\_Stat**

Message Type: Status

Note: Status signal from the Ambient Lighting Drive Mode Server with the status of whether Ambient Lighting is tied to Drive Mode or not.

Logical Signal Name	Literals	Value	Description
LghtAmbDrvMde_B_Stat	Manual	0x0	
	Automatic	0x1	

**1.1.41 MD-REQ-347056/A-Ecoldl\_D\_Rq**

Message Type: Request

Note: Request signal from the Eco-Idle Client to the Eco-Idle Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
Ecoldl_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

**1.1.42 MD-REQ-347057/A-Ecoldl\_D\_Stat**

Message Type: Status

Note: Status signal from the Eco-Idle Server with the status of Eco-Idle feature

Logical Signal Name	Literals	Value	Description
Ecoldl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

**1.1.43 MD-REQ-365621/A-EngExhMdeHrEnbl\_D\_Rq**

Message Type: Request

Request signal from Quiet Time Client to the Quite Time Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnbl_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	
	Menu Not Configured	0x3	

**1.1.44 MD-REQ-365620/A-EngExhMdeHrEnbl\_D\_Stat**

Message Type: Status

Status signal from the Quiet Time Server with the status of the Quiet Time setting

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnbl_D_Stat	Null	0x0	HMI setting treated as unknown (ex HMI greyed out, setting not shown as selected...)
	Disabled	0x1	
	Enabled	0x2	

**1.1.45 MD-REQ-365623/A-EngExhMdeHrStrt\_D\_Rq**

Message Type: Request

Request signal from Quiet Time Client to the Quiet Time Server to request the Quiet Time start hour

Logical Signal Name	Literals	Value	Description
EngExhMdeHrStrt_D_Rq	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	...	...	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.  
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

**1.1.46 MD-REQ-365626/A-EngExhMdeHrStrt\_D\_Stat**

Message Type: Status

Status signal from Quiet Time Server with the value the Quiet Time Start Hour is set to

Logical Signal Name	Literals	Value	Description
EngExhMdeHrStrt_D_Stat	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	...	...	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.  
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

**1.1.47 MD-REQ-365627/A-EngExhMdeHrEnd\_D\_Rq**

Message Type: Request

Request signal from Quiet Time Client to the Quiet Time Server to request the Quiet Time end hour

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnd_D_Rq	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	...	...	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.  
Reference function "[VS-FUN-REQ-025239-Set 12/24 hour mode setting](#)" in the Vehicle Setting SPSS for details.

**1.1.48 MD-REQ-365628/A-EngExhMdeHrEnd\_D\_Stat**

Message Type: Status

Status signal from Quiet Time Server with the value the Quiet Time End Hour is set to

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnd_D_Stat	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	...	...	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.  
Reference function "[VS-FUN-REQ-025239-Set 12/24 hour mode setting](#)" in the Vehicle Setting SPSS for details.

**1.1.49 MD-REQ-375908/A-TurnAsstSwch\_D\_Stat**

Message Type: Status

This signal is used by the Trail Turn Assist Client to broadcast the HMI Trail Turn Assist setting button status.

Logical Signal Name	Literals	Value	Description
TurnAsstSwch_D_Stat	Not Pressed	0x0	
	Pressed	0x1	
	Not Used	0x2	
	Faulty	0x3	

**1.1.50 MD-REQ-375918/A-OrtaSwchLamp\_B\_Rq**

Message Type: Request

This signal is used by the Trail Turn Assist Server to broadcast the Trail Turn Assist setting button status it requests to be displayed on the Trail Turn Assist Client HMI.

Logical Signal Name	Literals	Value	Description
OrtaSwchLamp_B_Rq	OFF / Disabled	0x0	Show the Trail Turn Assist setting HMI as OFF / Disabled
	ON / Enabled	0x1	Show the Trail Turn Assist setting HMI as ON / Enabled

**1.1.51 MD-REQ-354255/A-ClrExitAsstEnbl\_D\_RqMnu**

Message Type: Request

Request signal from the Clear Exit Assist Settings Client to the Clear Exit Assist Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
ClrExitAsstEnbl_D_RqMnu	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

**1.1.52 MD-REQ-354256/A-ClrExitAsst\_D\_Stat**

Message Type: Status

Status signal from the Clear Exit Assist Settings Server with the status of Clear Exit Assist feature

Logical Signal Name	Literals	Value	Description
ClrExitAsst_D_Stat	Null	0x0	HMI setting treated as unknown (ex HMI greyed out, setting not shown as selected...)
	Disabled	0x1	
	Enabled	0x2	

**1.1.53 MD-REQ-359587/A-ClrExitAsstMsgTxt2\_D\_Rq**

Message Type: Request

Request signal from the Clear Exit Assist Warning Server to the Clear Exit Assist Warning Client to display the warning HMI

Logical Signal Name	Literals	Value	Description
ClrExitAsstMsgTxt2_D_Rq	No Info / No Warning	0x0	
	Rear Left	0x1	
	Rear Right	0x2	
	Front Left	0x3	
	Front Right	0x4	



	Rear Left and Rear Right	0x5	
	Front Left and Front Right	0x6	
	Rear Left and Front Right	0x7	
	Front Left and Rear Right	0x8	
	Reserved	...	
	Reserved	0xF	

**1.1.54 MD-REQ-359588/A-ClrExitAsstActv\_B\_Rq**

Message Type: Request

Request signal from the Clear Exit Assist Warning Server to the Clear Exit Assist Warning Client / Infotainment System Master to remain powered up to display the clear exit assist warning HMI

Logical Signal Name	Literals	Value	Description
ClrExitAsstActv_B_Rq	False	0x0	
	True	0x1	

**1.1.55 MD-REQ-383981/A-TjaLaneBiasEnbl\_D\_RqMnu**

Message Type: Request

Request signal from the Lane Biasing Setting Client to the Lane Biasing Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
TjaLaneBiasEnbl_D_RqMnu	Null	0x0	
	Disable	0x1	
	Enable	0x2	

**1.1.56 MD-REQ-383982/A-TjaLaneBiasEnbl\_D\_Stat**

Message Type: Status

Status signal from the Lane Biasing Settings Server with the status of Lane Biasing feature

Logical Signal Name	Literals	Value	Description
TjaLaneBiasEnbl_D_Stat	Inactive	0x0	
	Disabled	0x1	
	Enabled	0x2	

**1.1.57 MD-REQ-399907/A-IaccCrvVCtlEnbl\_D\_Rq**

Message Type: Request

Request signal from the Curve Speed Control Setting Client to the Curve Speed Control Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
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laccCrwCtlEnbl_D_Rq	Null	0x0	
	Disable	0x1	
	Enable	0x2	

**1.1.58 MD-REQ-399906/A-laccCrvVCtlEnbl\_D\_Stat**

Message Type: Status

Status signal from the Curve Speed Control Settings Server with the status of Curve Speed Control feature

Logical Signal Name	Literals	Value	Description
laccCrwCtlEnbl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

**1.2 VS-CLD-REQ-133255/A-Vehicle Language Setting Client****1.3 VS-CLD-REQ-025444/A-Vehicle Language Settings Server (TcSE ROIN-150813-1)**

Responsibility : The vehicle language settings server provides status of vehicle language settings status to the vehicle settings client.

**1.4 VS-CLD-REQ-025445/B-Ambient Lighting / Vehicle Settings Client (TcSE ROIN-159910-1)**

Responsibility : The Ambient Lighting Settings Client makes requests to the external vehicle settings function to change Ambient lighting color or intensity as requested by the user.

**1.5 VS-CLD-REQ-133269/B-Ambient Lighting / Vehicle Setting Server****1.6 VS-CLD-REQ-025446/A-Charge Port Light Ring Client (TcSE ROIN-270413)**

The charge port light ring client is a vehicle settings display. It shows the current light ring style and also allows a user to select a different style. The charge port light ring client transmits the current style setting to the charge port light ring server.

**1.7 VS-CLD-REQ-093987/A-Charge Port Unlock Client**

The charge port unlock client is a vehicle settings display. It shows the current lock status and also allows a user to select unlock the cord. The charge port unlock client transmits the unlock command to the charge port unlock server.

**1.8 VS-CLD-REQ-133260/A-Charge Port Unlock Server****1.9 VS-CLD-REQ-133257/A-Vehicle Settings Temperature Units Client****1.10 VS-CLD-REQ-133258/A-Vehicle Settings Temperature Units Server****1.11 VS-CLD-REQ-133261/A-Vehicle Settings 12/24 Hour Mode Client****1.12 VS-CLD-REQ-133259/A-Vehicle Settings 12/24 Hour Mode Server****1.13 VS-CLD-REQ-133262/A-Vehicle Settings Distance Units Client****1.14 VS-CLD-REQ-133263/A-Vehicle Settings Distance Units Server****1.15 VS-CLD-REQ-025448/D-Keypad Server / External Personalization Function (TcSE ROIN-293526-1)****1.16 VS-CLD-REQ-025447/D-Keypad Client / Personalization Client (TcSE ROIN-293524-1)****1.17 VS-CLD-REQ-025497/A-Vehicle Settings Beep Server (TcSE ROIN-141569-1)**

Responsibility : The vehicle settings beep server provides status of the touch panel beeps setting.

**1.18 VS-CLD-REQ-133637/B-Vehicle Settings Beep Client****1.19 VS-CLD-REQ-025442/B-Vehicle Settings Client (TcSE ROIN-141546-2)**

Responsibility: The Vehicle Settings Client controls all vehicle settings change requests from the user, to various servers depending upon the functionality of the setting.

**1.20 VS-CLD-REQ-025443/B-Vehicle Settings Server (TcSE ROIN-141547-2)**

Responsibility : The vehicle settings server provides status of vehicle settings status to the vehicle settings client.

**1.21 VS-CLD-REQ-347054/A-Eco-Idle Client**

The Eco-Idle Client interfaces with the user via the HMI and is responsible for sending the Eco-Idle Setting request to the Eco-Idle Server.

**1.22 VS-CLD-REQ-347055/A-Eco-Idle Server**

The Eco-Idle Server is responsible for the control of the Eco-Idle function and interfaces with the Eco-Idle Client.

**1.23 VS-CLD-REQ-340540/A-Ambient Lighting Drive Mode Client**

The Ambient Lighting Drive Mode Client interfaces with the user via HMI and is responsible for sending the Ambient Lighting Drive Mode setting request to the Ambient Lighting Drive Mode Server.

**1.24 VS-CLD-REQ-340542/A-Ambient Lighting Drive Mode Server**

The Ambient Lighting Drive Mode Server is responsible for the ambient lighting drive mode function and interfaces with the Ambient Lighting Drive Mode Client.

**1.25 VS-CLD-REQ-339751/A-Propulsion Sound Client**

The Propulsion Sound Client interfaces with the user via HMI and is responsible for sending the propulsion sound setting request to the propulsion sound server.

**1.26 VS-CLD-REQ-339752/B-Propulsion Sound Server**

The Propulsion Sound Server is responsible for control of the propulsion sound function and interfaces with the Propulsion Sound Client.

**1.27 VS-CLD-REQ-341184/A-Low Battery Alert Client**

The Low Battery Alert Client interfaces with the user via HMI and is responsible for sending the Low Battery setting request to the Low Battery Server.

**1.28 VS-CLD-REQ-341185/A-Low Battery Alert Server**

The Low Battery Alert Server is responsible for control of the Low Battery Alert function and interfaces with the Low Battery Alert Server

**1.29 VS-CLD-REQ-339750/A-Drive History Client**

The Drive History Client is responsible for requesting the Long Term Drive History Reset to the Drive History Server



### 1.30 VS-CLD-REQ-342947/A-Drive History Server

#### 1.31 VS-CLD-REQ-362990/A-Quiet Time Client

The Quiet Time Client interfaces with the user via the HMI and is responsible for interfacing with the Quiet Time Server. This includes sending the quiet time requests and receiving the quiet time responses from the Quiet Time Server. See SPSS requirements for details

#### 1.32 VS-CLD-REQ-362991/A-Quiet Time Server

The Quiet Time Server is responsible for the control of the Quiet Time function and interfaces with the Quiet Time Client.

#### 1.33 VS-CLD-REQ-375893/A-Trail Turn Assist Client

The Trail Turn Assist Client interfaces with the user via the HMI and is responsible for interfacing with the Trail Turn Assist Server. This includes sending the HMI settings requests and receiving the responses from the Trail Turn Assist Server. See SPSS requirements for details.

#### 1.34 VS-CLD-REQ-375896/A-Trail Turn Assist Server

The Trail Turn Assist Server is responsible for the control of the Trail Turn Assist feature and interfaces with the Trail Turn Assist Client.

#### 1.35 VS-CLD-REQ-354250/A-Clear Exit Assist Settings Client

The Clear Exit Assist Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Clear Exit Assist Settings Server. The Clear Exit Assist Settings Client is responsible for sending the Clear Exit Assist setting request signal to the Clear Exit Assist Settings Server.

#### 1.36 VS-CLD-REQ-354251/A-Clear Exit Assist Settings Server

The Clear Exit Assist Settings Server is responsible for the control of the Clear Exit Assist settings function and interfaces with the Clear Exit Assist Settings Client.

#### 1.37 VS-CLD-REQ-359585/A-Clear Exit Assist Warning Client

The Clear Exit Assist Warning Client interfaces with the user via the HMI and interfaces with the Clear Exit Assist Warning Server to determine if HMI updates are needed.

#### 1.38 VS-CLD-REQ-359586/A-Clear Exit Assist Warning Server

The Clear Exit Assist Warning Server is responsible for the control to the Clear Exit Assist function and interfaces with the Clear Exit Assist Warning Client.

#### 1.39 VS-CLD-REQ-383974/A-Lane Biasing Settings Client

The Lane Biasing Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Lane Biasing Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Lane Biasing Settings Server.



#### 1.40 VS-CLD-REQ-383975/A-Lane Biasing Settings Server

The Lane Biasing Assist Settings Server is responsible for the control of the Lane Biasing settings function and interfaces with the Lane Biasing Settings Client.

#### 1.41 VS-CLD-REQ-392418/A-Curve Speed Control Settings Client

The Curve Speed Control Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Curve Speed Control Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Curve Speed Control Settings Server.

#### 1.42 VS-CLD-REQ-392419/A-Curve Speed Control Settings Server

The Curve Speed Control Settings Server is responsible for the control of the Curve Speed Control function and interfaces with the Curve Speed Control Settings Client.



## 2 General Requirements

### 2.1 VS-SR-REQ-134608/B-Cluster Vehicle Settings when Ignition is not in Run

When HMIAudioMode (ie HMI\_HMIMode\_St) = ON then the Cluster shall be able to support Vehicle Settings functions (ex Language, Temp units, 12/24 hour mode, Distance units...) regardless if the Cluster HMI is active or not.

Ex. Change Language

- Pre-Condition:
  - Ignition\_Status = OFF
  - HMIAudioMode = ON (ie infotainment system is ON)
  - Cluster HMI is OFF
  - Language equals English
- Event:
  - The Centerstack Vehicle Settings Client sends a request message to the Cluster Vehicle Settings Server to change the language from English to Spanish
- Post-Condition:
  - The Cluster updates its Language Status message to Spanish.
  - Next time the Cluster ignition\_status goes to Run the Cluster HMI would be in Spanish and would be in harmony with the Centerstack language

### 2.2 IFS-MMCAN-FUR-REQ-015114/D-Sending of Request and Response (TcSE ROIN-66252-1)

Unless noted otherwise request and response signals shall only be sent once and when they have been sent it is important that they are set to inactive/null again. The signals should be set back to inactive/null as soon as FNOS has reported that the signal has been transmitted unless noted otherwise.

- Example of an exception: an event-periodic signal going across network gateway and encoding value may need to be held until other bus wakes up. Reference the feature specs for exceptions.

For event based signals this has to be done in order to keep FNOS from accidentally sending out the signal twice when another signal in the same frame is to be transmitted, either by a change of another signal or by a periodic transmission.





### 3 Functional Definition

#### 3.1 VS-FUN-REQ-025206/C-Set Language (TcSE ROIN-292323-1)

##### 3.1.1 Interface Requirement - Language

###### 3.1.1.1 MD-REQ-025377/O-Disp\_LangSel.Rq (TcSE ROIN-297357)

Message Type: Request

This Signal requests the change of the Language displayed.

Name	Value	Description
Disp_LangSel.Rq	-	
	int <i>Language</i> 0x00 Invalid 0x01 Unknown 0x02 UK English 0x03 NA English 0x04 German 0x05 Italian 0x06 EU French 0x07 Cana French 0x08 EU Spanish 0x09 Mex Spanish 0x0A Turkish 0x0B Russian 0x0C Dutch 0x0D Flemish 0x0E Polish 0x0F Czech 0x10 Greek 0x11 Hungarian 0x12 Swedish 0x13 Danish 0x14 Norwegian 0x15 Finish 0x16 EU Portuguese 0x17 Braz Portuguese 0x18 Japanese 0x19 AU_English 0x1A Korean 0x1B Mandarin Chinese 0x1C Taiwanese 0x1D Arabic 0x1E Slovak 0x1F Thai 0x20 Indian English <a href="#">0x21 Ukrainian</a>	Request from Vehicle Settings Client to update Language displayed.

**Note:**

For HS3 Language Request signals 0x191 Disp\_LangSel.Rq (ex. APIM/CHR) and 0x193 McLangSel.Rq (ex. Cluster) they are 5 bit signals and maxed out with 0x1F Thai. The new Language Request signals created Disp\_LangSel2.Rq and McLangSel2.Rq are bigger in size (7 bits) to allow for more encodings but still include all the encodings the 5 bit signals had.

If the transmitter of the Infotainment language request signal supports one common CAN dB then infotainment language request client for a language request will send both language request signals 0x191 Disp\_LangSel.Rq 5 bit signal and Disp\_LangSel2.Rq 7 bit signal set to the language requested.

- If a language request is needed for an encoding that is supported by Disp\_LangSel2.Rq but not Disp\_LangSel.Rq (ex Indian English) then only Disp\_LangSel2.Rq would request the language.

If the transmitter of the infotainment language request signals has a CAN dB that only supports one Language request signal then only that language request signal would be supported (either support just the 5 bit Disp\_LangSel.Rq or 7 bit Disp\_LangSel2.Rq signal).

The receiver of the infotainment language request signal (ex Cluster) will have its CAN dB set-up so only one language request signal is received in its CAN dB for a particular program (will only receive the 5 bit Disp\_LangSel.Rq signal or 7 bit Disp\_LangSel2.Rq signal).

- Exception: If the Ford D&R for the receiver of the infotainment language request signal has explicitly asked for a CAN dB with both infotainment language request signals to support common software across multiple programs (0x191 Disp\_LangSel.Rq 5 bit signal and Disp\_LangSel2.Rq 7 bit signal) then the receiver of those signals will need to have a configuration bit such that only one of the signals can be used at a time (ex. program X only uses Disp\_LangSel2.Rq while program Y only uses Disp\_LangSel.Rq).

The Cluster transmitter of the language request signal will support only one language request signal in its CAN dB for a particular program (will only send the 5 bit McLangSel.Rq or 7 bit McLangSel2.Rq signal). The other language signal not used would be set to 0x0 Inactive/Invalid.

- Exception: If the Ford D&R for the transmitter of the Cluster language request signals (McLangSel.Rq 5 bit signal and McLangSel2.Rq 7 bit signal) has explicitly asked for a CAN dB with both cluster language request signals to support common software across multiple programs then the Cluster will need to have a configuration bit such that only one of the signals can be used at a time.
- If in an error condition the receiving module gets both language request signals from the same module at the same time then the last language request signal received set to a language would be supported. The Cluster Ford D&R or supplier needs to bring to the CAN dB teams attention if their module is receiving both language request signals if they are only supposed to be receiving one language request signal so this can be corrected in their CAN dB.
- The Cluster is only supposed to send one language request at a time and that is what receiver would expect. If the receiver of 0x193 McLangSel.Rq or McLangSel2.Rq gets both signal set to a language at the same time then bring the issue to the Cluster D&R's attention so this could be corrected.

Reference the CAN dB for the latest and in case any conflict in signal names the CAN dB takes precedent.

### 3.1.1.2 MD-REQ-025452/B-LanguageUpdate.Rsp (TcSE ROIN-297376)

**Message Type:** Response

Response signal from Vehicle settings Language server to the Vehicle settings Client in response to the Disp\_LangSel.Rq method. Signal informs the Client if the Language that was requested to change is supported by that server or not. This signal allows the Client to take an action if the language is not supported by the server.

Logical Signal Name	Literals	Value	Description
LanguageUpdate.Rsp	Inactive	0x0	
	Language_Updated	0x1	
	Language_Not_Supported	0x2	

**3.1.1.3 MD-REQ-025450/N-Disp\_LangSel.St (TcSE ROIN-297360)**

Message Type: Status

This Signal gives status of the Language displayed.

Name	Value	Description
Disp_LangSel.St	-	
	int <i>Language</i> 0x00 Invalid 0x01 Unknown 0x02 UK English 0x03 NA English 0x04 German 0x05 Italian 0x06 EU French 0x07 Cana French 0x08 EU Spanish 0x09 Mex Spanish 0x0A Turkish 0x0B Russian 0x0C Dutch 0x0D Flemish 0x0E Polish 0x0F Czech 0x10 Greek 0x11 Hungarian 0x12 Swedish 0x13 Danish 0x14 Norwegian 0x15 Finish 0x16 EU Portuguese 0x17 Braz Portuguese 0x18 Japanese 0x19 AU_English 0x1A Korean 0x1B Mandarin Chinese 0x1C Taiwanese 0x1D Arabic 0x1E Slovak 0x1F Thai 0x20 Indian English <a href="#">0x21 Ukrainian</a>	Status update from the Vehicle Language settings server stating what the current language setting is for the Vehicle Language Server which sends out the status message.

## Note:

The Infotainment Language status HS3 signal 0x229 Disp\_LangSel.St (ex APIM, CHR, MFD...) is a 5 bit signal and maxed out with 0x1F Thai. The new Infotainment Language Status HS3 signal is Disp\_LangSel2.St and is bigger in size (7 bits) to allow for more encodings but still include all the encodings the 5 bit signals had.



If the transmitter of the Infotainment Language status signal supports one common CAN dB then the transmitter of the infotainment language status signal will have to support sending both language status signals Disp\_LangSel.St 5 bit signal and Disp\_LangSel2.St 7 bit signal with both status signals set to the active language.

- If Disp\_LangSel2.St is set to a language that Disp\_LangSel.St does not have an encoding for then Disp\_LangSel.St would be set to 0x0 Inactive (ex. if Indian English was the active language).

If the transmitter of the Infotainment Language status signal has a CAN dB that only supports one language status signal then only that language status signal would be supported (either support just the 5 bit Disp\_LangSel.St or 7 bit Disp\_LangSel2.St).

The receiver of the infotainment language status signals (Disp\_LangSel.St 5 bit signal and Disp\_LangSel2.St 7 bit signal) should only receive one of the language status signals in their CAN dB.

- If the Ford D&R or supplier of a module receiving the infotainment language status message notices that both infotainment language status signals Disp\_LangSel.St 5 bit signal and Disp\_LangSel2.St 7 bit signal in their CAN dB bring to Ford's attention as the CAN dB would need to be corrected.
  - Exception: If the Ford D&R for the receiver of the infotainment language signal has explicitly asked for a CAN dB with both infotainment language signals to support common software across multiple programs (Disp\_LangSel.St 5 bit signal and Disp\_LangSel2.St 7 bit signal) then the receiver of those signals will need to have a configuration bit such that only one of the signals is can be used at a time (ex. program X only uses Disp\_LangSel2.st and program Y only uses Disp\_LangSel.St).

The Cluster language status HS3 signal 0x2FD Mc\_VehLangUsrSel.St is a 6 bit signal and is not currently maxed out so there is only one Cluster language status signal at the time this was written.

As a general practice if the receiving module just needs to receive one language status signal in a vehicle to know what language to be used then the Cluster Mc\_VehLangUsrSel.St signal should be used.

Reference the CAN dB for the latest and in case any conflict in signal names the CAN dB takes precedent.

### 3.1.2 Use Cases

#### 3.1.2.1 VS-UC-REQ-025207/B-Set Language (TcSE ROIN-290599)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	<p>Infotainment System is On.</p> <p><del>Language Setting is not currently set to {Language X}.</del></p> <p><u>Vehicle Setting Client A (ex Cluster display) can support Language Y.</u></p> <p><u>Vehicle Setting Client B (ex Centerstack display) can support Language Y.</u></p> <p><u>Language X is active on both Vehicle Setting Client A and Vehicle Setting Client B displays.</u></p>
<b>Scenario Description</b>	<p><del>User selects {Language X} via the HMI.</del></p> <p><u>User selects {Language Y} via the Vehicle Setting Client A HMI</u></p> <ul style="list-style-type: none"><li>• <u>the Vehicle Settings Client A requests Language Y from the Vehicle Language Server B (ex. Centerstack display)</u></li></ul>
<b>Post-conditions</b>	<p><del>HMI is updated to {Language X}.</del></p> <p><u>Vehicle Setting Client A {updates display A HMI to Language Y}</u></p> <p><u>Vehicle Setting Client B {updates display B HMI to Language Y}</u></p>



<b>List of Exception Use Cases</b>	E1- VS-GUC-290600-Selected Language not available on both Displays
<b>Interfaces</b>	G-HMI; SWC; CBI

### 3.1.2.2 VS-UC-REQ-025208/B-Selected Language not available on both Displays (TcSE ROIN-290600)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	<p>Infotainment System is On.</p> <p><u>Language Setting is not currently set to {Language X}</u></p> <p><u>Vehicle Setting Client A (ex Cluster display) can NOT support Language Y.</u></p> <p><u>Vehicle Setting Client B (ex Centerstack display) can support Language Y.</u></p> <p><u>Language X is active on both Vehicle Setting Client A and Vehicle Setting Client B displays.</u></p>
<b>Scenario Description</b>	<p><u>The selected language is not available on the other display unit.</u></p> <p><u>The selected language is not updated on the other display unit.</u></p> <p><u>The selected language is {updated on display where change was requested} via HMI.</u></p> <p><u>The HMI displays {other display not Supported Message}</u></p> <p><u>User selects {Language Y} via the Vehicle Setting Client B HMI</u></p> <ul style="list-style-type: none"> <li><u>the Vehicle Settings Client B requests Language Y from the Vehicle Language Server A (ex. Cluster display)</u></li> </ul>
<b>Post-conditions</b>	<p><u>HMI does not reflect user Selected Language not available on both displays</u></p> <p><u>Vehicle Setting Client B {updates display B to Language Y}</u></p> <p><u>Vehicle Setting Client A does not update Display A to Language Y and remains at Language X.</u></p>
<b>Comments</b>	<u>Note: just used the Cluster and Centerstack as examples above. The pre-conditions could have been reversed for who was Vehicle Setting Client A and Vehicle Setting B. Also this is not limited to only those modules used as examples.</u>
<b>Interfaces</b>	G-HMI

### 3.1.3 Functional Requirements

#### 3.1.3.1 VS-SR-REQ-025209/B-Language Truth Table (TcSE ROIN-141542-3)

Table describes the output response of the HMI based upon user input to change language setting at the Vehicle Settings Client 1 or Vehicle Settings Client 2, and availability of language in each display.

Language Update Request Made By	<u>VS-Client 1-Vehicle Settings Language Server 1</u> LanguageUpdate.Rsp	<u>VS-Client 2-Vehicle Settings Language Server 2</u> LanguageUpdate.Rsp	HMI Update
VS Client 1	Language_Updated*	Language_Updated	Languages Updated <u>on both VS Client 1 and VS Client 2 HMI</u>
VS Client 2	Language_Updated	Language_Updated*	Languages Updated <u>on both VS Client 1 and VS Client 2 HMI</u>



VS Client 1	Language_Updated*	Language_Not_Supported	VS Client 1 <a href="#">HMI</a> Updated, <a href="#">HMI</a> Message on VS Client 1 that VS Client 2 not supported.
VS Client 2	Language_Not_Supported	Language_Updated*	VS Client 2 <a href="#">HMI</a> Updated, <a href="#">HMI</a> Message on VS Client 2 that VS Client 1 not supported.
No active Request	Inactive	Inactive	None

\* Note: this might be an internal logical signal to a module instead of an actual network signal

### 3.1.3.2 VS-SR-REQ-025210/A-Language Status Update Timing (TcSE ROIN-141543-3)

The Vehicle Language settings servers shall respond to a Disp\_LangSel.Rq via a LanguageUpdate.Rsp signal within T\_Language\_Response of receiving the request, and update the Disp\_LangSel.St signal with the status of the server's language.

### 3.1.3.3 VS-TMR-REQ-025211/B-T\_Language\_Response (TcSE ROIN-146553-2)

Name	Description	Units	Range	Resolution	Default
T_Language_Response	Maximum time allowed between sending a Disp_LangSel.Rq language change message, and receiving a response message from the display modules.  Use default value	msec	0-1000	10	250

### 3.1.3.4 VS-SR-REQ-135143/B-Language following a B+ reset to Language Servers

The Cluster shall store the current language such that upon a loss of B+ to the Cluster the Cluster shall remember the current language. Upon B+ re-applied to the Cluster the Cluster shall use the language that was used before loss of B+. The Cluster shall update the language status signal with the correct language within 500 msec of network bus wake-up.

Upon a loss of B+ to Non-Cluster Vehicle Language Servers (ex APIM, MFD, CHR...) when B+ is re-applied to the Non-Cluster Vehicle Language Servers they shall use the language in the Cluster language status signal at start-up. After the Non-Cluster Vehicle Language Servers get the current language to use the other language requirements apply such that a language request is needed to change languages.

Note: Crank events are normal vehicle operations and vehicle language shall not be lost by the language servers for crank events. Worst case cold crank events are defined in the EMC specification and in the Stations Management SPSS.

Ex. The user disconnects the battery to the vehicle and later reconnects the battery

- Pre-condition:
  1. Language X is active in the Cluster and Centerstack Display module (ex. SYNC, MFD...)
- Event:
  1. B+ is removed from the vehicle (disconnect battery from the vehicle)
  2. After 30 minutes the battery is re-connected to the vehicle (could be any time but 30 min used for this example).
- Post-condition:
  1. The network bus wakes up when B+ is re-applied
  2. The Cluster may initially set the language status to Inactive/Invalid (usually the initialization value) until the Cluster language status message is updated with Language X. The Cluster has to publish the language in the status message within 500 msec of network bus wake-up
  3. Then Non-Cluster Vehicle Language Servers (ex APIM, MFD, CHR...) update their language to the Language X in the Cluster Language Status message.





### 3.1.3.5 VS-SR-REQ-193890/B-Enhanced Memory - Language for Active Personality Profile

All Vehicle Language Servers that support enhanced memory shall store the language for each personality profile (ex Vehicle, Per1, Per2, Per3, Per4) between power mode changes, bus asleep / awake and between B+ resets.

The Cluster and Non-Cluster Vehicle Language Servers (ex APIM, MFD, CHR...) do not normally listen to each other's language status information to update language unless the Client request a language update (exceptions for things like B+ resets). For enhanced memory though when the active personality profile changes (ex Pers\_1 to Pers\_3) then the Non-Cluster Vehicle Language Servers (ex APIM, MFD, CHR...) shall monitor the Cluster Language Status message after the active personality change and update the language to what is in the Cluster status message for the new personality profile.

- The Non-Cluster Vehicle Language Servers shall wait 1.5 second (hysteresis protection) from the time the Personality Profile changes until the time they update to the language indicated in the Cluster status message.
- Exception 1: If the Language indicated in the Cluster language status message the Non-Cluster Language Server does not support then the Language Server shall go to the stored language for that active personality profile and ignore the Cluster language status message.
- Exception 2: If for the new personality profile the stored language is one the Non-Cluster Vehicle Language Client previously requested a language that the Cluster responded it did not support then the Non-Cluster Vehicle Language Server shall go to the stored language for the new personality profile and ignore the Cluster language status message.

#### Network bus start-up:

At network bus start-up the Active Personality may be different than the last active personality. Modules initializing from network bus start-up shall look at the Active Personality signal at start-up so they can load the right language without adding delays to the start-up.

From a network bus asleep state the Non-Cluster Vehicle Language Servers shall use what language is stored for the personality profile and shall not use the Cluster language status message ([exception B+ resets](#)).

### 3.1.4 Sequence Diagrams

#### 3.1.4.1 VS-SD-REQ-025212/A-Set Language (TcSE ROIN-118736-4)

##### Linked Elements

VS-UC-REQ-025370/A-Set Language to English (TcSE ROIN-121358-3)

##### Scenarios

###### Normal Usage

The user selects <Language units change> via the HMI.

##### Constraints

###### Pre-condition

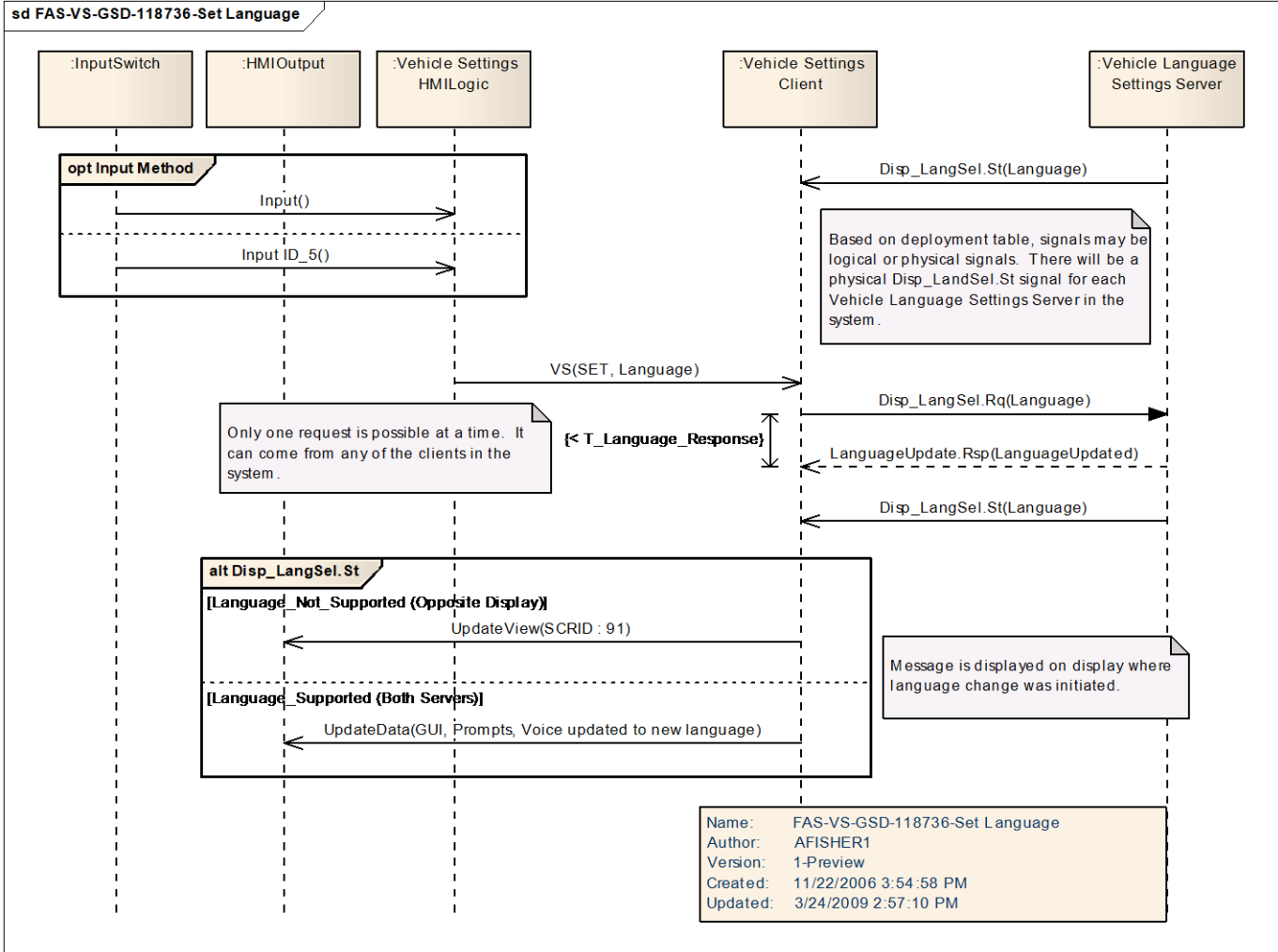
Center Stack Display is On, Settings units menu is active.

###### Post-condition

{Language units are updated to newly selected setting} via the HMI.



## Sequence Diagram





### 3.2 VS-FUN-REQ-025213/C-Set Distance Units (TcSE ROIN-292327-1)

Note: The set operation for Imperial or Metric in this function will be superseded by the Settings in the Centerstack SPSS Measure Unit function (VS-FUN-REQ234037-Measure Units) when DI settings move from the Cluster to Centerstack HMI.

#### 3.2.1 Interface Requirements - Distance

##### 3.2.1.1 MD-REQ-025516/C-DISP\_Miles\_Kilometers\_Rq (TcSE ROIN-273811)

Message Type: Request

This method is used to request a status change of Distance Unit.

Name	Literals	Value	Description
Mode	-	-	
	Metric	0x0	The parameter "Metric" is used to request the distance unit kilometers.
	Imperial	0x1	The parameter "Imperial" is used to request the distance unit miles.
	Inactive	0x3	

##### 3.2.1.2 MD-REQ-243934/B-Disp\_Miles\_Kilometers.St

Message Type: Status

Signal from the Vehicle Settings Server stating what the setting is for Distance units.

Logical Signal Name	Literals	Value	Description
Disp_Miles_Kilometers.St	Metric (kilometers)	0x0	
	Imperial (miles)	0x1	

#### 3.2.2 Use Cases

##### 3.2.2.1 VS-UC-REQ-025214/A-Set Distance Units (TcSE ROIN-290601)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On. Distance Setting is set to {Unit X}
<b>Scenario Description</b>	User selects {Unit Y} via the HMI
<b>Post-conditions</b>	HMI is updated to {Unit Y}
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI SWC CBI



### 3.2.3 Functional Requirements

#### 3.2.3.1 VS-SR-REQ-025215/A-Change Distance Units Status update timing (TcSE ROIN-149492-1)

The vehicle settings server shall respond to a Disp\_Miles\_Kilometers.Rq via the Disp\_Miles\_Kilometers.St signal within T\_Dist\_Response of receiving the request.

#### 3.2.3.2 VS-SR-REQ-025434/A-Multiple Disp\_Miles\_Kilometers.Rq signals (TcSE ROIN-150819-1)

The vehicle settings server shall ignore all new Disp\_Miles\_Kilometers.Rq signals for T\_Dist\_Response after receiving the initial Disp\_Miles\_Kilometers.Rq signal.

#### 3.2.3.3 VS-TMR-REQ-025216/B-T\_Disp\_Response (TcSE ROIN-149488-2)

Name	Description	Units	Range	Resolution	Default
T_Disp_Response	Maximum time allowed between sending a Disp_Miles_Kilometers.Rq distance change message, and receiving a response message from the display modules.  Use default value	msec	0-1000	10	250

### 3.2.4 Sequence Diagrams

#### 3.2.4.1 VS-SD-REQ-025217/A-Set Distance Units (TcSE ROIN-118743-3)

##### Linked Elements

VS-UC-REQ-025372/A-Set Distance Units (TcSE ROIN-121364-2)

##### Scenarios

###### Normal Usage

The user selects <Kilometers units> via the HMI.

##### Constraints

###### Pre-condition

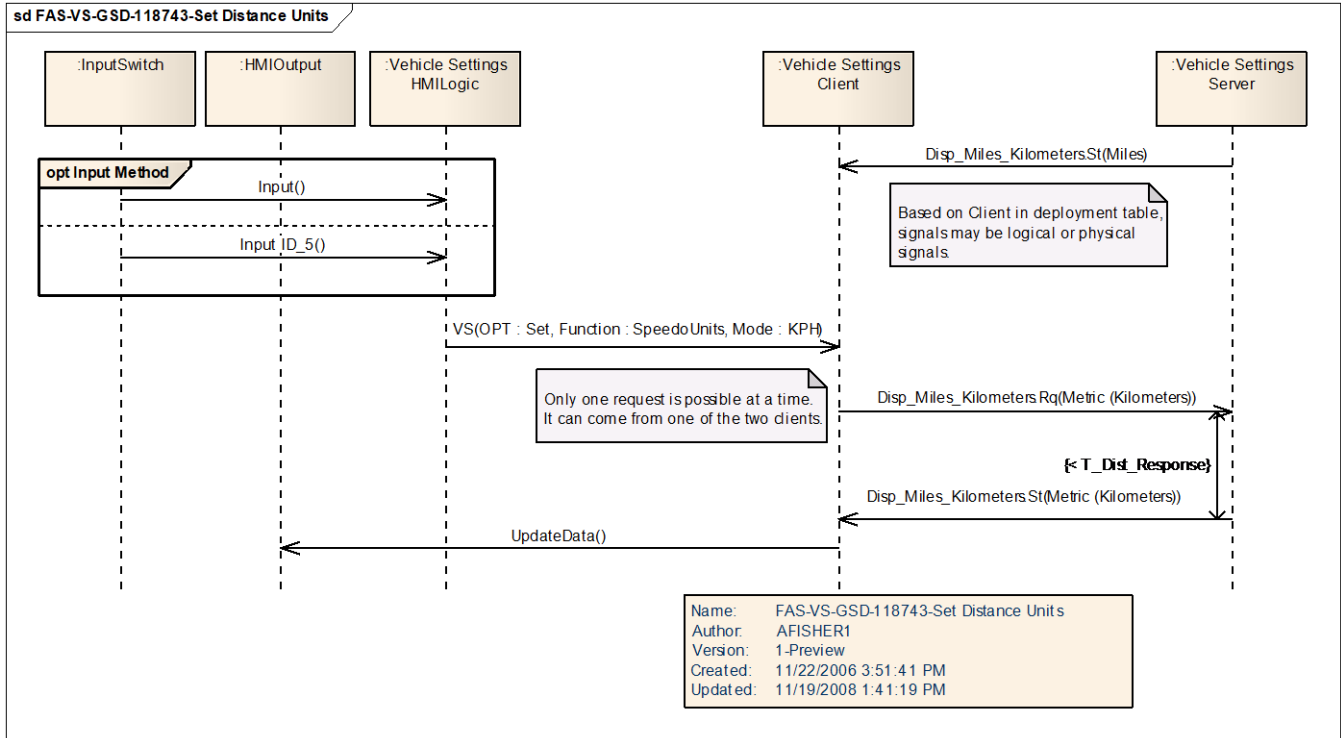
Center Stack Display is On, Settings units menu is active. Distance units are currently set to miles.

###### Post-condition

{Distance units are updated to kilometers on the HMI}



## Sequence Diagram





### 3.3 VS-FUN-REQ-025218/C-Set Temperature Units (TcSE ROIN-292331-1)

#### 3.3.1 Interface Requirement - Temperature

##### 3.3.1.1 MD-REQ-025380/B-Disp\_Temperature.Rq (TcSE ROIN-297369)

**Message Type:** Request

This signal requests to change the temperature units displayed.

Logical Signal Name	Literals	Value	Description
DISP_Temperature.Rq	Celsius	0x0	
	Fahrenheit	0x1	
	Inactive	0x3	

##### 3.3.1.2 MD-REQ-025453/B-Disp\_Temperature.St (TcSE ROIN-297374)

**Message Type:** Status

Signal from the Vehicle Settings Server stating what the setting is for temperature units.

Logical Signal Name	Literals	Value	Description
DISP_Temperature.St	Celsius	0x0	
	Fahrenheit	0x1	

#### 3.3.2 Use Cases

##### 3.3.2.1 VS-UC-REQ-025219/A-Set Temperature Units (TcSE ROIN-290602)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Current Unit is {Unit X}
<b>Scenario Description</b>	User selects {Unit Y} via the HMI.
<b>Post-conditions</b>	HMI is updated to {Unit Y}
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI

#### 3.3.3 Functional Requirements

##### 3.3.3.1 VS-SR-REQ-025220/A-Change Temperature Units Status update timing (TcSE ROIN-149493-1)

The vehicle settings server shall respond to a Disp\_Temperature.Rq via the Disp\_Temperature.St signal within T\_Temp\_Response of receiving the request.

##### 3.3.3.2 VS-SR-REQ-025433/A-Multiple Disp\_Temperature.Rq signals (TcSE ROIN-150818-1)

The vehicle settings server shall ignore all new Disp\_Temperature.Rq signals for T\_Temp\_Response after receiving the initial Disp\_Temperature.Rq signal.

##### 3.3.3.3 VS-TMR-REQ-025221/B-T\_Temp\_Response (TcSE ROIN-149489-2)

Name	Description	Units	Range	Resolution	Default
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T_Temp_Response	Maximum time allowed between sending a Disp_Temperature.Rq temperature units change message, and receiving a response message from the display modules.  Use default value	msec	0-1000	10	250
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### 3.3.4 Sequence Diagrams

#### 3.3.4.1 VS-SD-REQ-025222/A-Set Temperature Units (TcSE ROIN-118750-3)

##### Linked Elements

VS-UC-REQ-025374/A-Set Temperature Units to Fahrenheit (TcSE ROIN-121370-2)

##### Scenarios

###### Normal Usage

The user selects <Celsius units> via the HMI.

##### Constraints

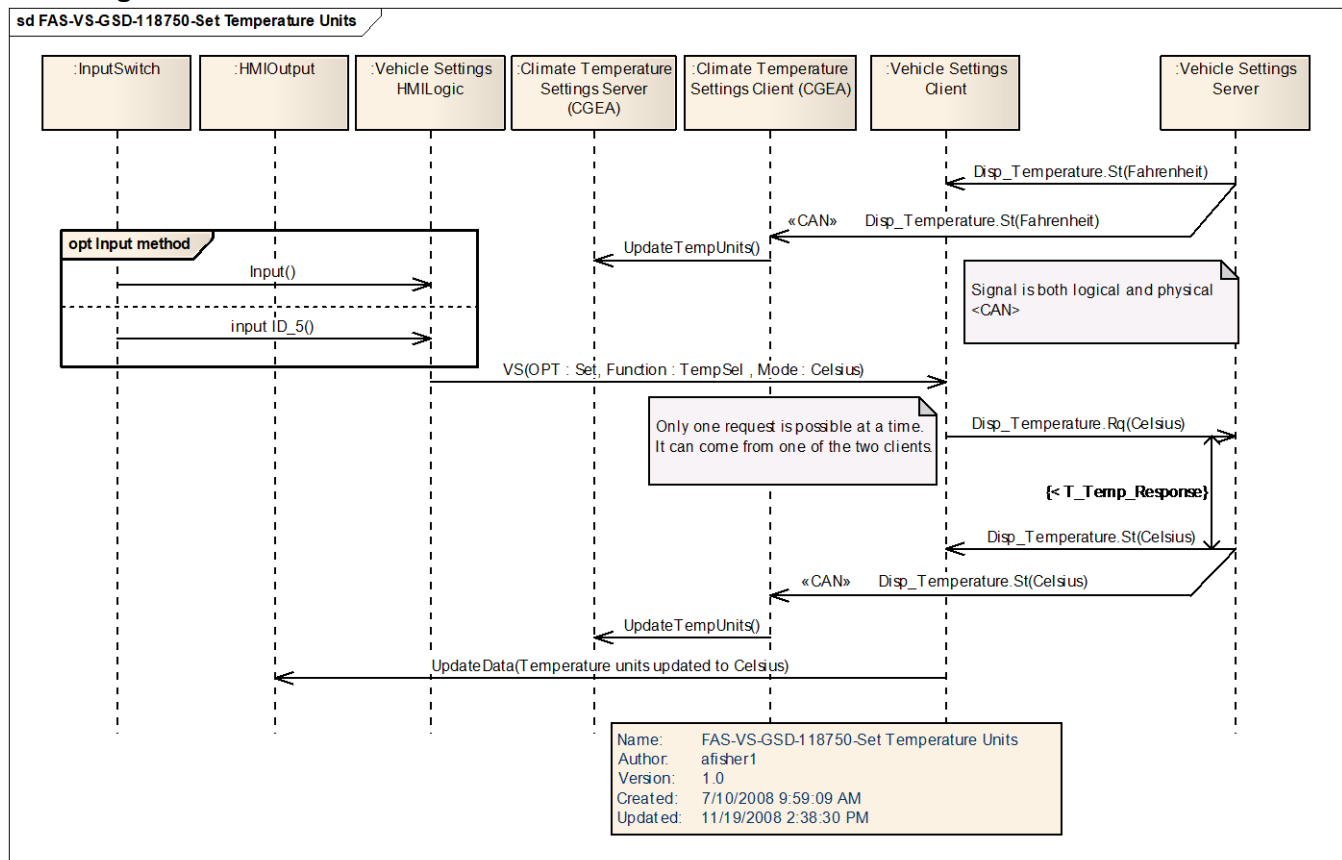
###### Pre-condition

Center Stack Display is On, Settings units menu is active. Temperature units are currently set to Fahrenheit.

###### Post-condition

{Temperature units are updated to Celsius on the HMI}

##### Sequence Diagram





### 3.4 Ambient Lighting - Variant 1

#### 3.4.1 VSv2-FUN-REQ-025223/C-Ambient Lighting- Set Color (TcSE ROIN-292314-1)

##### 3.4.1.1 Interface Requirements

###### 3.4.1.1.1 MD-REQ-025388/C-LightAmbColor\_No\_Rq (TcSE ROIN-297407)

**Message Type:** Request

This signal requests selection of color for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq	Invalid / No Data Exits	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	
	Reserved	0x11 to 0xFF	

###### 3.4.1.1.2 MD-REQ-025456/D-LightAmbColor\_No\_Actl (TcSE ROIN-297421)

**Message Type:** Status

This signal from Ext Vehicle Settings Function to the Vehicle Settings Client gives the status of the ambient lighting color.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl	OFF / Inactive / No Data Exists	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Cont	0x04 – 0xFF	separate document defines what the Color ID's are



### 3.4.1.2 Use Cases

#### 3.4.1.2.1 VS-UC-REQ-025224/A-Ambient Lighting- Set Color (TcSE ROIN-290603)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On
<b>Scenario Description</b>	The user selects <updated Ambient Lighting color setting> via the HMI
<b>Post-conditions</b>	The vehicle HMI indicates {Updated status of Ambient Lighting Color setting}
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI CBI

### 3.4.1.3 Requirements

#### 3.4.1.3.1 VS-SR-REQ-025225/E-Ambient Lighting - Color Change Request Latency (TcSE ROIN-141572-1)

The Vehicle Settings Client shall ignore the LightAmbColor\_No\_Actl status message for T\_Response\_light\_color after sending a LightAmbColor\_No\_Rq to the Ext Vehicle Settings Function to allow for Latency on the response back from the Vehicle Setting Server (don't want to act on a periodic status message from Vehicle Setting Server that wasn't yet updated). [All other times the Vehicle Settings Client shall update based on the LightAmbColor\\_No\\_Actl.St signal including updating its LightAmbColor\\_No\\_Rq signal to match.](#)

After T\_Response\_Light\_Color the Vehicle Settings Client shall use the last state received in the LightAmbColor\_No\_Actl signal.

Note: Since the LightAmbColor\_No\_Rq is event-periodic and some Vehicle Settings Client modules keep the last state the Vehicle Setting Server if it updates its status message to a new value may want to implement a similar strategy has above (don't want to act on a periodic status message from Vehicle Setting Client that wasn't yet updated).

#### 3.4.1.3.2 VS-TMR-REQ-025226/C-T\_Response\_light\_color (TcSE ROIN-146542-2)

Name	Description	Units	Range	Resolution	Default
T_Response_light_color	Minimum amount of time between LightAmbColor_No_Rq color change and acting upon a LightAmbColor_No_Actl signal by the vehicle settings client.  Use the default value	msec	0-1000	10	500

#### 3.4.1.3.3 VS-SR-REQ-117709/D-Turning ON and OFF Ambient Lighting

##### **Turning OFF ambient lighting the Ambient Lighting:**

When turning OFF ambient lighting from the Vehicle Setting Client the Vehicle Settings Client shall send:  
LightAmbIntsty\_No\_Rq = 0x0 0% Intensity / Ambient Lighting OFF, AND  
LightAmbColor\_No\_Rq shall stay at the currently selected value (equal to input LightAmbColor\_No\_Actl\_St).

When the Ambient Lighting Vehicle Setting Server receives LightAmbIntsty\_No\_Rq = "0x0 0% Intensity" then the Vehicle Settings Server shall turn OFF Ambient Lighting.

The Ambient Lighting Vehicle Setting Server shall not respond to LightAmbColor\_No\_Rq requests that are 0x0 Inactive / No Data Exists and shall treat those requests as don't cares (ex can continue to use the last valid value for color and send this in signal LightAmbColor\_No\_Actl\_St).

If LightAmbColor\_No\_Actl\_St = 0x0 OFF / Inactive / No Data Exists then the Vehicle Settings Client shall set LightAmbColor\_No\_Rq to 0x0 Inactive / No Data Exists and turn the Ambient Lighting HMI OFF.



Note: only the CGEA 1.2 Vehicle Settings Server uses the OFF state in LightAmbColor\_No\_Actl\_St. C1MCA and CGEA 1.3 architectures use LightAmbColor\_No\_Actl\_St = 0x0 as Inactive / No Data Exists.

When the Ambient Lighting Vehicle Setting Client receives LightAmbIntsty\_No\_Actl\_St = "0x0 0% Intensity" then the Vehicle Settings Client shall turn OFF Ambient Lighting on the HMI (after T\_Response\_Light\_Intensity from the request to turn OFF Ambient Lighting if requested Ambient Lighting OFF).

**Bus Start-Up or Module reset and avoiding 0x0 init values turning OFF Ambient Lighting when it is ON:**

When the network bus starts-up the Vehicle Settings Client / Server modules may send 0x0 init values before sending the actual values. The Vehicle Settings Client and Server shall not let the init values sent on bus start-up turn OFF ambient lighting if it is still on (ie LightAmbIntsty\_No\_Rq = 0x0 0% Intensity, LightAmbIntsty\_No\_Actl\_St = "0x0 0% Intensity", or LightAmbColor\_No\_Actl\_St = 0x0 OFF).

**At network bus start-up:**

1. the Ambient Lighting Vehicle Setting Server can implement a blanking period so that if at bus wakes up the Vehicle Setting Server receives 'LightAmbIntsty\_No\_Rq = 0x0 0% Intensity' (ie if 0x0 is default init CAN value) then Vehicle Settings Server can ignore these values at start-up so the current Ambient Lighting Intensity value is not reset to OFF.
2. the Ambient Lighting Vehicle Setting Client can implement a blanking period so that if at bus wakes up the Vehicle Setting Client receives LightAmbIntsty\_No\_Actl\_St = "0x0 0% Intensity", OR LightAmbColor\_No\_Actl\_St = 0x0 OFF (ie if 0x0 is default init CAN value) then Vehicle Settings Client can ignore these values at start-up so the current Ambient Lighting value are not reset to OFF.
3. Since the Ambient Lighting Intensity Request and Status signals (LightAmbIntsty\_Rq / LightAmbIntsty\_No\_Actl) don't have a "0x0 No Data Exists / Inactive" state for network bus wake-up when the network bus wakes up it is preferred if the Vehicle Settings Client / Server publish the last signal state/encoding of their respective signal. This would mean not publishing the network init value at network bus wake-up unless that was the last state before the network bus went to sleep.

**If the Ambient Lighting Vehicle Setting Client has a reset (ex B+) while the Vehicle Setting Server stays active on network bus (ex SYNC module resets causing it's CAN signals to be re-initialized while BCM stays active on CAN bus):**

1. Since the Vehicle Settings Client request signals are in the same message to avoid the case where a Vehicle Setting Client module resets results in turning OFF Ambient Lighting from an ON state to OFF the Vehicle Setting Server could implement the following:
  - a. If both "LightAmbIntsty\_No\_Rq / LightAmbColor\_No\_Rq" equal 0x0 then the Vehicle Setting Server could treat 0x0 encodings as a don't cares so ambient lighting is not turned OFF.

**Turning ON Ambient Lighting:**

If the user turns back ON Ambient Lighting from an OFF condition then the Vehicle Setting Client shall use the last Intensity value before Ambient Lighting was turned OFF.

Exception: If there was a B+ reset to the Vehicle Setting Client then after the reset the Vehicle Setting Client shall use 100% intensity for LightAmbIntsty\_No\_Rq after the user selects a color ID.

### **3.4.1.4 Sequence Diagrams**

#### **3.4.1.4.1 VS-SD-REQ-025227/A-Ambient Lighting- Set Color (TcSE ROIN-118722-2)**

**Linked Elements**

VS-FUN-REQ-025367/A-AmbientLighting- Set Color (TcSE ROIN-119875-1)

VSv2-FUN-REQ-025223/C-AmbientLighting- Set Color (TcSE ROIN-292314-1)

**Scenarios**

**Normal Usage**

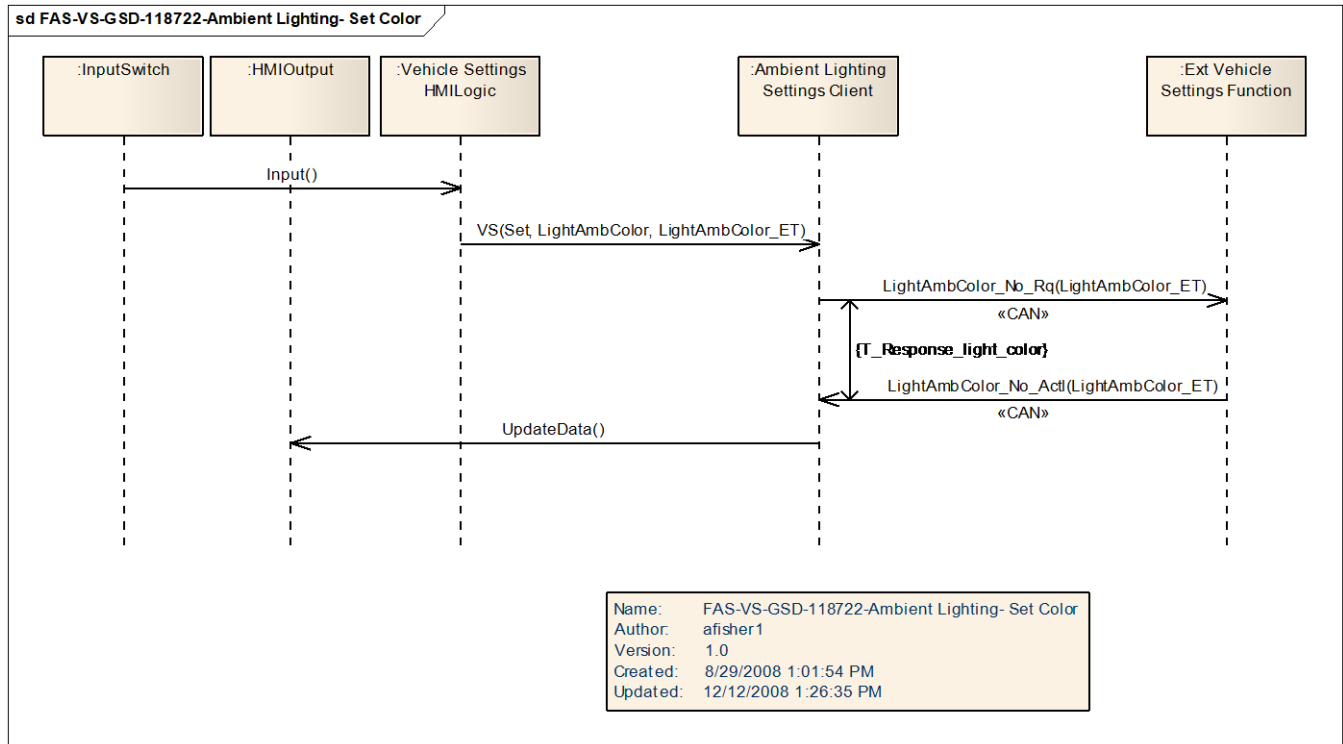
The user selects <updated Ambient Lighting color setting> via the HMI

**Constraints****Pre-condition**

Center Stack Display is On, Settings units menu is active.

**Post-condition**

The vehicle HMI indicates {Updated status of Ambient Lighting Color setting}

**Sequence Diagram**



### 3.4.2 VSv2-FUN-REQ-025228/C-Ambient Lighting- Set Intensity (TcSE ROIN-292320-1)

#### 3.4.2.1 Interface Requirements

##### 3.4.2.1.1 MD-REQ-025389/C-LightAmbIntsty\_No\_Rq (TcSE ROIN-297420)

**Message Type:** Request

This signal requests selection of intensity for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Rq	0% Intensity / Ambient Lighting OFF	0x0	
	1% Intensity	0x1	
	2% Intensity	0x2	
	cont.		
	100% Intensity	0x64	
	Reserved	0xFF	

##### 3.4.2.1.2 MD-REQ-025457/D-LightAmbIntsty\_No\_Actl (TcSE ROIN-297422)

**Message Type:** Status

This signal from the Ext Vehicle Settings Function to the Vehicle Settings Client gives the status of Ambient Lighting Intensity

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Actl	0% Intensity / Ambient Lighting OFF	0x00	
	1% intensity	0x01	
	2% intensity	0x02	
	cont		
	100% intensity	0x64	
	Reserved	0x65 – 0xFF	

#### 3.4.2.2 Use Cases

##### 3.4.2.2.1 VS-UC-REQ-025229/A- Ambient Lighting- Set Intensity (TcSE ROIN-290604)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On
<b>Scenario Description</b>	The user selects <updated Ambient Lighting Intensity setting> via the HMI
<b>Post-conditions</b>	The vehicle HMI indicates {Updated status of Ambient Lighting Intensity setting}
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI CBI



### 3.4.2.3 Requirements

#### 3.4.2.3.1 VS-SR-REQ-025230/D-Ambient Lighting - Intensity Change Request Latency (TcSE ROIN-141573-1)

The Vehicle settings client shall ignore the LightAmbIntsty\_No\_Actl status message for T\_Response\_light\_intensity after sending a LightAmbIntsty\_No\_Rq to the Ext Vehicle Settings Function to allow for Latency on the response back from the Ambient Lighting Vehicle Setting Server (don't want to act on a periodic status message from the Vehicle Setting Server that wasn't yet updated). All other times the Vehicle Settings Client shall update based on the LightAmbIntsty\_No\_Actl.St signal including updating its LightAmbIntsty\_No\_Rq signal to match.

After T\_Response\_Light\_Intensity the Vehicle Setting Client shall use the last state received in the LightAmbIntsty\_No\_Actl signal.

Note: Since the LightAmbIntsty\_No\_Rq is event-periodic and some Vehicle Settings Client modules keep the last state the Vehicle Setting Server if it updates its status message to a new value may want to implement a similar strategy has above (don't want to act on a periodic status message from Vehicle Setting Client that wasn't yet updated).

#### 3.4.2.3.2 VS-TMR-REQ-025231/B-T\_Response\_light\_intensity (TcSE ROIN-146541-2)

Name	Description	Units	Range	Resolution	Default
T_Response_light_intensity	Minimum amount of time between LightAmbIntsty_No_Rq color change and acting upon a LightAmbIntsty_No_Actl signal by the vehicle settings client.  Use the default value	msec	0-1000	10	500

#### 3.4.2.3.3 VS-HMI-REQ-097951/A-Ambient Lighting Intensity

Reference HMI vehicle specific documents for screen flow. If HMI and this requirement contradict follow the HMI specification.

Ambient Lighting Intensity signal values will be adjusted per HMI in the following increments:

For CGEA1.3/C1MCA (Please verify for particular module with HMI team):

Name	Literals	Value	Description
Mode	-	-	
	Inactive	int <i>LightAmbIntsty_ET</i> 0x00 0% Intensity 0x01 1% Intensity ... 0x64 100% Intensity 0xFF Reserved	Ambient Lighting Intensity Selection from Vehicle Settings Client to Ext Vehicle Settings Function

For CGEA 1.2 (Please verify for particular module with HMI team)::

Value	Description
0x00	0% Intensity
0x14	20% Intensity
0x28	40% Intensity
0x3C	60% Intensity
0x50	80% Intensity





0x64

100% Intensity

### 3.4.2.4 Sequence Diagrams

#### 3.4.2.4.1 VS-SD-REQ-025232/A-Ambient Lighting- Set Intensity (TcSE ROIN-118729-2)

##### Linked Elements

VS-FUN-REQ-025368/A-Ambient Lighting- Set Intensity (TcSE ROIN-119880-1)

VSv2-FUN-REQ-025228/C-Ambient Lighting- Set Intensity (TcSE ROIN-292320-1)

##### Scenarios

###### Normal Usage

The user selects &lt;updated Ambient Lighting Intensity setting&gt; via the HMI

##### Constraints

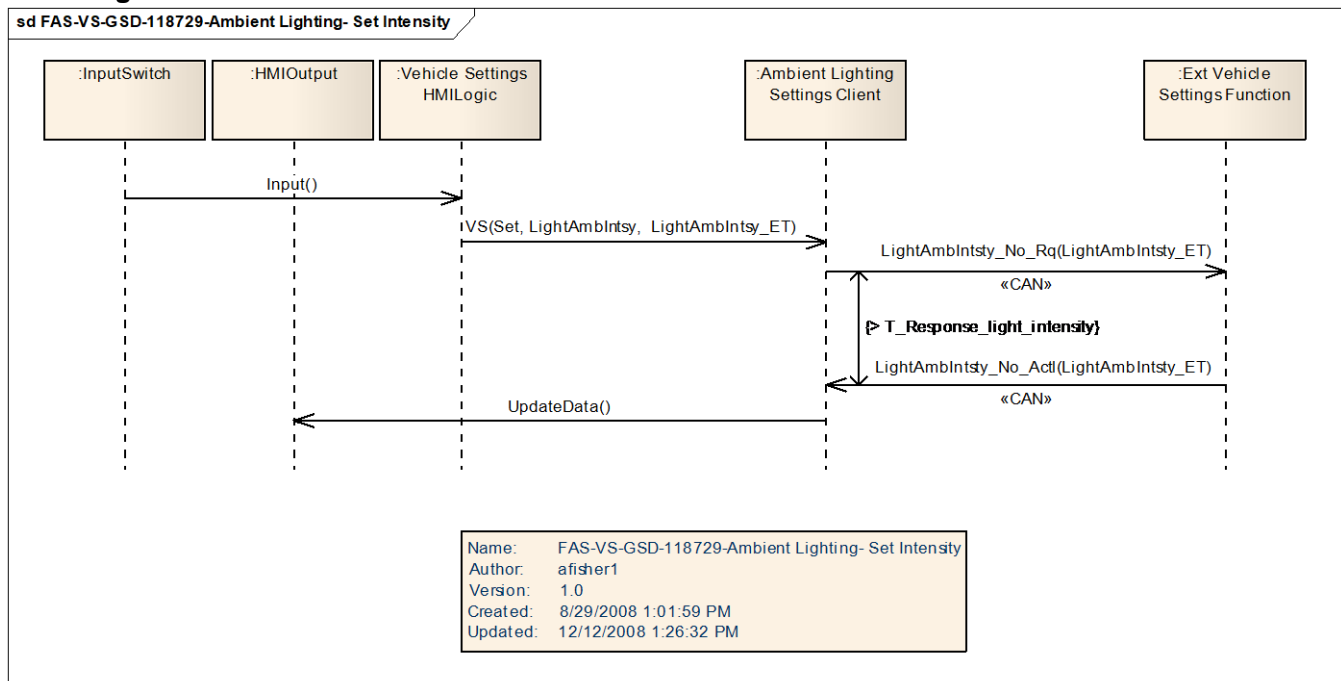
###### Pre-condition

Center Stack Display is On, Settings units menu is active.

###### Post-condition

The vehicle HMI indicates {Updated status of Ambient Lighting Intensity setting}

##### Sequence Diagram





### 3.5 VSv2-FUN-REQ-192195/A-Ambient Lighting - Variant 2

#### 3.5.1 VSv2-IIR-REQ-192188/A-Ambient Lighting Settings Client\_Tx - Variant 2

Note: Regardless what is in the CAN dB the logical encodings for the signals listed in the in the Ambient Lighting – Variant 2 SPSS interface descriptions shall be used

##### 3.5.1.1 MD-REQ-192189/B-LightAmbColor\_No\_Rq - Variant 2

**Message Type:** Request

The Ambient Lighting Client uses this signal to request the color selection for ambient lighting from the Ambient Lighting Server.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	
	Reserved	0x11 to 0xFF	

##### 3.5.1.2 MD-REQ-192190/B-LightAmbIntsty\_No\_Rq - Variant 2

**Message Type:** Request

This signal requests the selection of intensity for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Rq – Variant 2	Inactive / No Data Exits	0x00	
	0% Intensity / Ambient Lighting OFF	0x01	
	1% Intensity	0x02	
	2% Intensity	0x03	
	3% Intensity	0x04	
	cont.	...	
	100% Intensity	0x65	
	Ambient Lighting Turn ON	0x66	

**3.5.2 VSv2-IIR-REQ-192192/A-Ambient Lighting Settings Client\_Rx - Variant 2****3.5.2.1 MD-REQ-192193/C-LightAmbColor\_No\_Actl - Variant 2****Message Type:** Status

This signal gives status of ambient lighting color (variant 2) status.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Cont.	0x04 – 0xFF	Reference separate document with the ambient light Colors and Color ID's used

**3.5.2.2 MD-REQ-192194/C-LightAmbIntsty\_No\_Actl - Variant 2****Message Type:** Status

This signal gives the status of Ambient Lighting Intensity.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Actl – Variant 2	0% Intensity / Ambient Lighting OFF	0x00	
	1% Intensity / Ambient Lighting ON	0x01	
	2% Intensity / Ambient Lighting ON	0x02	
	3% Intensity / Ambient Lighting ON	0x03	
	cont.		
	100% Intensity / Ambient Lighting ON	0x64	



### 3.5.3 Use Cases

#### 3.5.3.1 VS-UC-REQ-192241/A-*Changing Ambient Lighting Color*

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Ambient Lighting is turned ON Infotainment System is powered ON Color X is active in the vehicle Intensity Y is active in the vehicle Ambient Lighting HMI is active
<b>Scenario Description</b>	The user select Color Y via the HMI
<b>Post-conditions</b>	Color Y ambient lighting is turned on in the vehicle Ambient lighting remains at Intensity Y in the vehicle The HMI shows Color Y active and Intensity Y
<b>Interfaces</b>	Vehicle Interface, G-HMI

#### 3.5.3.2 VS-UC-REQ-192242/A-*Changing Ambient Lighting Intensity*

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Ambient Lighting is turned ON Infotainment System is powered ON Color X is active in the vehicle Intensity X is active in the vehicle Ambient Lighting HMI is active
<b>Scenario Description</b>	The user select Intensity Y via the HMI
<b>Post-conditions</b>	Intensity Y is active in the vehicle The HMI shows intensity Y is active
<b>Interfaces</b>	Vehicle Interface, G-HMI

#### 3.5.3.3 VS-UC-REQ-192243/A-*Turning ON Ambient Lighting by selecting a color*

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Ambient Lighting is turned OFF with the previous Intensity value of Y used before ambient lighting was turned OFF. Infotainment System is powered ON. Ambient Lighting HMI is active.
<b>Scenario Description</b>	The user selects Color X via the HMI to turn ON ambient lighting
<b>Post-conditions</b>	Ambient Lighting Color X turns on in the vehicle. The Ambient Lighting Intensity value Y becomes active in the vehicle The HMI shows Color X and Intensity Y
<b>Interfaces</b>	Vehicle Interface, G-HMI

#### 3.5.3.4 VS-UC-REQ-192244/A-*Turning ON Ambient Lighting via ON/OFF HMI selection*



<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Ambient Lighting is turned OFF with the previous intensity value of X and color of Y used before ambient lighting was turned off. Infotainment System is powered ON Ambient Lighting HMI is active.
<b>Scenario Description</b>	The user selects Ambient Lighting ON via the HMI
<b>Post-conditions</b>	Ambient Lighting turned ON with intensity X and color Y active in the vehicle The HMI shows ambient lighting on with intensity X and color Y
<b>Interfaces</b>	Vehicle Interface, G-HMI

### 3.5.3.5 VS-UC-REQ-192245/A-Turning OFF Ambient Lighting

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Ambient Lighting is ON in the vehicle Ambient Lighting HMI is active Infotainment System is powered ON
<b>Scenario Description</b>	The user select Ambient Lighting OFF via the HMI
<b>Post-conditions</b>	The Ambient Lighting is turned OFF in the vehicle The HMI shows Ambient Lighting turned OFF
<b>Interfaces</b>	Vehicle Interface, G-HMI

### 3.5.3.6 VS-UC-REQ-192246/A-Enhanced Memory - Recall new personality profile with Ambient Lighting active

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is Powered ON Enhanced Memory is turned ON The Active Personality profile is Profile 1 with Color A and Intensity B Ambient Lighting HMI is active Personality profile 3 is NOT active but when it was last active Color X and Intensity Y were active for ambient lighting
<b>Scenario Description</b>	The user select Profile 3 to be the active personality profile from the memory seat button (would apply for any enhanced memory recall method)
<b>Post-conditions</b>	Personality 3 becomes the active personality profile Ambient Lighting is active in the vehicle with Color X and Intensity Y The HMI shows Color X and Intensity Y
<b>Interfaces</b>	Vehicle Interface, G-HMI

### 3.5.3.7 VS-UC-REQ-192247/A-Enhanced Memory - New Profile at Network Wake-up

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Network Bus is asleep Before network was asleep enhanced memory active personality profile was profile 2 Profile 3 is NOT active (profile 3 was last set to Color X, Intensity Y) Ambient Lighting is OFF



	Ignition Status is OFF, Delayed Accessory is OFF Infotainment System is powered OFF
<b>Scenario Description</b>	<ol style="list-style-type: none"><li>1. The user enters the vehicle with a keyfob associated to profile 3</li><li>2. Network bus wakes up and indicates that profile 3 is active</li><li>3. User keys to run from Ignition OFF</li></ol>
<b>Post-conditions</b>	Ambient Lighting becomes active for Profile 3 with Color X and Intensity Y active in the vehicle. If the user goes to the ambient lighting HMI it shows Color X and Intensity Y
<b>Interfaces</b>	Vehicle Interface, G-HMI



### 3.5.4 Requirements

#### 3.5.4.1 VS-SR-REQ-192228/A-Ambient Lighting Server handling of "Inactive" in the Request signals

The Ambient Lighting Server shall treat LightAmbColor\_No\_Rq = Inactive and LightAmbIntsty\_No\_Rq = Inactive as don't cares and shall not update the LightAmbColor\_No\_Actl and LightAmbIntsty\_No\_Actl status signals based on the request signals set to Inactive.

#### 3.5.4.2 VS-SR-REQ-192229/A-Bus Start-up

At network bus start-up the Ambient Lighting Server shall only publish the actual ambient lighting values of LightAmbColor\_No\_Actl and LightAmbIntsty\_No\_Actl and shall not publish the network init values.

At network bus start-up the Ambient Lighting Client shall set the request signals to Inactive.

#### 3.5.4.3 VS-HMI-REQ-192230/B-Ambient Lighting HMI

The Ambient Lighting Client shall only display, on the ambient lighting HMI, the values indicated in the LightAmbColor\_No\_Actl and LightAmbIntsty\_No\_Actl status signals from the Ambient Lighting Server.

If the Ambient Lighting HMI is being displayed, a change in the ambient lighting status signal shall update the HMI.

If the Ambient Lighting Server sends LightAmbIntsty\_No\_Actl = "0% Intensity / Ambient Lighting OFF" then the Ambient Lighting Client HMI shall set Ambient Lighting HMI OFF. Note this is regardless of what is in the LightAmbColor\_No\_Actl status signal.

#### 3.5.4.4 VS-SR-REQ-192238/B-Ambient Lighting Request and Response signals

The Ambient Lighting Client, when requesting an Ambient Lighting Color or Ambient Lighting Intensity value, shall set the color or intensity being requested and then set the request signal back to inactive.

- When setting the request signal back to inactive the Ambient Lighting Client shall set to Inactive within 50 msec of making the request.
- When setting the request signal back to inactive the Ambient Lighting Client shall set to Inactive no sooner than 20 msec after making the request.

If the Ambient Lighting Client has not received the Color or Intensity values requested in the LightAmbColor\_No\_Actl and LightAmbIntsty\_No\_Actl status signals within 200 msec of the request then the Ambient Lighting Client shall re-request signal within 250 msec after making the first request (only one retry should be performed).

- Note: this protects for the case if the Ambient Lighting Server was on another bus that was asleep and the first message was lost.

The Ambient Lighting Server shall respond back to the LightAmbColor\_No\_Rq and LightAmbIntsty\_No\_Rq request signals within 150 msec of receiving the ambient lighting request.

Ex.

1. User selects a new ambient lighting color from the HMI
2. Ambient Lighting Client sets LightAmbIntsty\_No\_Rq = Color X and then 35 msec later sets LightAmbIntsty\_No\_Rq = Inactive.
3. The Ambient Lighting Server responds back within 150 msec of receiving LightAmbIntsty\_No\_Rq = Color X with LightAmbColor\_No\_Actl = Color X.
4. The Ambient Lighting Client updates the Ambient Lighting HMI based on the LightAmbColor\_No\_Actl status signal.





#### 3.5.4.5 VS-SR-REQ-192239/A-Turning ON and OFF Ambient Lighting

The Ambient Lighting Client can request the Ambient Lighting is turned ON using LightAmbIntsty\_No\_Rq = "Ambient Lighting Turn ON" or Ambient Lighting is turned OFF using "0% Intensity / Ambient Lighting Turn OFF".

The Ambient Lighting Server is responsible for remembering the Color and Intensity values between Power Mode / Ignition cycles, network bus wake-ups, and B+ resets.

If Ambient Lighting is turned OFF the Ambient Lighting Server shall remember the color and intensity values before ambient lighting was turned OFF.

If Ambient Lighting is turned off (ie LightAmbIntsty\_No\_Actl = 0% Intensity / Ambient Lighting OFF) and if the Ambient Lighting Server receives LightAmbIntsty\_No\_Rq = "Ambient Lighting Turn ON" then the Ambient Lighting Server shall be responsible for publishing the Color and Intensity values to be used when turned ON.

- The Ambient Lighting Client could request Ambient Lighting ON with a particular Color set, OR
- The Ambient Lighting Client could request Ambient Lighting ON with the Color and Intensity set to Inactive

#### 3.5.4.6 VS-SR-REQ-192240/A-Enhanced Memory - Ambient Lighting

If Enhanced Memory is configured ON in the Ambient Lighting Client than this "Ambient Lighting – Variant 2" strategy shall be used.

If Enhanced Memory is configured ON in the Ambient Lighting Server than this "Ambient Lighting – Variant 2" strategy shall be used.

The Ambient Lighting Server shall update the LightAmbColor\_No\_Actl and LightAmbIntsty\_No\_Actl status signals when changing to new enhanced memory profiles (ie when the active personality profile changes).

- If the Ambient Lighting Server is turned OFF the Ambient Lighting Server shall remember what all the personality profiles where before they were turned off (in case turned back on).

If the Ambient Lighting Client HMI is active the Ambient Lighting Client HMI will automatically update to whatever the new Color and Intensity values are when there is a new active personality since the Ambient Lighting Client will use the LightAmbColor\_No\_Actl and LightAmbIntsty\_No\_Actl status signals when they are updated.



### 3.5.5 Sequence Diagrams

#### 3.5.5.1 VS-SD-REQ-193188/A-Changing Ambient Lighting Color

Pre-condition:

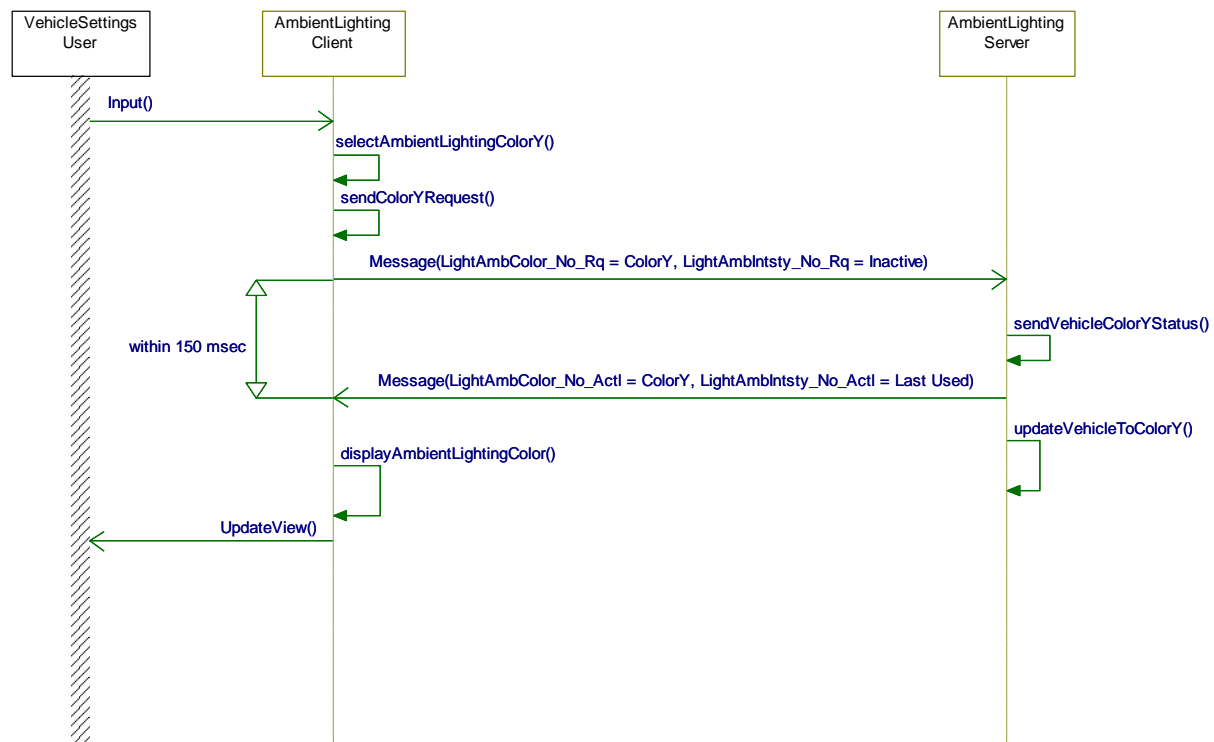
Color Y is not the active color

Event:

User selects color Y

Post-condition:

Color Y is active on the HMI and the vehicle



#### 3.5.5.2 VS-SD-REQ-193207/A-Changing Ambient Lighting Intensity

Pre-condition:

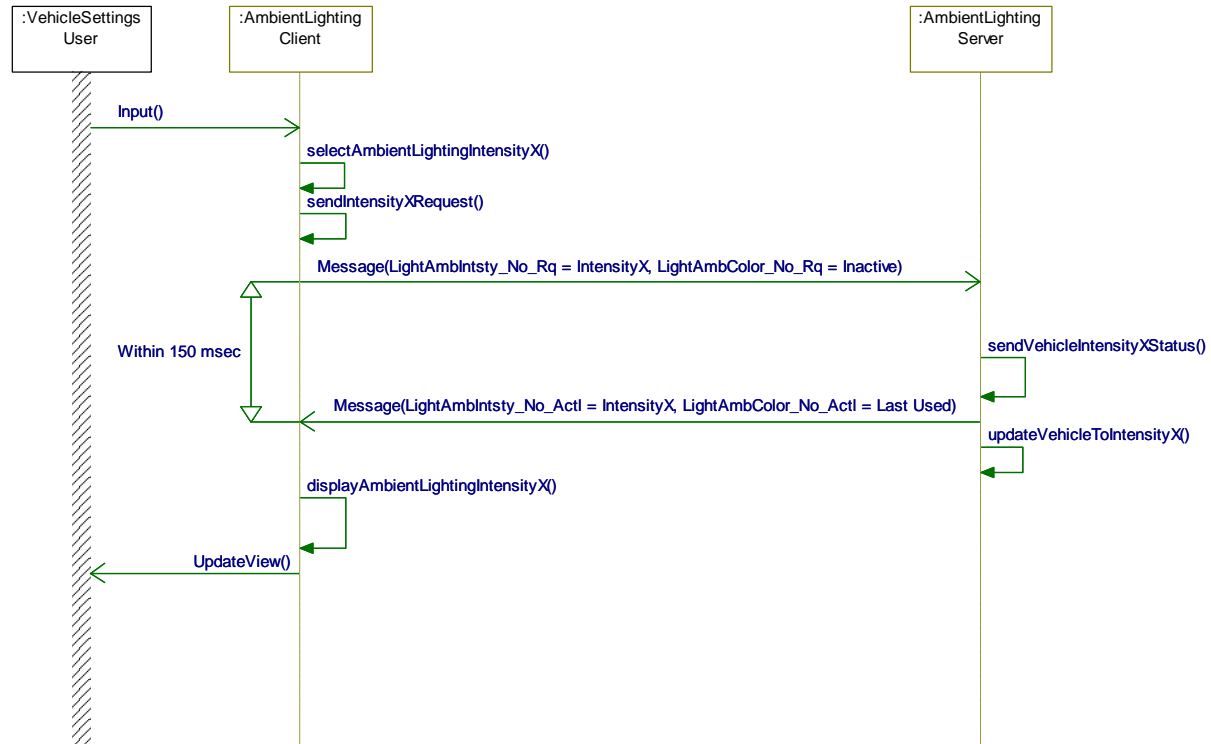
Intensity X is not the active intensity

Event:

User selects intensity X

Post-Condition:

Intensity X is shown on the HMI and Intensity X is active in the vehicle



### 3.5.5.3 VS-SD-REQ-193443/B-Turning ON Ambient Lighting by selecting a Color

#### Pre-Condition:

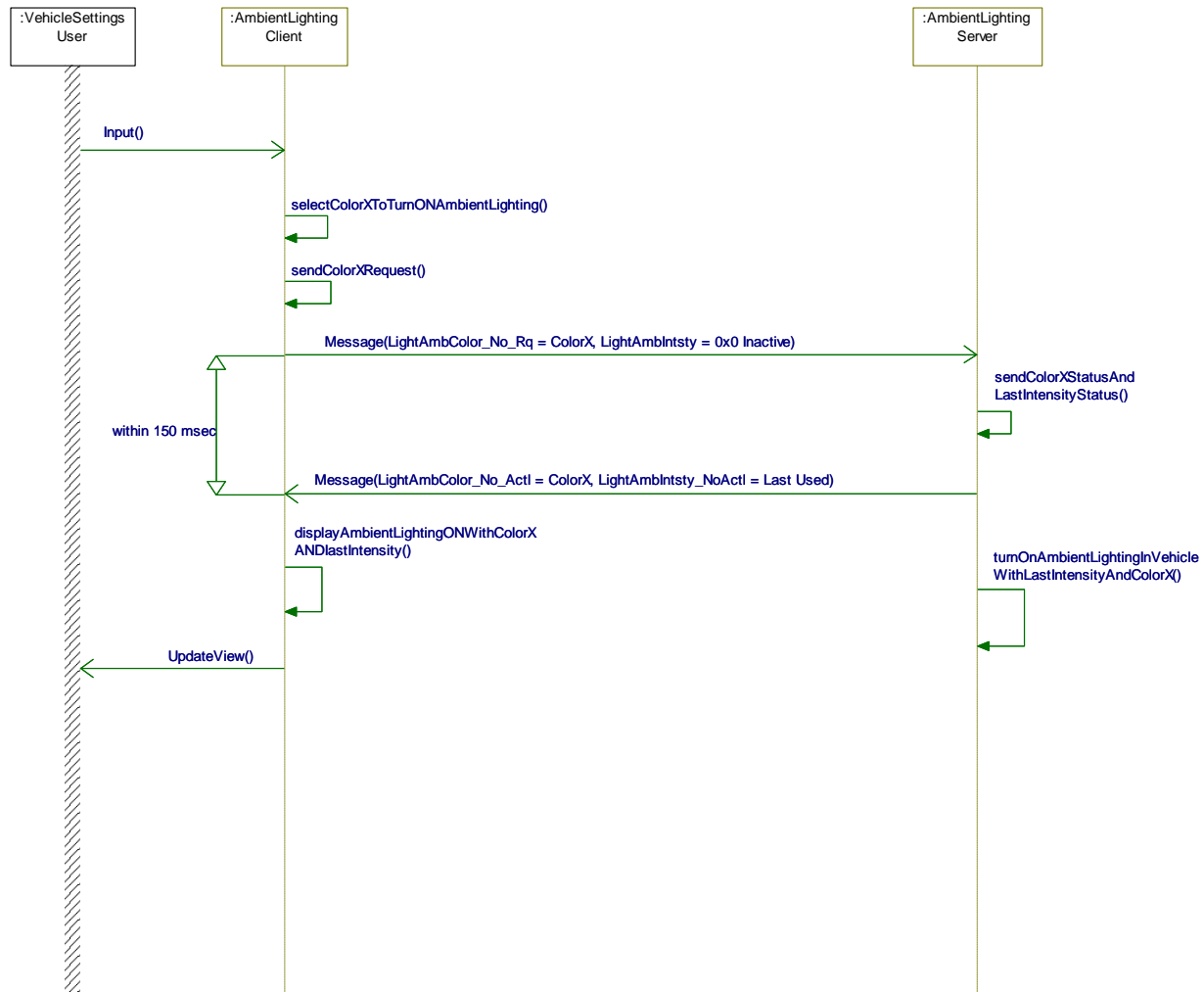
Ambient Lighting was previously turned OFF via the HMI  
Ambient Lighting in the vehicle is OFF

#### Event:

User selects colorX to turn ON ambient lighting

#### Post-Condition:

Ambient Lighting HMI is shown with ColorX active  
Ambient Lighting Intensity is shown with last Intensity before turned back ON  
Ambient Lighting is turned ON in the vehicle



Note: if enhanced memory is turned on then in the sequence diagram for network signal LightAmbIntsty\_No\_Actl = 'Last Used' is referring to the last used Intensity for the personality profile being turned on.

#### 3.5.5.4 VS-SD-REQ-193446/A-Turning ON Ambient Lighting via ON/OFF HMI Selection

##### Pre-Condition:

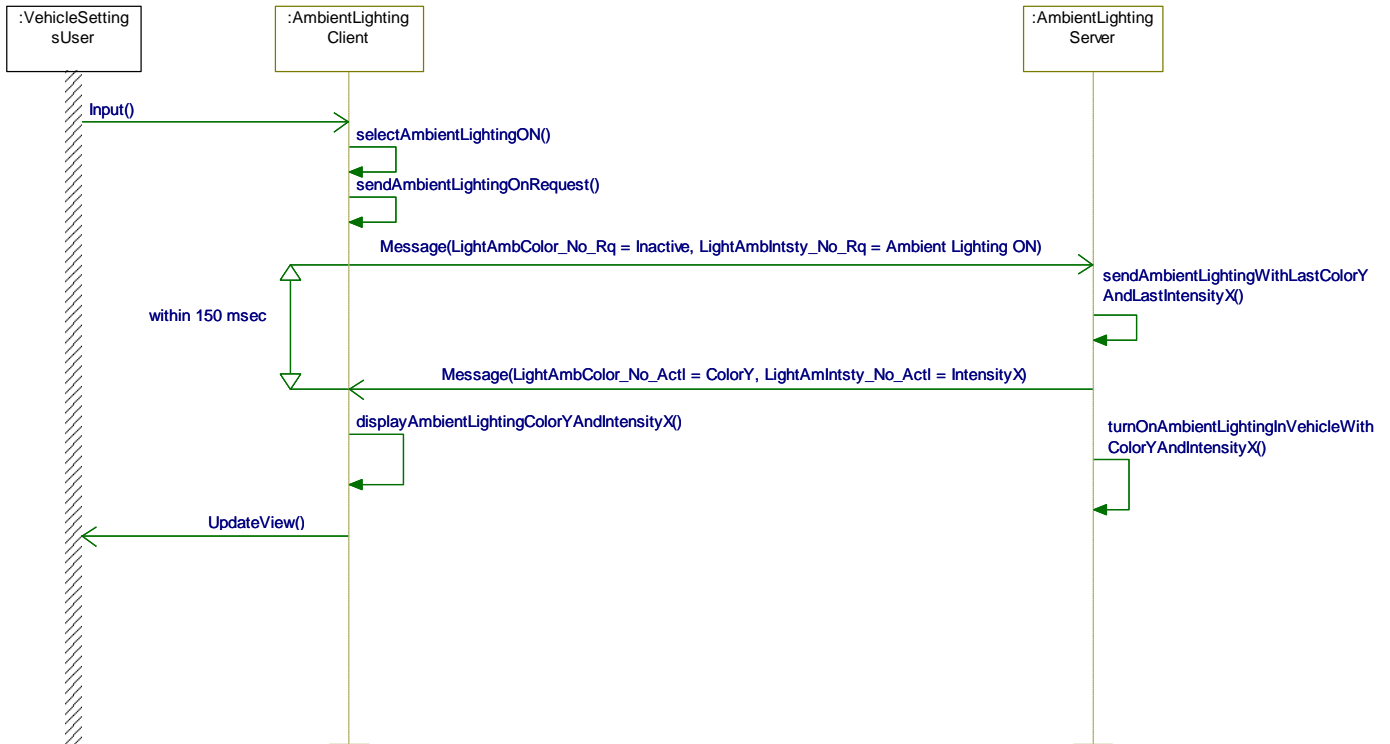
Ambient Lighting turned OFF with the previous Color when last ON set to ColorY  
Ambient Lighting turned OFF with the previous Intensity when last ON set to IntensityX

##### Event:

The user selects Ambient Lighting ON via the HMI

##### Post-Condition:

Ambient Lighting HMI shows Ambient Lighting ON with ColorY and IntensityX  
Ambient Lighting is turned ON in the vehicle with ColorY and IntensityX



### 3.5.5.5 VS-SD-REQ-193447/A-Turning OFF Ambient Lighting

Pre-Condition:

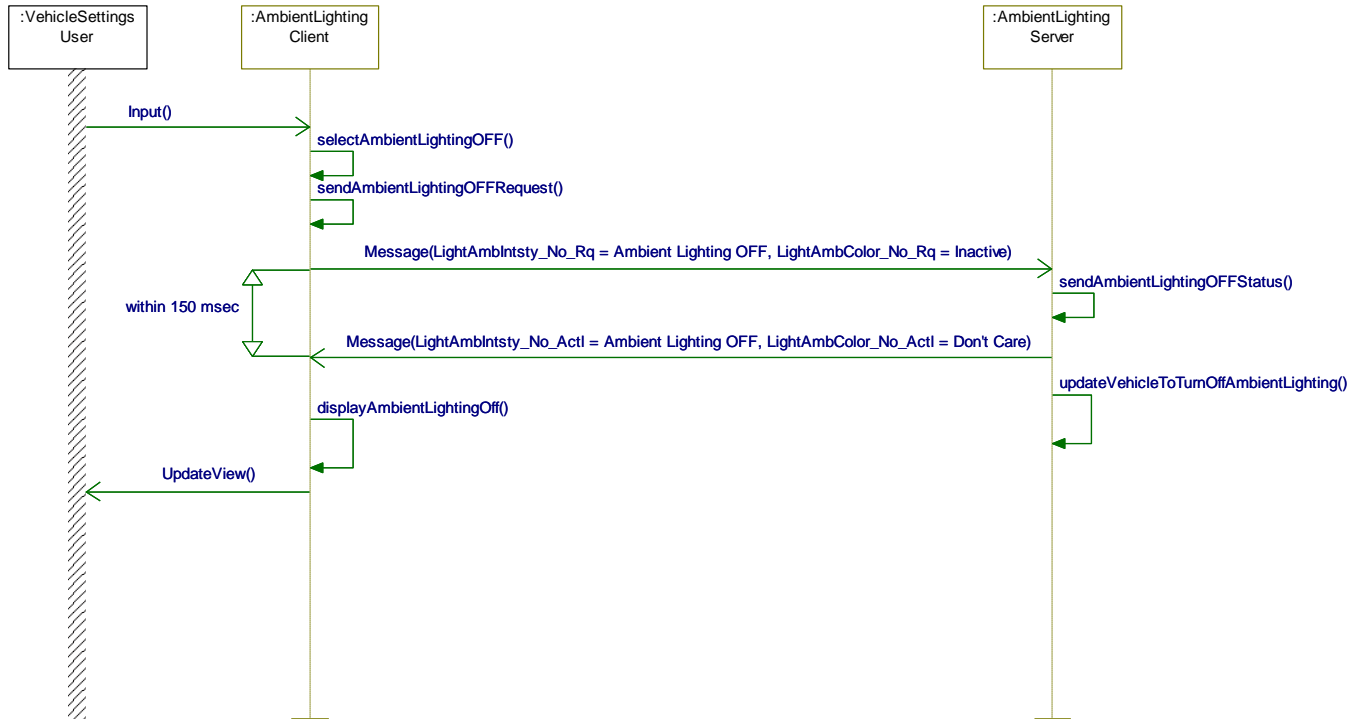
Ambient Lighting HMI is active showing Ambient Lighting is ON

Event:

The user selects Ambient Lighting OFF via the HMI

Post-Condition:

The HMI shows Ambient Lighting turned OFF  
Ambient Lighting is OFF in the vehicle



### 3.5.5.6 VS-SD-REQ-193487/B-Enhanced Memory - Recall new personality profile with Ambient Lighting active

Pre-Condition:

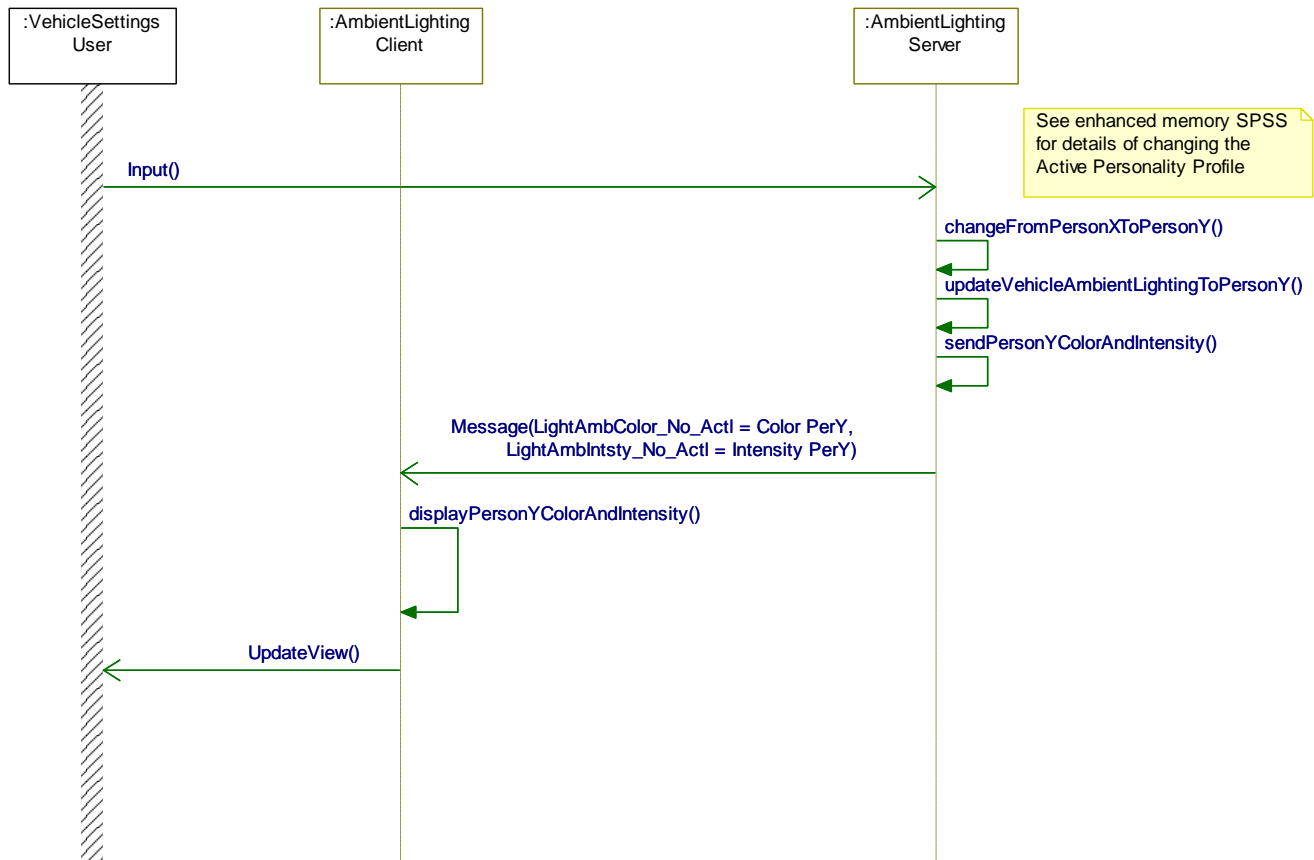
Ambient Lighting HMI is active for PersonX

Event:

User changes from PersonX to PersonY

Post-Condition:

Ambient Lighting HMI is active for PersonY



### 3.5.5.7 VS-SD-REQ-193489/A-Enhanced Memory - New Profile at Network Wake-up

#### Pre-Condition:

Network bus is asleep

When Network bus last awake Person Z was the active profile

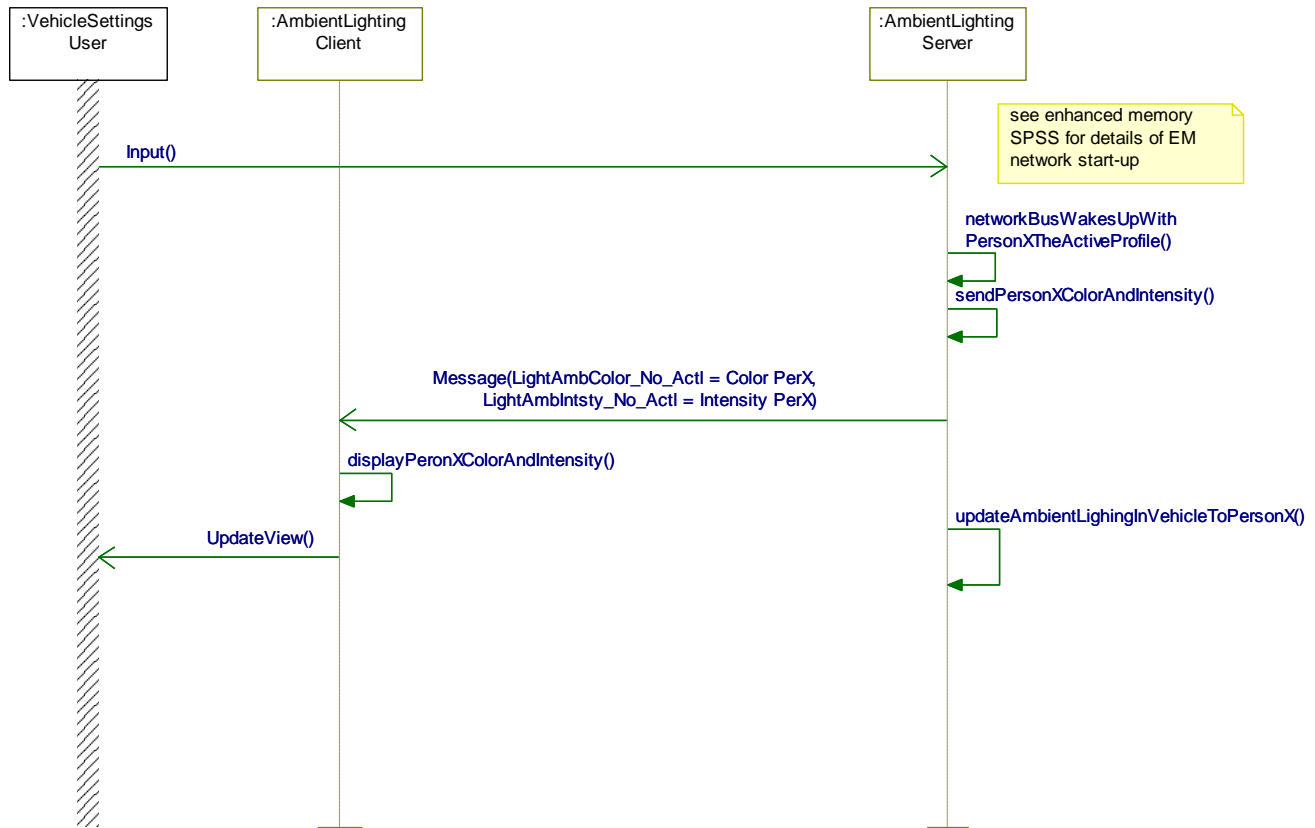
#### Event:

1. Network bus wakes up
2. The Active Profile is Person X
3. The Ambient Lighting HMI screen is selected

#### Post-Condition:

Ambient Lighting HMI is active for Person X







### 3.6 VS-FUN-REQ-025233/C-Touch Panel Beeps Settings (TcSE ROIN-292335-1)

#### 3.6.1 Interface Requirements - Beeps

##### 3.6.1.1 MD-REQ-025379/B-Bezel\_Beeps.Rq (TcSE ROIN-297362)

**Message Type:** Request

This signal requests to change the Bezel Beeps settings.

Logical Signal Name	Literals	Value	Description
Bezel_Beeps.Rq	Inactive	0x0	
	Enabled	0x1	
	Disabled	0x2	

##### 3.6.1.2 MD-REQ-025385/B-Bezel\_Beeps.St (TcSE ROIN-297423)

**Message Type:** Status

This signal provides the status of Bezel Beeps settings (Enabled/ Disabled).

Logical Signal Name	Literals	Value	Description
Bezel_Beeps.St	Invalid	0x0	
	Enabled	0x1	
	Disabled	0x2	

##### 3.6.1.3 MD-REQ-025386/B-Bezel\_Beeps\_Supported.St (TcSE ROIN-297429)

**Message Type:** Status

Signal from the Vehicle Settings Beep Server telling the Vehicle Settings Beep Client if Bezel Beeps are supported or not supported

Logical Signal Name	Literals	Value	Description
Bezel_Beeps_Supported.St	Invalid	0x0	
	Supported	0x1	
	Not Supported	0x2	

#### 3.6.2 Use Cases

##### 3.6.2.1 VS-UC-REQ-025234/A- Set Tone Panel Beep mode (TcSE ROIN-290777)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On. Touch Panel Beeps is set to {mode X}.



<b>Scenario Description</b>	User selects <Mode Y> via the HMI.
<b>Post-conditions</b>	HMI is updated to {Mode Y}.
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI CBI

### 3.6.3 Functional Requirements

#### 3.6.3.1 VS-SR-REQ-025235/A-Touch panel beeps Supported / Not supported by Bezel interface module (TcSE ROIN-141577-2)

The vehicle settings beep server shall tell the vehicle settings client via the Bezel\_Beeps\_Supported.St signal whether touch panel beeps are supported or not supported. For example if they are not supported the display module HMI will not offer the option to enable / disable the beeps.

If the beep menu display (for enabling or disabling beeps) is End Of Line configurable then the Beep menu display module (Vehicle Settings Client) shall ignore the \_Beeps\_Supported display configuration signal(s) and use the EOL configuration for the beeps menu pick. See the Infotainment Diagnostic Spec for beep EOL configuration details.

Note: The vehicle settings beep server may not have a Bezel\_Beeps\_Supported.St CAN signal in the CAN dB if EOL configurable.

#### 3.6.3.2 VS-REQ-025236/A-Enabling and Disabling Beeps (TcSE ROIN-273465)

The Vehicle Settings Beep Client can enable/disable beeps via the Bezel\_Beeps.Rq signal.

The Vehicle Setting Beep Client shall remember the beeps setting between ignition cycles and power mode changes.

The Vehicle Setting Beep Server shall remember the beeps setting between ignition cycles and power mode changes.

#### 3.6.3.3 VS-FUR-REQ-025237/A-EFP/ECP Beeps Default Parameters (TcSE ROIN-285003-1)

The EFP beep parameters shall be defaulted as shown below when:

- First shipped to the plant, or
- Upon loss of B+ power (if it causes a loss of Enable/Disable Beep parameters). The EFP shall be able to survive vehicle cranks and remember the Beep parameters.

If touch sense EFP :

Bezel\_Beep\_St = 0x1 Enabled

Bezel\_Beeps\_Supported = 0x1 Supported

If non Touch sense EFP:

Bezel\_Beeps\_Supported = 0x2 Not\_Supported

Bezel\_Beep\_St = 0x0 (Invalid)

### 3.6.4 Sequence Diagrams

#### 3.6.4.1 VS-SD-REQ-025238/A-Touch Panel Beeps (TcSE ROIN-118715-1)

##### Scenarios

##### Normal Usage

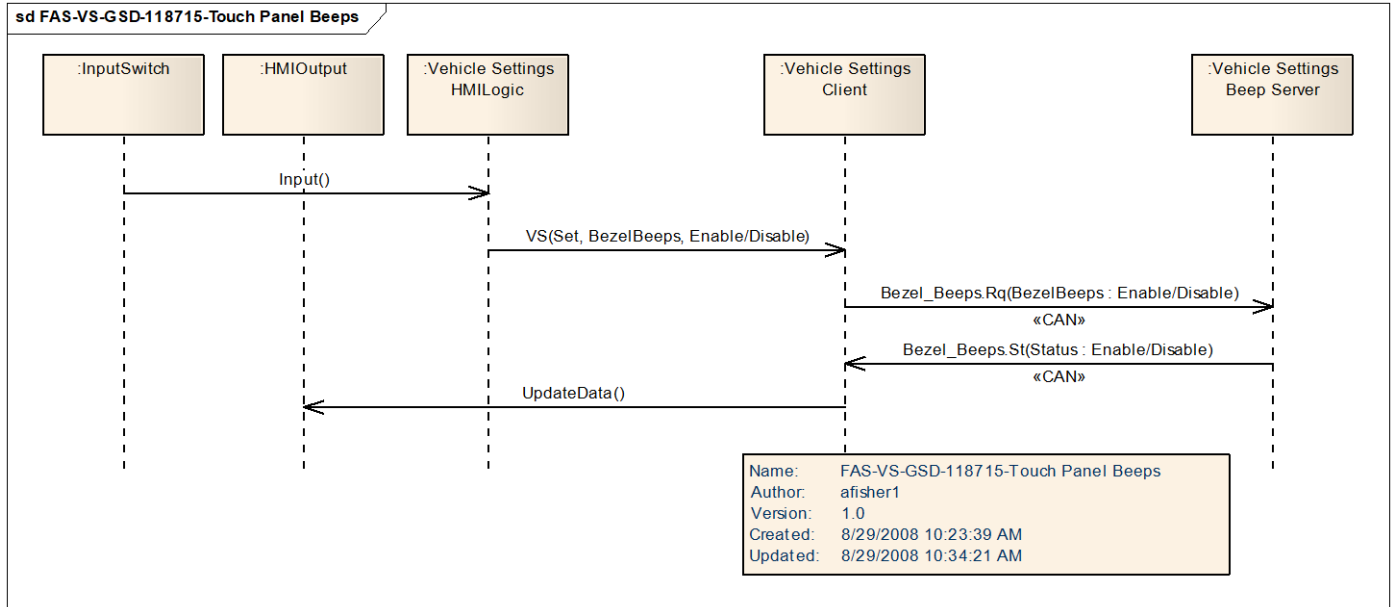
The user selects <turn Touch panel beeps on/off> via the HMI

**Constraints****Pre-condition**

Center Stack Display is On, Settings units menu is active.

**Post-condition**

The vehicle HMI indicates {Updated status of Touch Panel Beeps setting}

**Sequence Diagram**



### 3.7 VS-FUN-REQ-025239/C-Set 12/24 hour mode setting (TcSE ROIN-292339-1)

#### 3.7.1 Interface Requirements - 12/24 hour mode

##### 3.7.1.1 MD-REQ-025381/B-TimeAdjust.Rq (TcSE ROIN-297370)

**Message Type:** Request

This signal requests to change the setting for 12/24 hour mode.

Logical Signal Name	Literals	Value	Description
TimeAdjust.Rq	Inactive	0x0	
	12h_mode	0x1	
	24h_mode	0x2	

##### 3.7.1.2 MD-REQ-025462/B-VehTimeFormat.St (TcSE ROIN-297375)

**Message Type:** Status

Signal by the Vehicle Settings Server to provide the status of the 12/24 hour time mode setting.

Logical Signal Name	Literals	Value	Description
VehTimeFormat.St	Invalid	0x0	
	12h_mode	0x1	
	24h_mode	0x2	

#### 3.7.2 Functional Requirements

##### 3.7.2.1 VS-SR-REQ-099559/A-12/24 Hour Status Storage

The Vehicle Settings Server shall retain the value for 12/24 hour mode for the VehTimeFormat signal across ignition cycles and sleep cycles. The Vehicle Settings Server shall only initialize VehTimeFormat upon battery connects.

##### 3.7.2.2 VS-SR-REQ-099560/A-12/24 Hour Default Setting

The Vehicle Settings Server shall support a default configuration for 12 or 24 hour mode based on the vehicle market they are supporting. The VehicleTimeFormat signal shall be set on battery connect based on the configuration value used to determine 12 or 24 hour mode. If no configuration/value is available then the default shall be 12 hour mode.

##### 3.7.2.3 VS-SR-REQ-099558/A-12/24 Hour Mode Error Handling

In the case that the Vehicle Settings Server is reporting an invalid value for 12/24 hour mode status the Vehicle Settings Client shall display the setting selected by the user. The setting displayed shall be retained through ignition/sleep cycles. If the Vehicle Settings Server starts to transmit a valid value in the 12/24 hour mode status then the Vehicle Settings Client shall update to the value received and refresh their stored value if necessary. The request from the Vehicle settings client does not require the vehicle settings server to reply with an updated status to update their HMI. (Example, Client sends request 24h to Server, Server ignores and continues to send invalid. Client updates HMI with 24h and stores internal the value)

If the TimeAdjust (SetTimeFormat) signal equals 0x0 Inactive or 0x3 Not Used the Vehicle Settings Server shall ignore these values and continue reporting the current value in VehicleTimeFormat.



### 3.7.3 Use Cases

#### 3.7.3.1 VS-UC-REQ-025240/A- Set Time Format 12/24 hour mode (TcSE ROIN-290605)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On. Clock time format is set to {mode X}.
<b>Scenario Description</b>	User selects <Mode Y> via the HMI.
<b>Post-conditions</b>	HMI is updated to {Mode Y}.
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI CBI

### 3.7.4 Sequence Diagrams

#### 3.7.4.1 VS-SD-REQ-025241/A-Set 12/24 hour mode (TcSE ROIN-174033-1)

**Linked Elements**

VS-UC-REQ-025395/A-Set Time Format 12/24 hour mode(TcSE ROIN-174042-1)

**Scenarios****Normal Usage**

The user selects &lt;24 hour mode &gt; via the HMI.

**Constraints****Pre-condition**

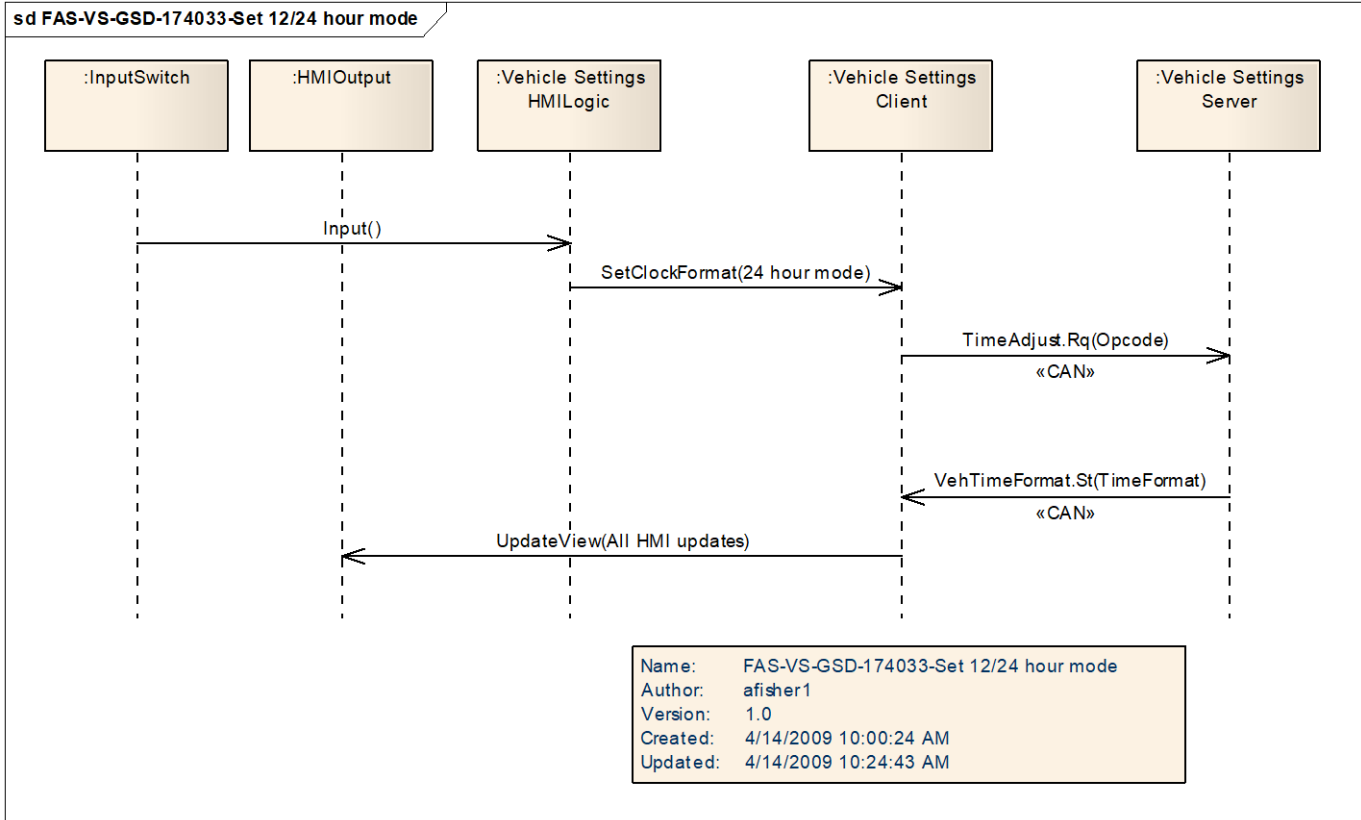
Center Stack Display is On, Settings units menu is active. Hour mode is currently set to 12 hours.

**Post-condition**

{Hour mode is updated to 24 hour mode on the HMI}



## Sequence Diagram







### 3.8 VS-FUN-REQ-025246/E-Charge Port Light Ring (TcSE ROIN-292385-1)

#### 3.8.1 Interface Requirements - Charge Port Light Ring

##### 3.8.1.1 MD-REQ-025392/C-ChargePortLightRing\_St (TcSE ROIN-270412)

If the CharePortLightRingClient supports both variants of the Charge Port Light Ring signals below then when selecting Charge Port Light Ring HMI the signal that will get updated will depend on what variant Charge Port Light Ring is configured for.

Variant 1 of ChargePortLightRing\_St:

CAN Signal Name: CenterStackRing\_D\_Actl

Value	Equal
0x0	Null
0x1	Off
0x2	On
0x3	LimitedOn

Variant 2 of ChargePortLightRing\_St:

CAN Signal Name: ChrgStatDsply\_D\_Rq

Value	Equal
0x0	Off
0x1	On (default)
0x2	NotUsed_1
0x3	NotUsed_2

#### 3.8.2 Use Cases

##### 3.8.2.1 VS-UC-REQ-025247/A-Adjust Charge Port Light Ring (TcSE ROIN-290607)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On
<b>Scenario Description</b>	The user selects a new charge port light ring setting
<b>Post-conditions</b>	The charge port light ring setting is updated and displayed to the user.
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI

#### 3.8.3 Requirements

##### 3.8.3.1 VS-SR-REQ-238151/A-ChargePortLightRing\_St signal

Once a selection is made for the Charge Port Light setting on the HMI the ChargePortLightRingClient shall keep this value set and save this setting between power modes (ie HMIAudioMode → ON → OFF → ON).

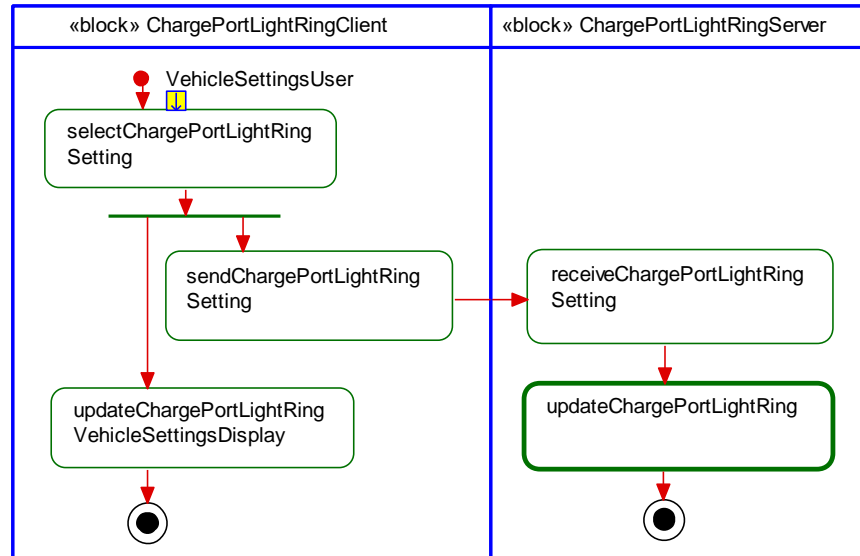


### 3.8.4 White Box View

#### 3.8.4.1 VS-ACT-REQ-025152/A-Adjust Charge Port Light Ring (TcSE ROIN-270411)

**Linked Elements**

VS-SD-REQ-025248/A-Adjust Charge Port Light Ring (TcSE ROIN-270410)

**Activity Diagram**

#### 3.8.4.2 VS-SD-REQ-025248/A-Adjust Charge Port Light Ring (TcSE ROIN-270410)

**Scenarios****Normal Usage**

The user selects a new charge port light ring setting using an input on the charge port light ring vehicle setting display.

**Constraints****Pre-condition**

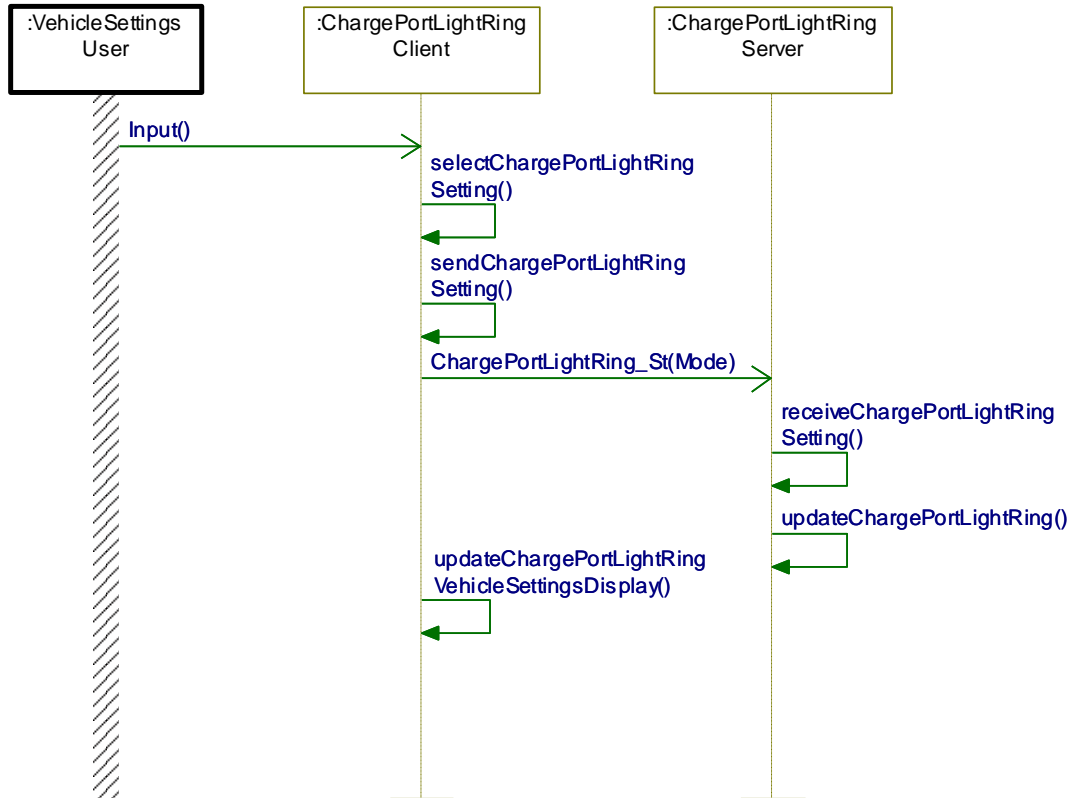
The charge port light ring vehicle setting display is active.

**Post-condition**

The charge port light ring setting is updated and displayed to the user.



## Sequence Diagram





### 3.9 VSv2-FUN-REQ-131582/B-Charge Cord Unlock

#### 3.9.1 Interface Requirements - Charge Cord Unlock

##### 3.9.1.1 MD-REQ-093985/B-ChargePortUnlock\_Rq

Message Type: Request

This signal is requested by the Charge Port Unlock Client for the Charge Port Unlock Server to unlock the charge port connector.

Logical Signal Name	Literals	Value	Description
ChargePortUnlock_Rq	No_Request	0x0	
	Unlock Request	0x1	

##### 3.9.1.2 MD-REQ-132658/C-ChrgCrdLck\_D\_Stat

Message Type: Response and Status

This signal reports the status of the Charge Port Unlock Server

Literals	Value	Description
Inactive / Retain	0x0	Retain treat same as Inactive. <a href="#">This supports requirement "IFS-MMCAN-REQ-015112-Invalid-NoDataExists", when in this state the charge port unlock client remembers the last state.</a>
Unlocked	0x1	
Locked	0x2	
UnlockInProgress	0x3	
Unlocked / LockInProgress	0x4	This will say when the Lock is in Progress but to be treated as Unlocked by the Charge Port Unlock Client
Locked / Unlock_Fail	0x5	Unlock_Fail is treated the same as status set to Locked for the Charge Port Unlock Client
Unlocked / Lock_Fail	0x6	Lock_Fail is treated the same as status set to Unlocked for the Charge Port Unlock Client
Locked / Faulty	0x7	Faulty is treated the same as status set to Locked for the Charge Port Unlock Client



### 3.9.2 Use Cases

#### 3.9.2.1 VS-UC-REQ-130593/B-Unlock Charge Cord from Centerstack

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge cord is locked (ex charging in progress) HMI for charge cord locked is shown Ignition Status is Run
<b>Scenario Description</b>	The user selects unlock charge cord HMI from the infotainment Charge Cord Unlock Client
<b>Post-conditions</b>	The charger module (ie Charge Port Unlock Server) reports that the charge cord unlock is in progress. The HMI indicates the charge cord unlock is in progress. The charger module reports that the Charge Cord is unlocked. HMI shows Charge Cord Unlocked
<b>Interfaces</b>	G-HMI

#### 3.9.2.2 VS-UC-REQ-130595/B-User tries to access Centerstack Charge Car Unlock HMI when Not in Run

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge cord is locked Ignition Status is OFF / Acc
<b>Scenario Description</b>	The user selects settings menu from the Charge Cord Unlock Client
<b>Post-conditions</b>	HMI is not available to unlock the charge cord
<b>Interfaces</b>	G-HMI

#### 3.9.2.3 VS-UC-REQ-130596/A-Charge Cord Centerstack HMI when Ignition changes out of Run to OFF or Accessory

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge cord is locked Ignition Status is Run Settings Menu has Charge Cord Unlock HMI available for selection
<b>Scenario Description</b>	Ignition is changed to OFF / Accessory
<b>Post-conditions</b>	HMI is not available to unlock the charge cord
<b>Interfaces</b>	G-HMI

#### 3.9.2.4 VS-UC-REQ-130598/A-User tries to Unlock from the Centerstack but Charge Cord is Not Unlocked

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge Cord is connected and locked



	HMI for charge cord locked is shown Ignition Status is Run
<b>Scenario Description</b>	The user selects unlock charge cord but doesn't unlock
<b>Post-conditions</b>	HMI doesn't show Unlocked HMI
<b>Interfaces</b>	G-HMI

**3.9.2.5 VS-UC-REQ-130653/B-Fast Charging Completes**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge cord is connected and locked HMI for charge cord locked is shown Ignition Status is Run
<b>Scenario Description</b>	Charging completes
<b>Post-conditions</b>	Charge Cord is Unlocked.  HMI shows as Unlocked HMI* *HMI shows whatever the status reported from the charging module
<b>Interfaces</b>	G-HMI

**3.9.2.6 VS-UC-REQ-130654/A-Charge Cord is Not Connected**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge cord is not connected Ignition Status is Run
<b>Scenario Description</b>	Go to the Vehicle Settings HMI screen for Charge Port Unlock
<b>Post-conditions</b>	HMI shows Unlocked* *HMI shows whatever the status reported from the charging module
<b>Interfaces</b>	G-HMI

**3.9.2.7 VS-UC-REQ-130656/A-User selects Unlock from Hard Button**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge cord is locked HMI for charge cord locked is shown Ignition Status is Run Settings Menu HMI is shown
<b>Scenario Description</b>	The user selects unlock charge cord via the hard button
<b>Post-conditions</b>	The charger module reports that the charge cord unlock is in progress.



	The HMI indicates the charge cord unlock is in progress.  The charger module reports that the charge cord is unlocked.  HMI shows charge cord unlocked HMI.
<b>Interfaces</b>	G-HMI

**3.9.2.8 VS-UC-REQ-131663/A-User selects Unlock from the Hard Button with Infotainment System OFF**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is OFF (ie Infotainment HMI is OFF) Charge cord is locked Ignition Status is Off
<b>Scenario Description</b>	The user selects unlock charge cord via the hard button
<b>Post-conditions</b>	No feedback on Infotainment HMI of in progress or lock status. <ul style="list-style-type: none"><li>Note: Charge port light will be used for feedback</li></ul>
<b>Interfaces</b>	G-HMI

**3.9.2.9 VS-UC-REQ-131664/B-User tries to Unlock via hard or soft button but the charger module reports Unlock Fail on the charger status signal**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge Cord is connected and locked HMI for Charge Cord Locked is shown Ignition Status is Run
<b>Scenario Description</b>	The user selects unlock charge cord but charger responds with faulted status
<b>Post-conditions</b>	HMI displays Locked HMI for unlocked failed <ul style="list-style-type: none"><li>Note: charge port light will be used for feedback</li></ul>
<b>Interfaces</b>	G-HMI

**3.9.2.10 VS-UC-REQ-131665/B-The charger module reports lock fail on the charge status signal**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge Cord is connected Ignition Status is Run
<b>Scenario Description</b>	The cord tries to lock, but fails
<b>Post-conditions</b>	HMI display Unlocked HMI for Lock Failed <ul style="list-style-type: none"><li>charge port light will be used for feedback</li></ul>
<b>Interfaces</b>	G-HMI



**3.9.2.11 VS-UC-REQ-131666/A-Charger module reports Inactive encoding on the charger status signal**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Ignition Status is Run
<b>Scenario Description</b>	Charger module powers up and reports Inactive on the status signal
<b>Post-conditions</b>	HMI performs based on last state the charger status signal was received that was not Inactive. This applies only if received Inactive for less than 5 seconds in Run.  If receive Inactive more than 5 seconds in Run then the signal is considered missing/unknown. When missing/unknown the HMI shall assume the cord is locked so that the unlock button is available.
<b>Interfaces</b>	G-HMI

**3.9.2.12 VS-UC-REQ-131667/B-The Charger Module reports Faulty on the status signal**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge Cord is connected Settings HMI is active Ignition Status is Run
<b>Scenario Description</b>	The charger reports faulty on the charge cord lock status
<b>Post-conditions</b>	HMI displays Locked HMI for faulty <ul style="list-style-type: none"><li>charge port light will be used for feedback</li></ul>
<b>Interfaces</b>	G-HMI

**3.9.2.13 VS-UC-REQ-131668/A-The charging module reports Locking In Progress on the charger status signal**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On Charge Cord is connected Ignition Status is Run
<b>Scenario Description</b>	The charger reports Locking In Progress on the charge cord lock status
<b>Post-conditions</b>	HMI shows Unlocked HMI for Locking In Progress <ul style="list-style-type: none"><li>charge port light will be used for feedback</li></ul>
<b>Interfaces</b>	G-HMI

**3.9.2.14 VS-UC-REQ-132657/A-User plugs in Charge Cord and Charge Cord is Automatically Locked**

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On



	Charge Cord is not connected HMI for charge cord unlocked is shown Ignition Status is Run Vehicle settings screen is being viewed
<b>Scenario Description</b>	The user plugs in the vehicle
<b>Post-conditions</b>	<p>The charger module reports that the charge cord lock is in progress. HMI shows Unlocked HMI*</p> <p>*HMI shows whatever the status reported from the charging module</p> <p>The charger module reports that the charge cord is locked. HMI shows Locked HMI*</p> <p>*HMI shows whatever the status reported from the charging module</p>
<b>Interfaces</b>	G-HMI



### 3.9.3 Requirements

#### 3.9.3.1 VS-HMI-REQ-132665/A-Charge Port HMI when Ignition is Run

The Charge Port Unlock Client shall only display Charge Port HMI when the Ignition Status is Run.



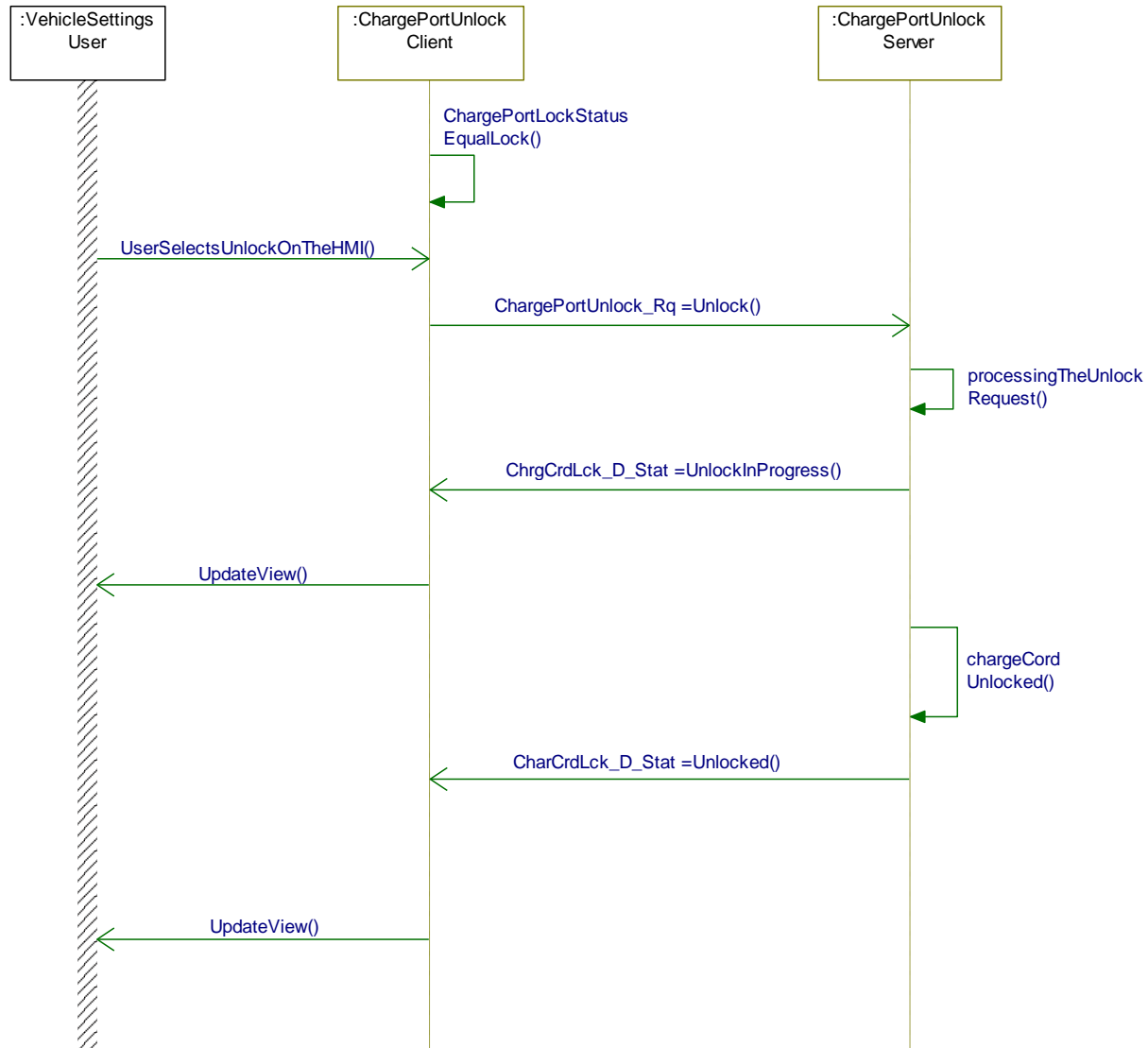
### 3.9.4 Sequence Diagrams

#### 3.9.4.1 VS-SD-REQ-132666/B-Unlock Charge Port from Infotainment HMI

Pre-Condition:

Ignition = Run

Charge Cord is Locked and Status message is reporting Locked

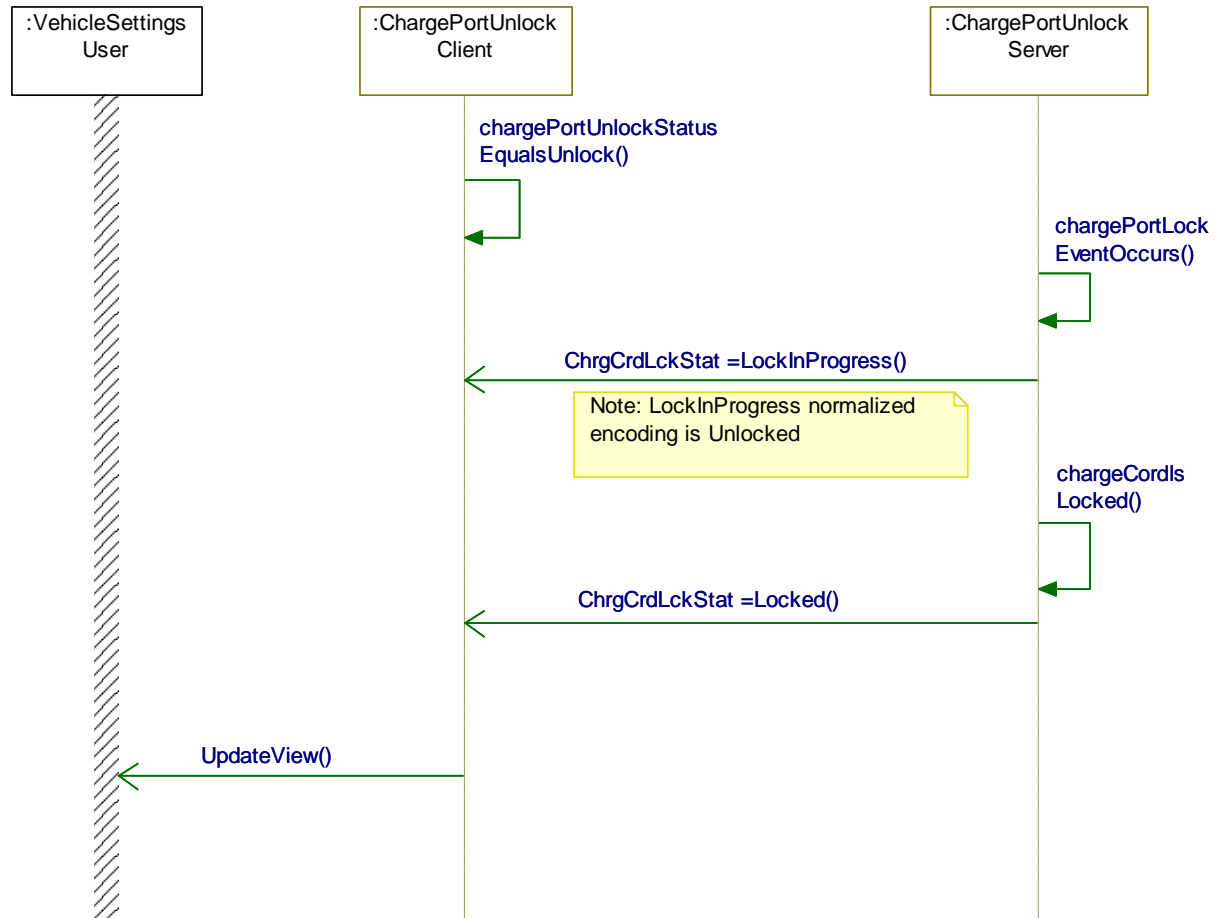


#### 3.9.4.2 VS-SD-REQ-132673/A-Lock Charge Cord

Pre-Condition:

Ignition = Run

Charge Cord is Unlocked and status message is reporting Unlocked





### 3.10 VS-FUN-REQ-023435/C-Edit Keypad Code (TcSE ROIN-284424-1)

#### 3.10.1 Interface Requirements - Keypad

##### 3.10.1.1 MD-REQ-023414/C-CntrStk\_D\_RqAssoc (TcSE ROIN-284870-1)

Message Type: Request

Note: Request signal from the Keypad Client / Personality Client to the Keypad Server with the keycode operation requested to be performed.

Logical Signal Name	Literals	Value	Description
CntrStk_D_RqAssoc	CHECK_KEYCODE	0x0	
	ERASE_KEYCODE	0x1	
	KEY	0x2	
	NULL	0x3	
	RKE	0x4	
	SET_KEYCODE	0x5	
	Cancel	0x6	
	Not Used	0x7	

##### 3.10.1.2 MD-REQ-023415/B-CntrStkKeycodeActl (TcSE ROIN-284871-1)

Message Type: Request

Note: Keycode signal from the Keypad Client / Personality Client to the Keypad Server / PersonalizationFunction Server to be used for verifying factory keycode or for changing current keycode.

Logical Signal Name	Literals	Value	Description
CntrStkKeycodeActl	Keycode	0x0000 – 0xFFFF	See table below for decoding



## CntrStkKeycodeActI

Note:

The Keycode entered from the center stack to the personalization.  
This is a bit encoded CAN signal.

001 = 1/2 button pressed  
010 = 3/4 button pressed  
011 = 5/6 button pressed  
100 = 7/8 button pressed  
101 = 9/0 button pressed

000, 110, 111 are Invalid entries.

## CntrStkKeycodeActI

Note:

Bit 15 is ignored  
Bits 14 - 12 : First button pressed  
Bits 11 - 9 : Second button pressed  
Bits 8 - 6 : Third button pressed  
Bits 5 - 3 : Fourth button pressed  
Bits 2 - 0 : Fifth button pressed  
Where, bit 0 is the right most bit of this CAN signal.

Example of decoding the Keycode from the CAN signal:

CAN Signal Value: 0x58D1

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
0	1	0	1	1	0	0	0
Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	1	0	1	0	0	0	1

Bit 15 is ignored.  
Bits 14 – 12: (9/0) First Button Pressed  
Bits 11 - 9 : (7/8) Second button pressed  
Bits 8 - 6 : (5/6) Third button pressed  
Bits 5 - 3 : (3/4) Fourth button pressed  
Bits 2 - 0 : (1/0) Fifth button pressed

**3.10.1.3 MD-REQ-023425/B-AssocConfirm\_D\_ActI (TcSE ROIN-284863-1)**

Message Type: Status

Note: Keypad Server / PersonalizationFunction Server communicates the state of the requested keycode association

Logical Signal Name	Literals	Value	Description
AssocConfirm_D_ActI	None	0x0	
	DISASSOCIATE	0x1	
	DUPLICATE	0x2	
	ERASE	0x3	
	IN_PROGRESS	0x4	
	KEYCODE_ACCEPTED	0x5	
	KEYCODE_REJECTED	0x6	
	ASSOCIATE	0x7	





### 3.10.2 Use Cases

#### 3.10.2.1 VS-UC-REQ-023436/A-Set Keypad Code for Current User (TcSE ROIN-290608)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On In key pad set mode
<b>Scenario Description</b>	The user enters <factory code, and then enters a valid new key code> via HMI. This is unique from all other entered key codes.
<b>Post-conditions</b>	New Keycode is stored {appropriate HMI is displayed}
<b>List of Exception Use Cases</b>	E1- VS-GUC-290609 -Invalid Keypad Code Entry E2- VS-GUC-290610 -Invalid Duplicate Keypad Code Entry E3- VS-GUC-290611 -Cancel Keypad Set Process
<b>Interfaces</b>	G-HMI Vehicle System Interface

#### 3.10.2.2 VS-UC-REQ-023437/A-Erase Keypad Code from Current User (TcSE ROIN-290612)

<b>Use Case Title</b>	Erase Keypad Code from current user
<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment system is On In key pad set mode
<b>Scenario Description</b>	The user enters <factory code, and then selects erase key code> via HMI.
<b>Post-conditions</b>	The keycode is erased. {Appropriate HMI is displayed}
<b>List of Exception Use Cases</b>	E1-VS-GUC-290609 -Invalid Keycode Entry E2- VS-GUC-290611 -Cancel Keypad Set Process
<b>Interfaces</b>	G-HMI Vehicle System Interface

#### 3.10.2.3 VS-UC-REQ-023438/A-Invalid Keypad Code Entry (TcSE ROIN-290609)

**Linked Elements**

VS-UC-REQ-023436/A-Set Keypad Code for Current User (TcSE ROIN-290608)

VS-UC-REQ-023437/A-Erase Keypad Code from Current User (TcSE ROIN-290612)

<b>Use Case Title</b>	Invalid keycode entry
<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On In key pad set mode
<b>Scenario Description</b>	The user enters an invalid factory code.
<b>Post-conditions</b>	HMI indicates {invalid key code entered message}. Keycode is not Set or Erased
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI Vehicle System Interface

#### 3.10.2.4 VS-UC-REQ-023439/A-Invalid Duplicate Keypad Code Entry (TcSE ROIN-290610)

**Linked Elements**

VS-UC-REQ-023436/A-Set Keypad Code for Current User (TcSE ROIN-290608)



<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On
<b>Scenario Description</b>	The user enters a duplicate key code
<b>Post-conditions</b>	HMI indicates {Duplicate key code entered message}. Keycode is not Set.
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI Vehicle System Interface

### 3.10.2.5 VS-UC-REQ-023440/A-Cancel Keypad Set Process (TcSE ROIN-290611)

#### Linked Elements

VS-UC-REQ-023436/A-Set Keypad Code for Current User (TcSE ROIN-290608)

VS-UC-REQ-023437/A-Erase Keypad Code from Current User (TcSE ROIN-290612)

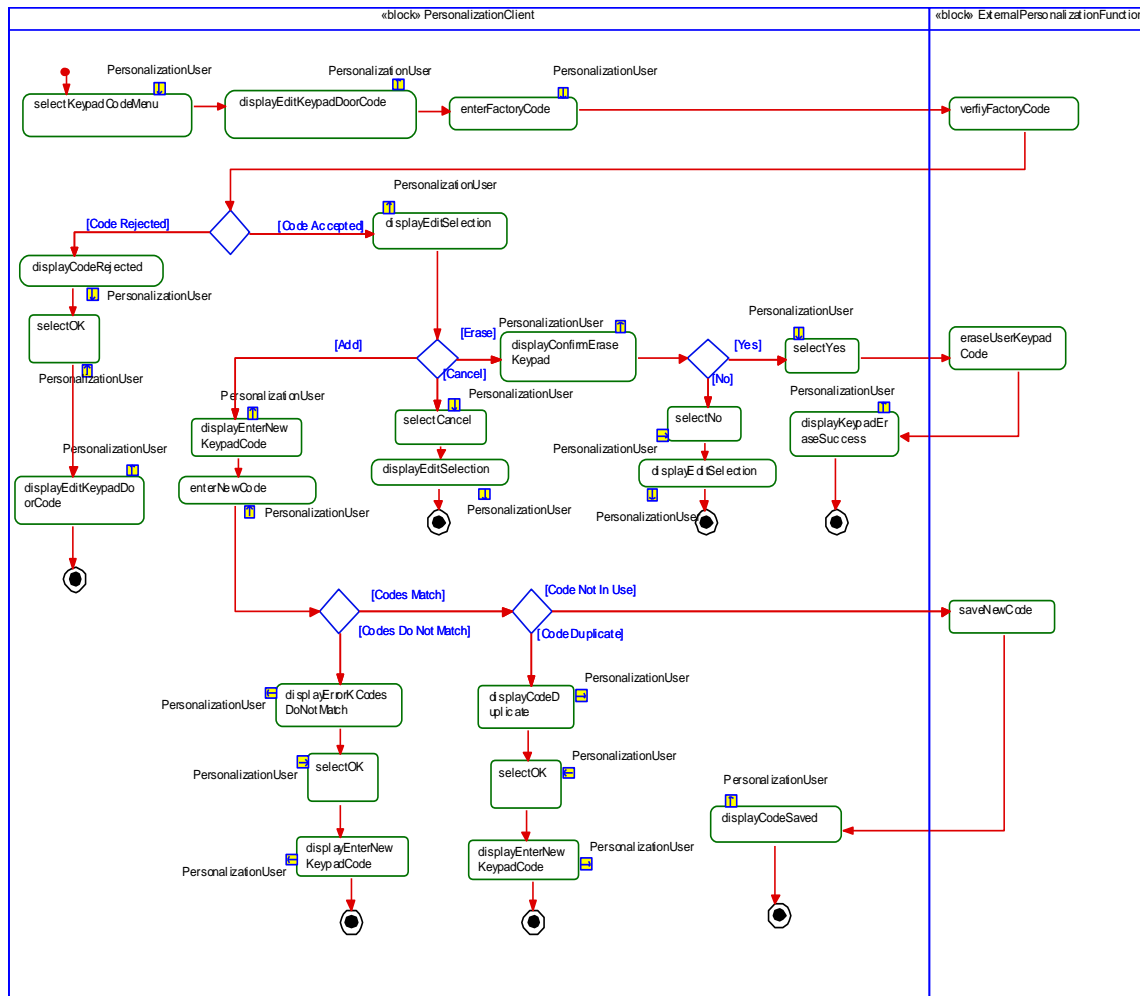
<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On In key pad set mode
<b>Scenario Description</b>	Exit key pad set screen, while before setting keypad code.
<b>Post-conditions</b>	Operation is aborted.
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI Vehicle System Interface



## 3.10.3 White Box Views

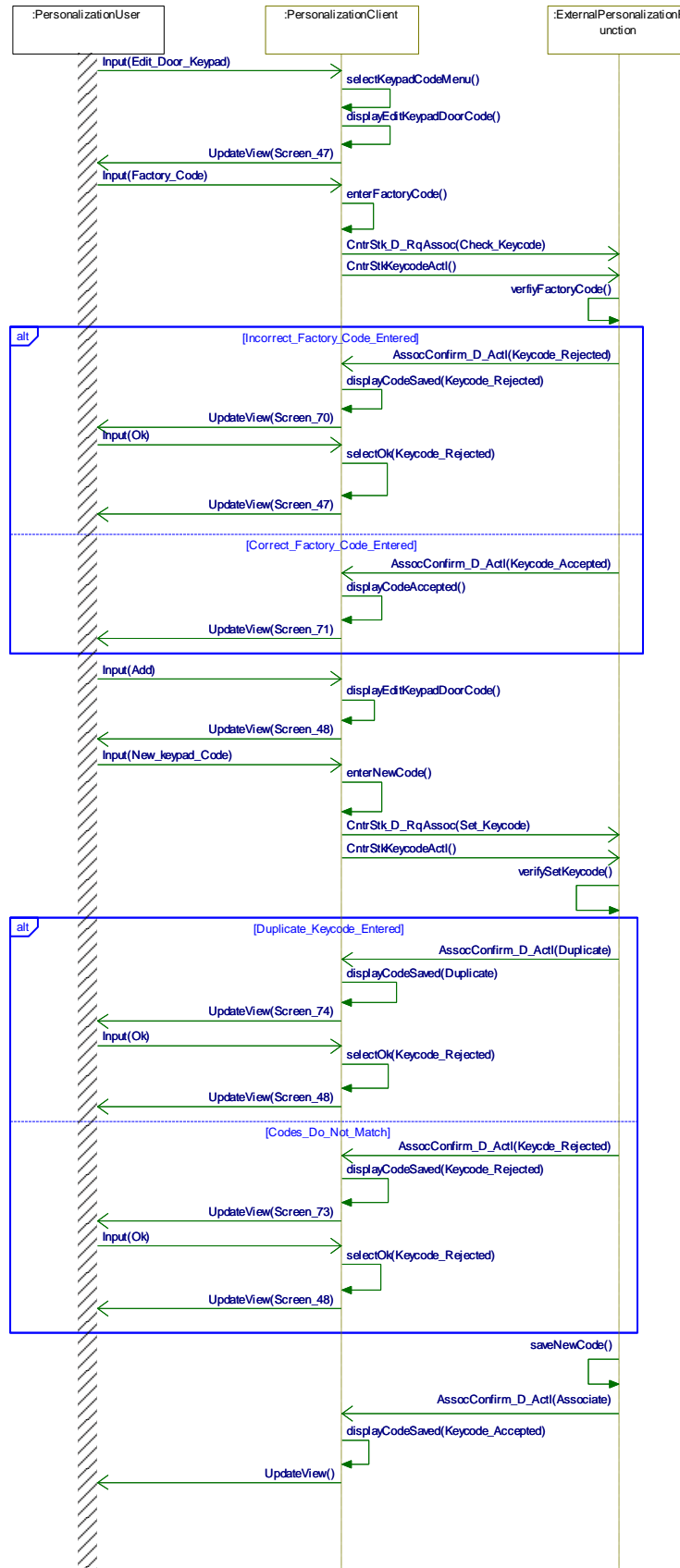
## 3.10.3.1 VS-ACT-REQ-023441/A-Edit Key Pad Code (TcSE ROIN-284422-1)

## Activity Diagram



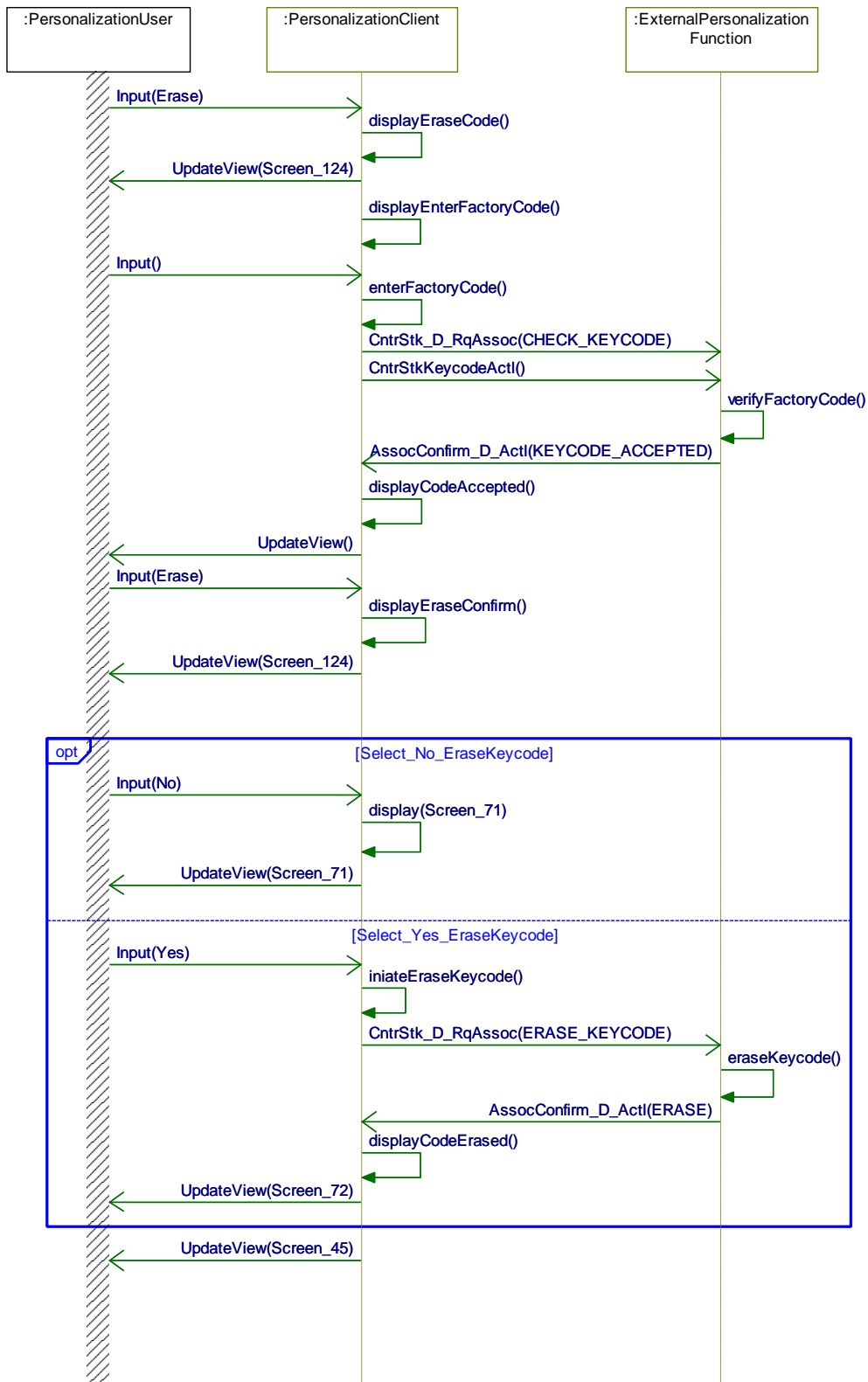


## 3.10.3.2 VS-SD-REQ-023442/B-Set Keypad Code for current user (TcSE ROIN-129661-2)



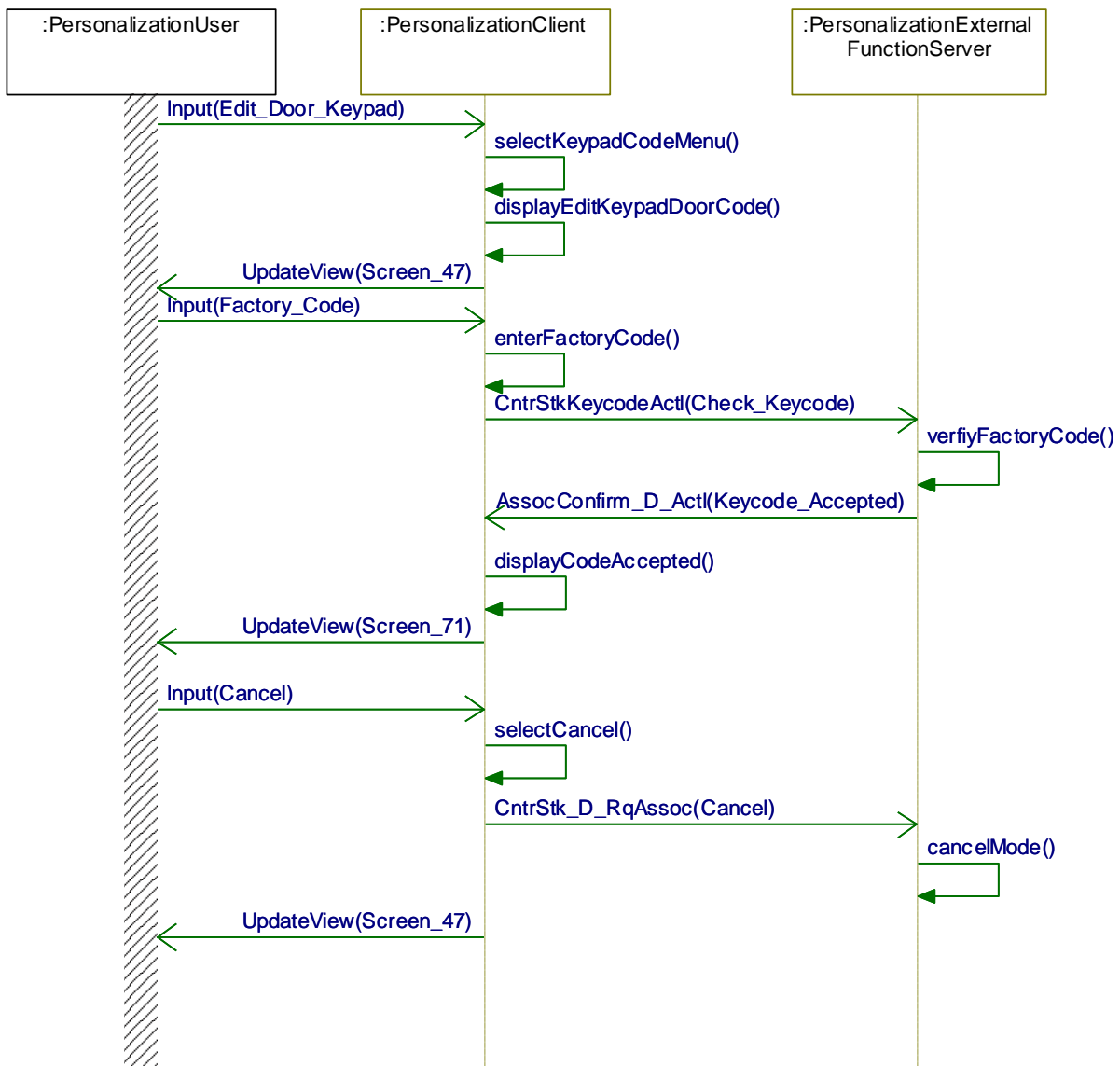


## 3.10.3.3 VS-SD-REQ-023443/B-Erase Keypad Code from current user (TcSE ROIN-129691-1)





## 3.10.3.4 VS-SD-REQ-086469/A-Cancel Keypad Code Edit





### 3.11 VSv2-FUN-REQ-331323/A-Edit Keypad Code - Variant 2

#### 3.11.1 Interface Requirements - Keypad

##### 3.11.1.1 MD-REQ-331324/A-CntrStk2\_D\_RqAssoc

Message Type: Request

Note: Request signal from the Keypad Client to the Keypad Server with the keycode operation requested to be performed.

Logical Signal Name	Literals	Value	Description
CntrStk2_D_RqAssoc	CHECK_KEYCODE	0x0	
	ERASE_KEYCODE	0x1	
	KEY	0x2	
	NULL	0x3	
	RKE	0x4	
	SET_KEYCODE	0x5	
	Cancel	0x6	
	Not Used	0x7	

Note: init value in the CAN dB for this signal should be 0x3 Null

##### 3.11.1.2 MD-REQ-330676/A-KeyPadCodeDgtX\_D\_Stat

Message Type: Status

Keycode signal from the Keypad Client to the Keypad Server to be used for verifying factory keycode or for changing current keycode.

Note: the "X" in KeyPadCodeDgtX\_D\_Stat represents 1 – 7 for each of the 7 keypad signals

Logical Signal Name	Literals	Value	Description
KeyPadCodeDgtX_D_Stat	EndofString	0x0	
	Button1_2or1	0x1	Ex. HMI has button 1_2 option or HMI has an individual 1 digit
	Button2	0x2	Ex. HMI allows selection of individual 2 digit
	Button3_4or3	0x3	
	Button4	0x4	
	Button5_6or5	0x5	
	Button6	0x6	
	Button7_8or7	0x7	
	Button8	0x8	
	Button9_0or9	0x9	
	Button0	0xA	
	Button7_8and9_0	0xB	Not used, treat as a don't care. Added for legacy reasons per the BCM team
	NotUsed1	0xC	
	NotUsed2	0xD	
	NotUsed3	0xE	
	NotUsed4	0xF	





Note: there would be 7 signals KeyPadCodeDgt1\_D\_Stat – KeyPadCodeDgt7\_D\_Stat where X represents the signal number

### 3.11.1.3 MD-REQ-023425/B-AssocConfirm\_D\_Actl (TcSE ROIN-284863-1)

Message Type: Status

Note: Keypad Server / PersonalizationFunction Server communicates the state of the requested keycode association

Logical Signal Name	Literals	Value	Description
AssocConfirm_D_Actl	None	0x0	
	DISASSOCIATE	0x1	
	DUPLICATE	0x2	
	ERASE	0x3	
	IN_PROGRESS	0x4	
	KEYCODE_ACCEPTED	0x5	
	KEYCODE_REJECTED	0x6	
	ASSOCIATE	0x7	

## 3.11.2 Use Cases

### 3.11.2.1 VS-UC-REQ-331327/A-Set Keypad Code for Current User

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is On In keypad set mode
<b>Scenario Description</b>	The user enters <factory code, and then enters a valid new keycode> via HMI. This is unique from all other entered keycodes.
<b>Post-conditions</b>	New keycode is stored {appropriate HMI is displayed}
<b>List of Exception Use Cases</b>	E1- VS-GUC-290609 -Invalid Keypad Code Entry E2- VS-GUC-290610 -Invalid Duplicate Keypad Code Entry E3- VS-GUC-290611 -Cancel Keypad Set Process
<b>Interfaces</b>	G-HMI Vehicle System Interface
<b>Notes</b>	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

### 3.11.2.2 VS-UC-REQ-331328/A-Erase Keypad Code from Current User

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment system is On In keypad set mode
<b>Scenario Description</b>	The user enters <factory code, and then selects erase keycode> via HMI.
<b>Post-conditions</b>	The keycode is erased. {Appropriate HMI is displayed}
<b>List of Exception Use Cases</b>	E1-VS-GUC-290609 -Invalid Keypad Code Entry E2- VS-GUC-290611 -Cancel Keypad Set Process
<b>Interfaces</b>	G-HMI



	Vehicle System Interface
Notes	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

### 3.11.23 VS-UC-REQ-331329/A-Invalid Keypad Code Entry

#### Linked Elements

VS-UC-REQ-331327/A-Set Keypad Code for Current User

VS-UC-REQ-331328/A-Erase Keypad Code from Current User

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On In keypad set mode
Scenario Description	The user enters an invalid factory code.
Post-conditions	HMI indicates {invalid key code entered message}. Keycode is not Set or Erased
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface
Notes	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

### 3.11.24 VS-UC-REQ-331330/A-Invalid Duplicate Keypad Code Entry

#### Linked Elements

VS-UC-REQ-331327/A-Set Keypad Code for Current User

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On
Scenario Description	The user enters a duplicate keycode
Post-conditions	HMI indicates {Duplicate keycode entered message}. Keycode is not Set.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface
Notes	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

### 3.11.25 VS-UC-REQ-331331/A-Cancel Keypad Set Process

#### Linked Elements

VS-UC-REQ-331327/A-Set Keypad Code for Current User

VS-UC-REQ-331328/A-Erase Keypad Code from Current User

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On In keypad set mode



<b>Scenario Description</b>	Exit key pad set screen, while before setting keypad keycode.
<b>Post-conditions</b>	Operation is aborted.
<b>List of Exception Use Cases</b>	NA
<b>Interfaces</b>	G-HMI Vehicle System Interface
<b>Notes</b>	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

### 3.11.3 Requirements

#### 3.11.3.1 VS-SR-REQ-331337/B-Keypad Client supporting both Variant 1 and Variant 2 request signals at the same time

The Keypad Client shall send both the Variant 1 and Variant 2 keypad request signals at the same time when performing a keypad keycode function operation. To support this the Keypad Client shall:

- Send the variant 1 request signals CntrStk\_D\_RqAssoc and CntrStkKeycodeActl from the function “VS-FUN-REQ-023435-Edit Keypad Code”, AND
- Send the variant 2 request signals Cntrstk2\_D\_RqAssoc and KeyPadCodeDgtX\_D\_Stat from this variant 2 function (“VSv2-FUN-REQ-331323-Edit Keypad Code – Variant 2”).
  - For the Cntrstk2\_D\_RqAssoc signal, once the selected value (ex SET\_KEYCODE) is put on the CAN bus then 100 msec later Cntrstk2\_D\_RqAssoc would be set to Null.
  - For the KeyPadCodeDgtX\_D\_Stat signals, once the selected values are set for each signal (ex Button8) then 100 msec later all the KeyPadCodeDgtX\_D\_Stat signals would be set back to EndOfString.

The Keypad Client shall use the same response signal AssocConfirm\_D\_Actl from the Keypad Server (same signal in both variant 1 and variant 2 functions).

The Keypad Server shall determine if the variant 2 signals are to be used (Cntrstk2\_D\_RqAssoc, KeyPadCodeDgtX\_D\_Stat) or variant 1 signals are to be used (CntrStk\_D\_RqAssoc, CntrStkKeycodeActl). The Keypad Server shall only respond to one set of request and keycode signals from the Keypad Client.

- **Disclaimer:** the Keypad Server was using the strategy in the bullets below at the time of the spec release. If the strategy changes in the future (ex use configurations, only supports the new signals) that won't impact the strategy of the Keypad Client. The KeyPad Server shall only respond to either variant 1 or variant2 requests signals but not both regardless what strategy they use.
- Keypad Server uses signals Cntrstk2\_D\_RqAssoc, KeyPadCodeDgtX\_D\_Stat:
  - If the new Keypad Client signals (Cntrstk2\_D\_RqAssoc, KeyPadCodeDgtX\_D\_Stat) are on the bus (would be in a new CAN message ID) then use these signal. If they are on the bus the Keypad Server shall support the new signals in this function.
- Keypad Server uses signals CntrStk\_D\_RqAssoc, CntrStkKeycodeActl:
  - If the signals Cntrstk2\_D\_RqAssoc, KeyPadCodeDgtX\_D\_Stat are not received by the Keypad Server (Due to an older revision of the module) then the KeyPad Server shall support the signals CntrStk\_D\_RqAssoc, CntrStkKeycodeActl in “VS-FUN-REQ-023435-Edit Keypad Code”.

#### 3.11.3.2 VS-SR-REQ-331338/A-Number of digits in Keypad

The EndOfString encoding in the KeyPadCodeDgtX\_D\_Stat signals is used to indicate how many button presses from the keypad keycode are being sent to the keypad server. The EndOfString shall be set in the KeyPadCodeDgtX\_D\_Stat signals not being used.

Example:

- For a 5 digit keycode with a keycode of 1\_2, 3\_4, 1\_2, 9\_0, 5\_6 would be sent from the Keypad Client as follows:
  - KeypadCodeDgt1\_D\_Actl = 0x1 Button1\_2or1
  - KeypadCodeDgt2\_D\_Actl = 0x3 Button3\_4or3

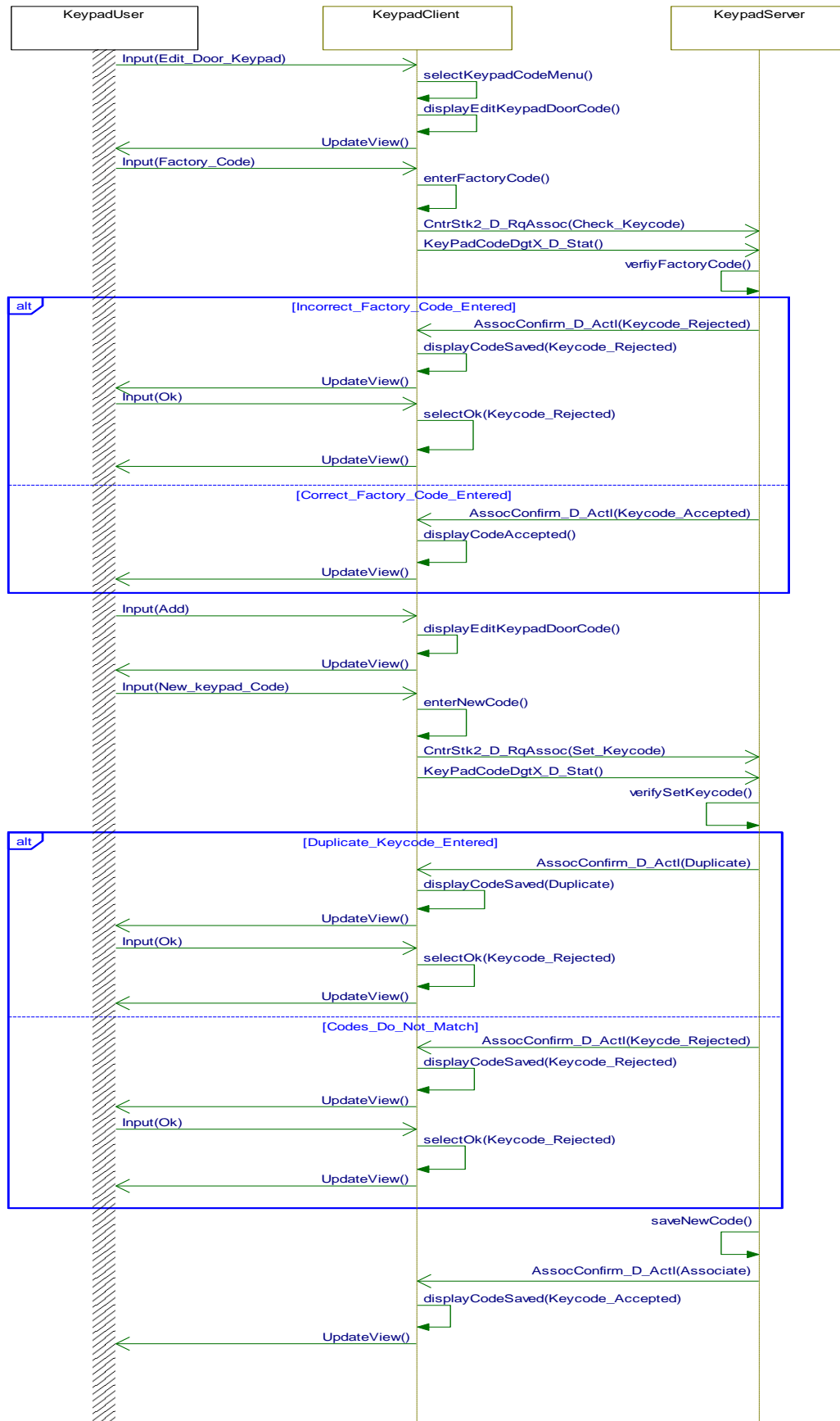


- KeypadCodeDgt3\_D\_Actl = 0x1 Button1\_2or1
- KeypadCodeDgt4\_D\_Actl = 0x9 Button9\_0or9
- KeypadCodeDgt5\_D\_Actl = 0x5 Button5\_6or5
- KeypadCodeDgt6\_D\_Actl = 0x0 EndOfString
- KeypadCodeDgt7\_D\_Actl = 0x0 EndOfString



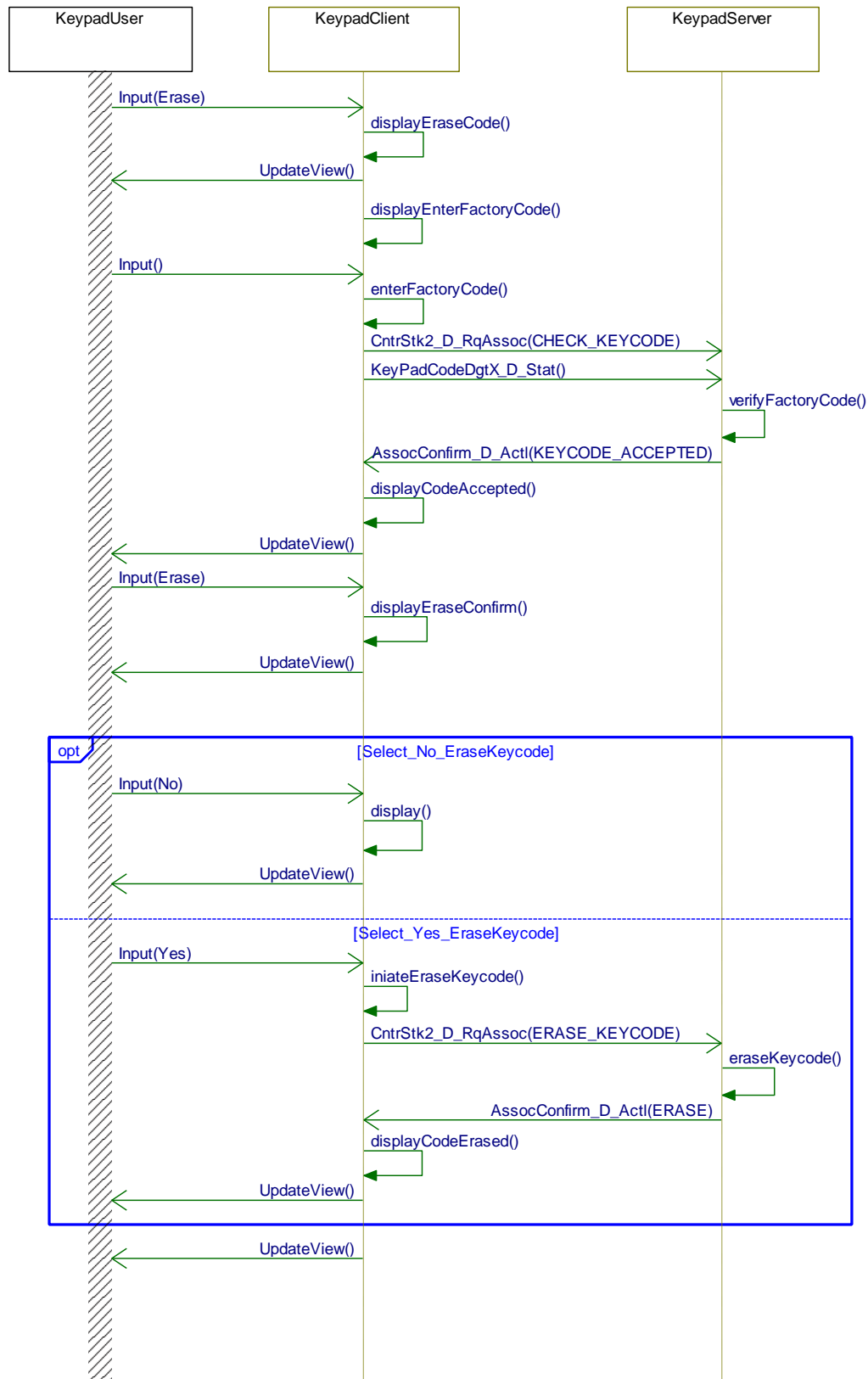
### 3.11.4 Sequence Diagrams

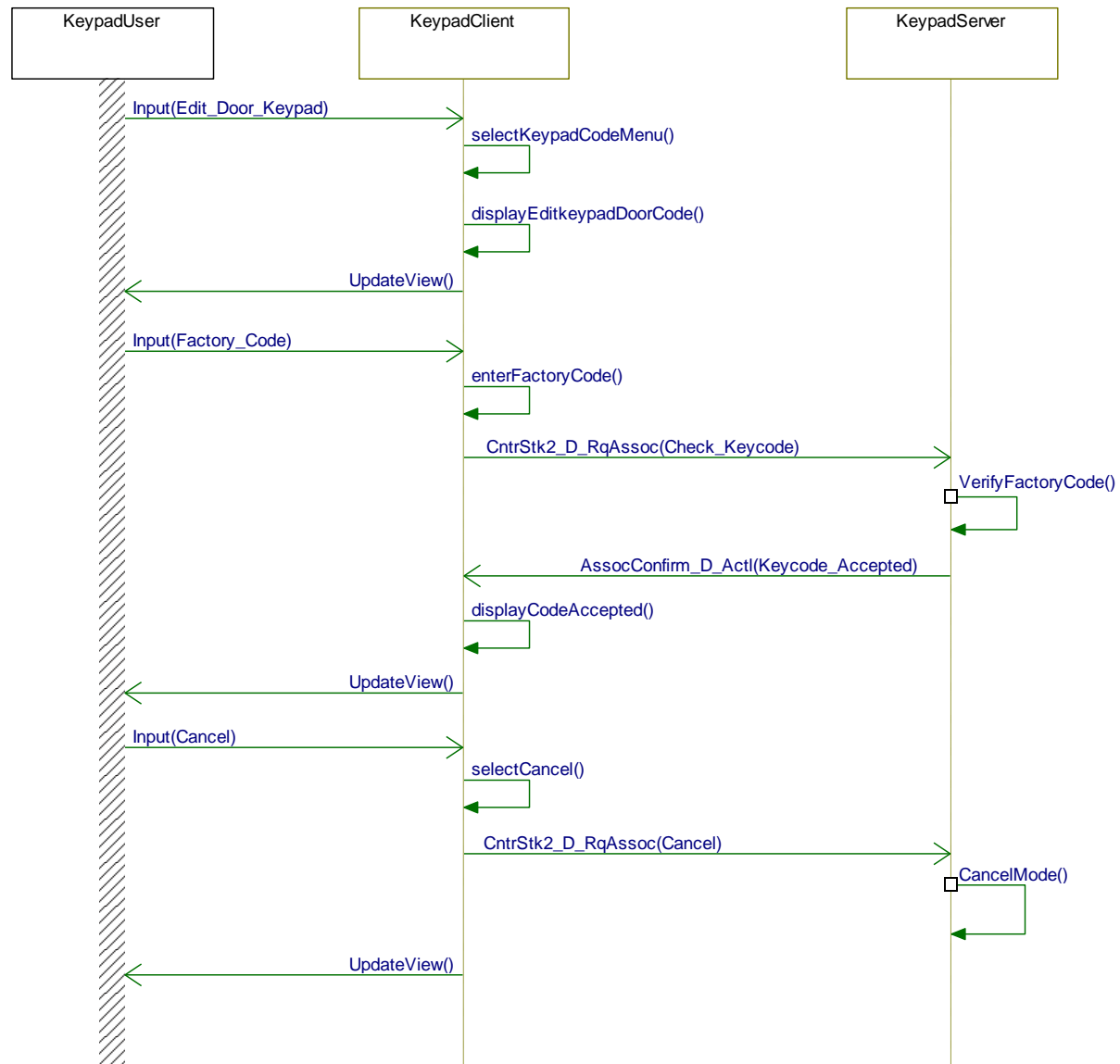
#### 3.11.4.1 VS-SD-REQ-331333/A-Set Keypad Code for current user





## 3.11.4.2 VS-SD-REQ-331334/A-Erase Keypad Code from current user



**3.11.4.3 VS-SD-REQ-331335/A-Cancel Keypad Code Edit**





### 3.12 VS-FUN-REQ-025341/E-Master Reset to Factory Defaults - APIM (TcSE ROIN-296290-1)

#### 3.12.1 Interface Requirements - Master Reset

##### 3.12.1.1 MD-REQ-213361/C-FactoryReset\_Rq

**Message Type:** Request

Signal sent by the Master Reset Client to initiate a Master Reset

Logical Signal Name	Literals	Value	Description
FactoryReset_Rq	Inactive	0x0	
	ResetFactoryDefaults	0x1	

##### 3.12.1.2 MD-REQ-222036/B-FactoryReset.St

**Message Type:** Status

Signal sent by the Master Reset Server indicating that the master reset default settings were restored for a master reset event

Logical Signal Name	Literals	Value	Description
FactoryReset.St	Inactive	0x0	
	FactoryDefaultsRestored	0x1	
	Reserved	0x2	
	Reserved	0x3	

#### 3.12.2 Use Cases

##### 3.12.2.1 VS-UC-REQ-025342/A-User Decides to Restore Module back to its Original Factory State while Driving (Driver Restriction = ON) (TcSE ROIN-298054)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment system is available Driver Restriction = ON
<b>Scenario Description</b>	The user will like to perform a Master Reset while the vehicle is moving (Driver Restriction = ON)
<b>Post-conditions</b>	All Master Reset functionality should be a disabled
<b>List of Exception Use Cases</b>	E1 – Master reset started and user drivers off (Driver Restriction = ON)
<b>Interfaces</b>	G-HMI

##### 3.12.2.2 VS-UC-REQ-025343/A-Master Reset Started and User Drivers Off (Driver Restriction = ON) (TcSE ROIN-298057)

**Linked Elements**

VS-UC-REQ-025342/A-User Decides to Restore Module back to its Original Factory State while Driving (Driver Restriction = ON) (TcSE ROIN-298054)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Same as normal use case
<b>Scenario Description</b>	User starts master reset and then drives off (turning ON driver restriction)
<b>Post-conditions</b>	Master reset and any reboots (if necessary) will continue as normal



List of Exception Use Cases	N/A
Interfaces	G-HMI

### 3.12.2.3 VS-UC-REQ-025344/A-User Decides to Restore Module Back to its Original Factory State (TcSE ROIN-298055)

Actors	Vehicle Occupant
Pre-conditions	Infotainment system is available Driver Restriction = OFF
Scenario Description	User select {Master Reset} option on the HMI The systems is locked out from usage until Master reset has completed successfully (if required, an immediate reboot shall occur right after master reset completion)
Post-conditions	All dynamic system & PII data is securely deleted and module is return back to its original factory state
List of Exception Use Cases	E1 – Loss of power while performing Master Reset E2 – Failure to remove/disconnect devices
Interfaces	G-HMI

### 3.12.2.4 VS-UC-REQ-025345/A-Loss of Power While Performing Master Reset (TcSE ROIN-298058)

**Linked Elements**

VS-UC-REQ-025344/A-User Decides to Restore Module Back to its Original Factory State (TcSE ROIN-298055)

VS-UC-REQ-213362/B-User Decides to Restore Module Back to its Original Factory State - Integrated AHU

Actors	Vehicle Occupant
Pre-conditions	Same as Normal Usage Use Case
Scenario Description	The user acknowledge the master reset action While Master reset functionality is active the module loses power After a few minutes the module acquires power
Post-conditions	Master reset actions shall not be preserved across power cycles. Only the master reset steps that took place while the module had power were the items deleted/restored.
List of Exception Use Cases	N/A
Interfaces	G-HMI

### 3.12.2.5 VS-UC-REQ-025346/A-Failure to Remove/Disconnect Devices (TcSE ROIN-298059)

**Linked Elements**

VS-UC-REQ-025344/A-User Decides to Restore Module Back to its Original Factory State (TcSE ROIN-298055)

VS-UC-REQ-213362/B-User Decides to Restore Module Back to its Original Factory State - Integrated AHU

Actors	Vehicle Occupant
Pre-conditions	Same as Normal Usage Use Case
Scenario Description	The user acknowledge the master reset action None of the index or connected devices are removed (i.e. iPod & BT Phone) Master reset functionality is active
Post-conditions	Same as Normal Usage Use Case. Master Reset should be able to ignore devices not removed.
List of Exception Use Cases	N/A
Interfaces	G-HMI

### 3.12.2.6 VS-UC-REQ-025347/A-User Decides to Reboot the Module (TcSE ROIN-298056)



<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment system is available
<b>Scenario Description</b>	User applies Center Stack Button combination for a set period of time User is presented with {reboot warning} HMI with a set period of time
<b>Post-conditions</b>	An immediate reboot shall occur
<b>List of Exception Use Cases</b>	E1 - User cancels via the {reboot warning} HMI
<b>Interfaces</b>	G-HMI CBI

### 3.12.2.7 VS-UC-REQ-025348/A-User Cancels via the {Reboot Warning} HMI (TcSE ROIN-298060)

#### Linked Elements

VS-UC-REQ-025347/A-User Decides to Reboot the Module (TcSE ROIN-298056)

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Same as Normal Usage Use Case
<b>Scenario Description</b>	User cancels the manual reboot via the {reboot warning} HMI
<b>Post-conditions</b>	Reboot is cancelled
<b>List of Exception Use Cases</b>	N/A
<b>Interfaces</b>	G-HMI

### 3.12.2.8 VS-UC-REQ-025349/B-Master Reset (TcSE ROIN-296294)

<b>Actors</b>	Vehicle occupant
<b>Pre-conditions</b>	Center stack display is ON
<b>Scenario Description</b>	The user selects <Master Reset> via HMI.
<b>Post-conditions</b>	All settings are restored to the factory defaults. SDARS stations are reset to factory defaults. Audio Settings are set to the default settings
<b>List of Exception Use Cases</b>	N/A
<b>Interfaces</b>	G-HMI

## 3.12.3 Requirements

### 3.12.3.1 VS-SR-REQ-015044/E-Master Reset request to the infotainment components (TcSE ROIN-174375-1)

During a Master Reset, the Vehicle Settings Master Reset Client shall issue a FactoryReset.Rq = [ResetFactoryDefaults](#) to the ~~SDARS Server~~ [infotainment components](#).

Note: when the infotainment components (ex AHU, Smart DSP AMP...) receive "FactoryReset\_Rq = ResetFactoryDefaults" they will reset to their default settings things such as the Audio Settings (ex Bass, Treble, Volume...) and SDARS settings.

SPSS to CAN dB mapping: For this FactoryReset.Rq the Vehicle Setting Master Reset Client shall send "0x104 MFD Request Signals3: SDARS\_FactoryReset\_Rq".

### 3.12.3.2 VS-SR-REQ-213252/B-Master Reset request to the TCU (Telematic Control Unit)

During a Master Reset, the Vehicle Settings Master Reset Client shall issue a FactoryReset.Rq = ResetFactoryDefaults to the TCU.



SPSS to CAN dB mapping: For this FactoryReset.Rq the Vehicle Setting Master Reset Client shall send "0x105 APIM\_Request\_Signals : FactoryReset\_Rq".

### 3.12.3.3 VS-FUR-REQ-136296/B-Master Reset Language

The APIM / IAHU Master Reset shall not change the currently selected language the APIM / IAHU module is using. For example if Spanish is the language and the user then does a Master Reset then after the Master Reset Spanish shall still be the language.

The APIM / IAHU Master Reset shall have the APIM / IAHU send a language request so the Vehicle Settings Language Servers (ex. Cluster) to go to the currently selected Language by the APIM / IAHU. For example if the Cluster was at English and APIM / IAHU is at Spanish and the user then selects Master Reset the APIM / IAHU would request the Cluster to go to Spanish.

Note: IAHU is integrated AHU for those modules which send out the Master Reset (mutually exclusive to APIM)

### 3.12.3.4 VS-FUR-REQ-025350/B-Reboot module using Center Stack (TcSE ROIN-298037-1)

The user shall be able to perform an immediate reboot by holding a combination of center Stack buttons for 5 seconds. Combination = TBD.

See HMI specs for button combinations for Multimedia Reboot and see the HMI specs for button combinations.

### 3.12.3.5 VS-FUR-REQ-025351/A-Secure Deletion (TcSE ROIN-298038-1)

Secure deletion must overwrite/erase the memory in such a way that the data can't be observed in a subsequent bitwise copy of the entire flash area.

### 3.12.3.6 VS-FUR-REQ-025352/A-Secure Data Storage - Copies (TcSE ROIN-298039-1)

PII data must not be copied/cached elsewhere in the system unless those copies are securely deleted as well.

### 3.12.3.7 VS-FUR-REQ-025353/A-Remove all PII & Specific Applications Data (TcSE ROIN-298040-1)

A mechanism in the HMI shall provide the user with the ability to remove all PII and specific applications data.

### 3.12.3.8 VS-FUR-REQ-025354/A-Master Reset Completion Time Limit (TcSE ROIN-298041-1)

The removal of all PII and specific application data shall not take longer than 45 seconds.

### 3.12.3.9 VS-FUR-REQ-025355/A-Restore Factory Settings and Default Values (TcSE ROIN-298042-1)

The APIM Master Reset shall have an option to securely delete all content and restore all factory settings to its default values. See all items in P01a\_Master\_Reset.xls for expected behavior details.

### 3.12.3.10 VS-FUR-REQ-025356/A-Clean Cache (TcSE ROIN-298043-1)

After securely deleting and restoring all settings the system shall clear any remaining system/application cache.



### 3.12.3.11 VS-FUR-REQ-025357/A-Immediate Reboot after Completion (TcSE ROIN-298044-1)

After securely deleting and restoring all settings the system shall perform an immediate reboot.

### 3.12.3.12 VS-FUR-REQ-025358/B-Feature Unavailability during Master Reset (TcSE ROIN-298045-1)

For any immediate reboot the user confirmation message shall include a warning about the unavailability of rear view camera and other vehicle APIM / IAHU dependent features.

Note: IAHU is for Integrated AHU (mutually exclusive with APIM)

### 3.12.3.13 VS-FUR-REQ-025359/A-Confirmation Message & Device Disconnect Info (TcSE ROIN-298046-1)

A user confirmation message shall include a description of the function that will be performed and the appropriate devices that must be disconnected.

### 3.12.3.14 VS-FUR-REQ-025360/A-Dynamic/Manual Registration to Master Reset Service (TcSE ROIN-298047-1)

Third-party or external software applications/plugin-ins shall be allow to register to a global master reset event.

### 3.12.3.15 VS-FUR-REQ-025361/A-System Blocked until Master Reset Completed (TcSE ROIN-298048-1)

After the master reset feature is activated the user shall not be able to perform any other functions in the systems after master reset completes and system reboot occurs.

### 3.12.3.16 VS-FUR-REQ-025362/A-Secure Delete APIs (TcSE ROIN-298049-1)

All data shall be securely deleted during Master Reset using the appropriate secure deletion APIs determined by Ford Motor Company.

### 3.12.3.17 VS-FUR-REQ-025363/A-Baseline OTA Data (TcSE ROIN-298050-1)

APIM's Baseline OTA data shall never be removed (e.i. STL, RDS-TMC).

### 3.12.3.18 VS-FUR-REQ-025364/A-System Upgrades and/or Languages Not Removable (TcSE ROIN-298051-1)

Installed language packs and System upgrades shall never be removed during Master Reset .

### 3.12.3.19 VS-FUR-REQ-025365/A-Driver Restriction 2 (TcSE ROIN-298053)

Driver restriction shall apply to master reset and its features. This options shall not be available while the vehicle is moving and driver restriction = ON

### 3.12.3.20 ENMEM-REQ-105569/E-Driver Profiles Deleted During Master Reset

The storage and maintenance of the Driver Profiles of Enhanced Memory shall comply with the design and requirements of Master Reset (refer to the latest version of VS-FUN-REQ-025341-Master Reset to Factory Defaults).

When a Master Reset operation is executed:

1. The EnhancedMemoryInterfaceClient shall delete all internal Driver Profile data (i.e. Profile Name, Button Association, Profile Number Association) for all Driver Profiles
2. If a keyfob is associated to a Driver Profile(s) the following actions shall be performed:
  - The EnhancedMemoryInterfaceClient shall request to disassociate the keyfob via EnMemProfilePairingRq(KeyPairing=DisassociateKey)
  - The EnhancedMemoryProfileServer shall respond with a successful keyfob disassociation via EnMemKeyPairing\_St(KeyPairing=KeyDisassociated)



- The EnhancedMemoryProfileServer shall update the status of PersKeyPairing\_St to KeyNot Associated for the Driver Profile deleted
  - If there are more than one profile with keys paired, the EnhancedMemoryInterfaceClient shall repeat steps 2 and 3 above until all the keyfobs are dissociated from all profiles
3. If a phone is associated to a Driver Profile(s) the following actions shall be performed:
- The EnhancedMemoryInterfaceClient shall request to disassociate the phone via EnMemProfilePairingRq(KeyPairing=DisassociatePhone)
  - The EnhancedMemoryProfileServer shall respond with a successful phone disassociation via EnMemKeyPairing\_St(KeyPairing=KeyDisassociated)
  - The EnhancedMemoryProfileServer shall update the status of PersPhonePairing\_St to NoPhonesAssociated for the Driver Profile deleted
  - If there are more than one profile with phones paired, the EnhancedMemoryInterfaceClient shall repeat steps 2 and 3 above until all the phones are dissociated from all profiles
4. The EnhancedMemoryInterfaceClient shall send a recall request for Vehicle Profile via InfotainmentRecall\_Rq(PersIndex = Vehicle)
5. The EnhancedMemoryInterfaceClient shall OptOut of all profiles and set all active personalities in PersonalityOptIn\_St to NotOptedIn
6. The EnhancedMemoryInterfaceClient shall set the Enhanced Memory feature status to Off via EnhancedMemory\_St(Status = ProfileOff)
7. The EnhancedMemoryProfileServer shall send a recall request for Vehicle to the EnhancedMemoryPositionClient via MemoryPosition\_St. Note: this step does not apply to the EnhancedMemoryInterfaceClient and is don't care for the EnhancedMemoryInterfaceClient
8. The EnhancedMemoryInterfaceClient shall send a Factory Reset request to the EnhancedMemoryServers via FactoryReset\_Rq(Type = Reset) to perform Master Reset on the EnhancedMemoryServers that support Master Reset (ex. AHU resets SDARS presets - see SDARS SPSS for details). If the EnhancedMemoryServer supports FactoryReset\_Rq, all profiles shall reset (ex. SDARS presets reset for all profiles).
9. The EnhancedMemoryInterfaceClient performs a reboot for Master Reset following VS-FUN-REQ-025341-Master Reset to Factory Defaults.
- Note: the EnhancedMemoryInterfaceClient/Infotainment System Master shall send the FactoryReset\_Rq before shutting down the Infotainment System (i.e. sends FactoryReset\_Rq(Type = Reset) while HMI\_HMIMode\_St = On).

Reference sequence diagram ENMEM-SD-REQ-197509-Master Reset for details

### 3.12.3.21 VS-SR-REQ-362537/A-Master Reset Setting when MyKey is active

The Vehicle Settings Master Reset Client shall not perform a Master Reset when MyKey is active (ie IgnKeyType\_D\_Actl = Key\_In\_Ign\_MyKey).

When a MyKey is active the Master Reset setting shall be greyed out or not visible. See HMI specs for details.

If the IgnKeyType\_D\_Actl is not on the bus when ignition does not equal Run (ex Acc, Delay Acc, extended play) then assume the last signal state received.

Signal Name	Encodings	Value	Description
IgnKeyType_D_Actl	-	-	Type of key that is in the ignition
	Key_Read_In_Progress	0x0	Key(s) will be read now
	Key_In_Ign_Standard_Key	0x1	Admin (full) mode
	Key_In_Ign_MyKey	0x2	MyKey restricted mode
	Key_Not_Prgm_Read_Failure	0x3	
	Unknown	0xE	Disable MyKey System mode
	Invalid	0xF	Initial value

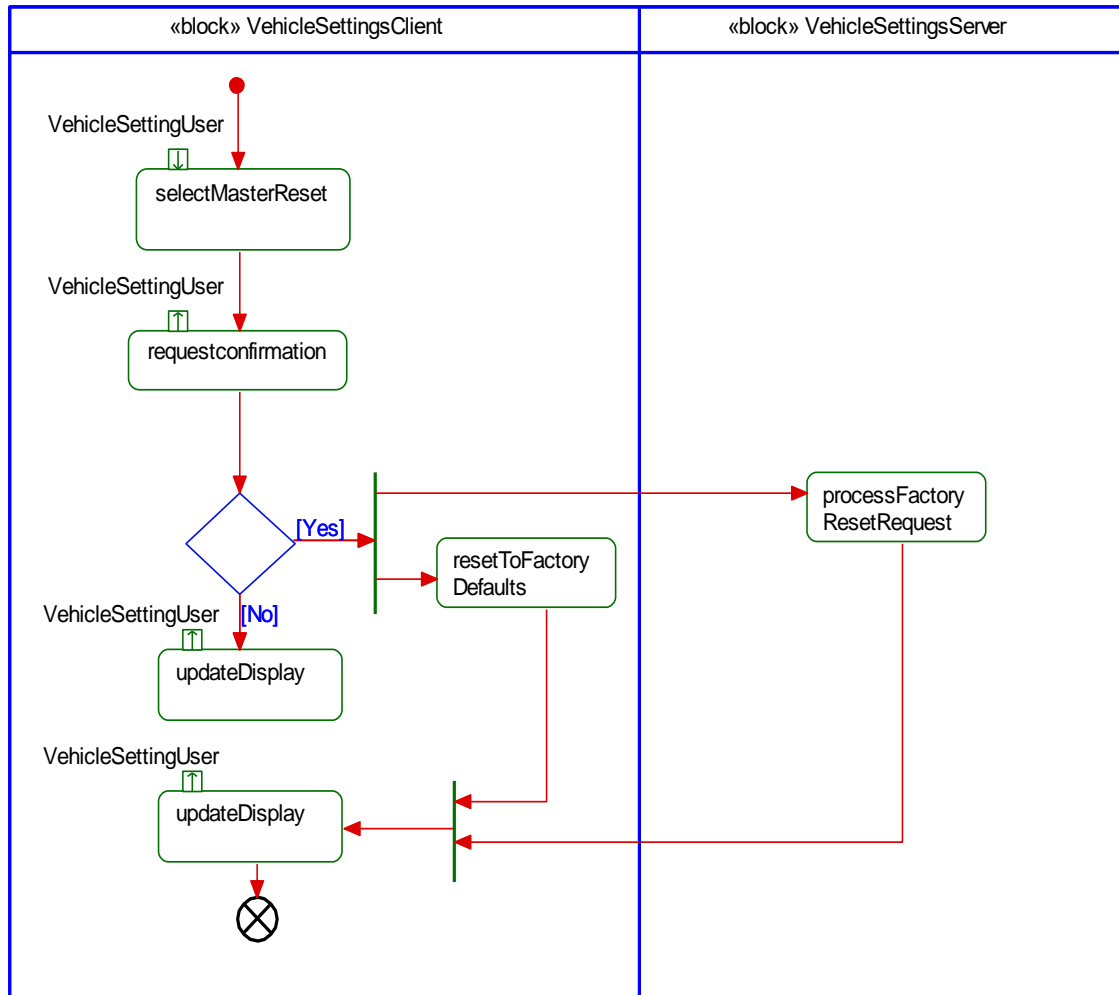


### 3.12.4 White Box Views

#### 3.12.4.1 VS-ACT-REQ-025151/A-Master Reset (TcSE ROIN-296296-1)

**Linked Elements**

VS-SD-REQ-025366/A-Master Reset (TcSE ROIN-296298)

**Activity Diagram**

#### 3.12.4.2 VS-SD-REQ-025366/A-Master Reset (TcSE ROIN-296298)

**Scenarios****Normal Usage**

User requests {Master Reset} via the HMI.

**Constraints****Pre-condition**

CenterStack is On.

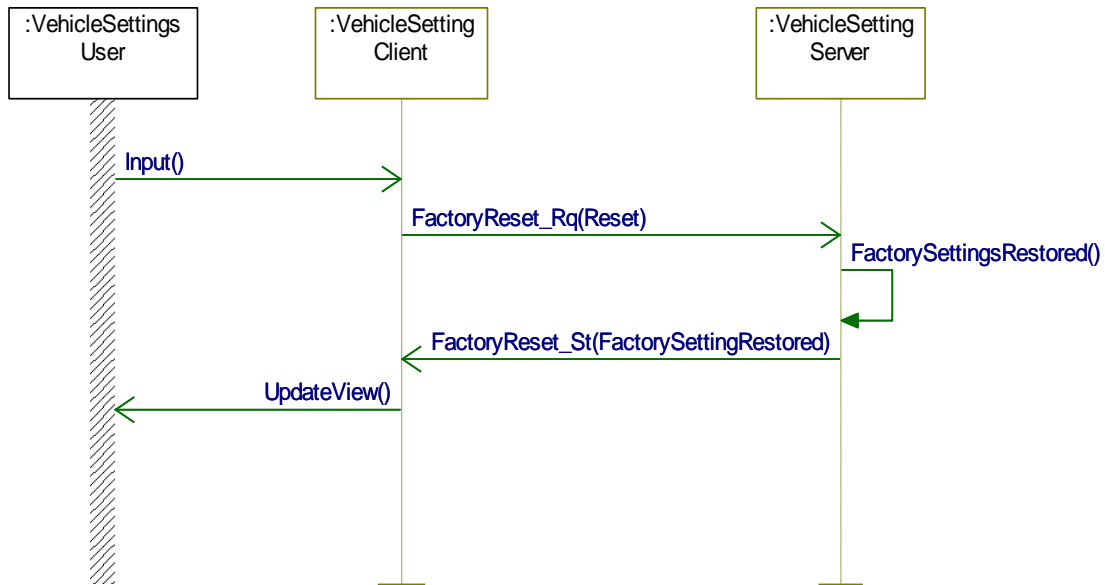
**Post-condition**

Requested Restore is completed.





## Sequence Diagram







### 3.13 VS-FUN-REQ-096818/D-Set Valet Mode

#### 3.13.1 Interface Requirement - Valet Mode

##### 3.13.1.1 MD-REQ-097285/C-ValetMode\_St

**Message Type:** Status

Signal used to indicate the Valet Mode Status.

Logical Signal Name	Literals	Value	Description
ValetMode_St	Invalid / Null	0x0	
	OFF	0x1	
	ON	0x2	
	Not Used	0x3	

#### 3.13.2 Use Cases

##### 3.13.2.1 VS-UC-REQ-096810/B-Enable/Disable Valet Mode

<b>Actors</b>	Vehicle Occupant
<b>Pre-conditions</b>	Infotainment System is powered ON (ie HMIAudioMode = ON). Valet Mode is available in the HMI.
<b>Scenario Description</b>	The user selects activate or deactivate Valet Mode from the HMI.
<b>Post-conditions</b>	Valet Mode is activated if user selects activate Valet Mode Features that are restricted by Valet Mode are now locked out  Valet Mode is deactivated if user selects deactivate Valet Mode Features that were locked out by Valet Mode are no longer restricted
<b>Notes</b>	
<b>Interfaces</b>	G-HMI, Vehicle System Interface

#### 3.13.3 Requirements

##### 3.13.3.1 VS-FUR-REQ-104343/D-Valet Mode Infotainment Operation

The valet mode feature allows the touch screen (if touch screen on module) to be locked out using a 4 digit pin.

During activation, the touchscreen is locked out, and certain functionality is suspended/disabled as defined by HMI.

Valet mode is disabled using the same 4 digit pin that was used during activation.

There is a predetermined default pin that can be used to disable valet mode as defined by HMI.

Valet mode shall only be disabled using a matching 4 digit pin to what was used to enable the feature or by the default pin.

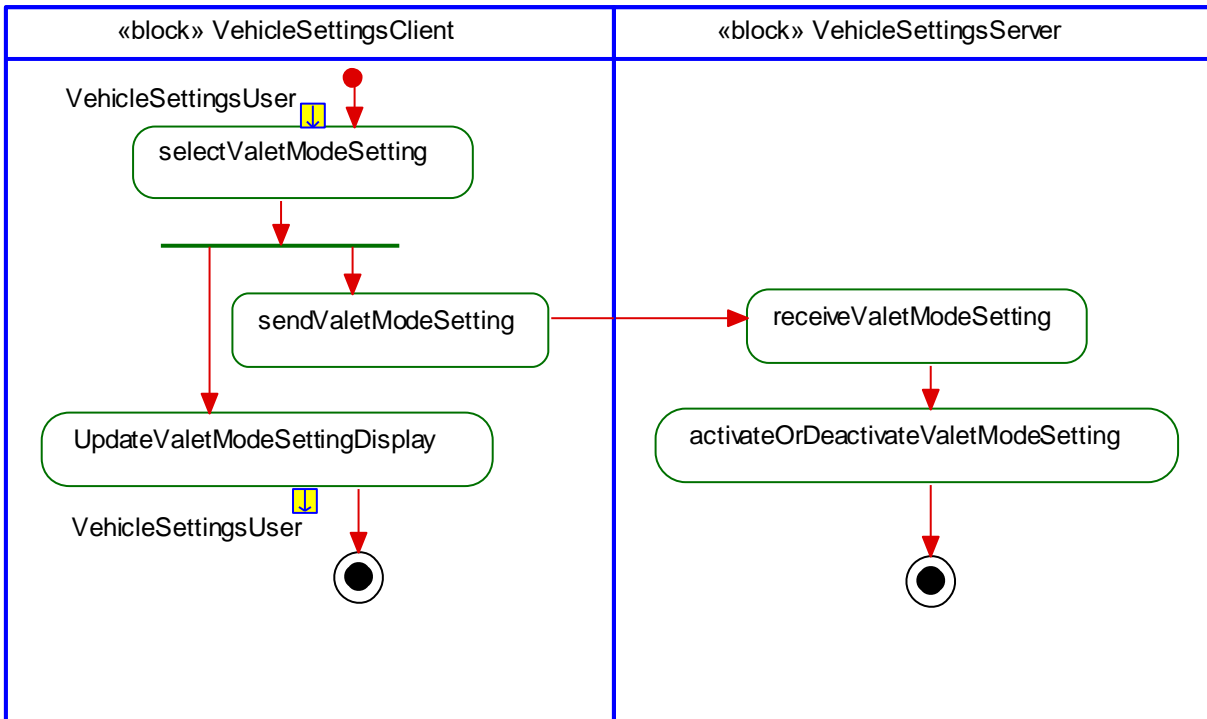
While Valet mode is enabled it shall not be disabled [over ignition cycles \(ie HMIAudioMode turning OFF to ON to OFF..\).](#) [during a battery reset \(cold reboot\) or](#) after performing the user activated multimedia system reboot via the manual 2 button press procedure as called out by the HMI (ex. radio power + seek up).

Upon activation/deactivation, the current valet mode state is communicated using the ValetMode\_St signal. ValetMode\_St = ON shall enable Valet Mode and ValetMode\_St = OFF shall disable Valet Mode for modules receiving this signal. Modules receiving the ValetMode\_St signal shall determine what features/functions to lock out while ValetMode is active.

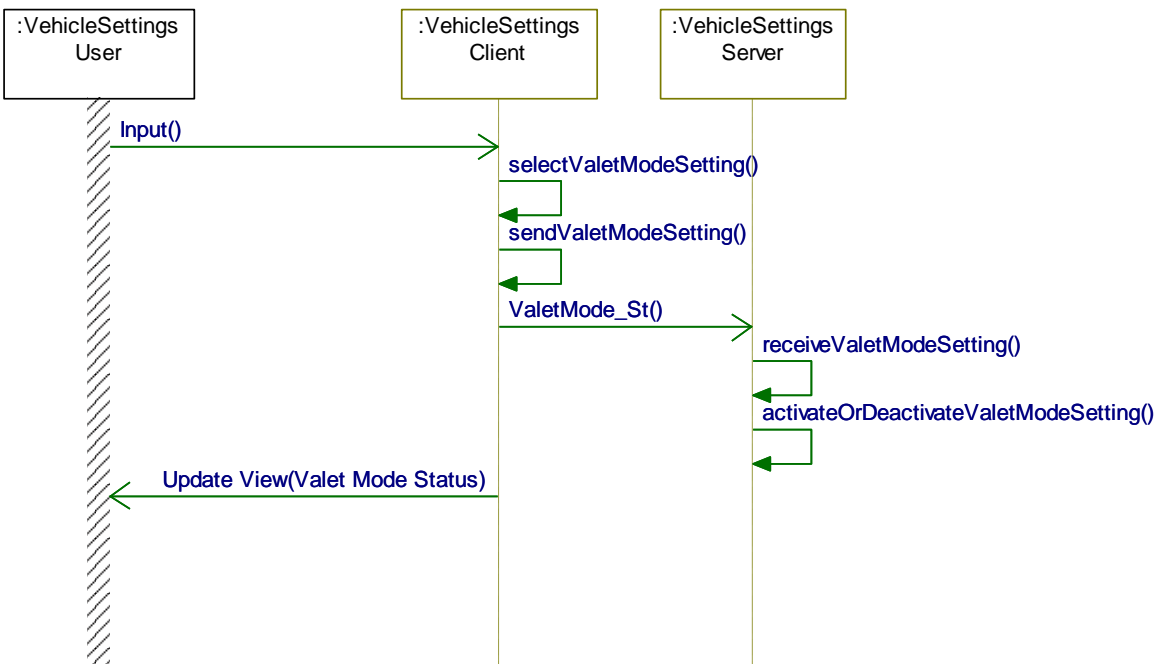


### 3.13.4 White Box Views

#### 3.13.4.1 VS-ACT-REQ-096820/A-Set Valet Mode



#### 3.13.4.2 VS-SD-REQ-097279/B-Set Valet Mode



Note: Vehicle Setting Server can be the same module as the Vehicle Setting Client (ex locking screen which requires a PIN to unlock) or the Vehicle Settings Server could be a different module then the Vehicle Setting Client would require bus communication (ex. locking glove box if supported).



### 3.14 VS-FUN-REQ-334503/A-Drive History Reset

#### 3.14.1 VS-CLD-REQ-339750/A-Drive History Client

The Drive History Client is responsible for requesting the Long Term Drive History Reset to the Drive History Server

#### 3.14.2 VS-CLD-REQ-342947/A-Drive History Server

#### 3.14.3 Interface Requirements

##### 3.14.3.1 MD-REQ-338982/B-LongTermReset\_B\_RqMnu

Message Type: Request

Note: Request signal from the Drive History Client to the Drive History Server to reset the long term drive history information

Logical Signal Name	Literals	Value	Description
LongTermReset_B_RqMnu	OFF	0x0	
	ON	0x1	

Note: init value in the CAN dB for this signal should be 0x0 OFF

#### 3.14.4 Requirements

##### 3.14.4.1 VS-SR-REQ-334504/B-Drive History Reset

When the drive history setting is selected to reset the long term drive history the Drive History Client shall:

1. Set the signal LongTermReset\_B\_RqMnu to ON from OFF, AND
2. Hold the LongTermReset\_B\_RqMnu set to ON for 2 seconds +/- 10%, then
3. Set LongTermReset\_B\_RqMnu back to OFF

Note: There is no status signal back for the Drive History Client indicating if the reset was successful or not.

The Drive History Client is only allowed to display Drive History Long Term Reset Setting HMI when Ignition = Run or Accessory. See HMI specification for when this setting is actually shown (could be more limited) but this setting cannot be shown outside for Run/ACC

HMI Setting ID
1024



### 3.15 VS-FUN-REQ-333193/A-Low Battery Alert

#### 3.15.1 VS-CLD-REQ-341184/A-Low Battery Alert Client

The Low Battery Alert Client interfaces with the user via HMI and is responsible for sending the Low Battery setting request to the Low Battery Server.

#### 3.15.2 VS-CLD-REQ-341185/A-Low Battery Alert Server

The Low Battery Alert Server is responsible for control of the Low Battery Alert function and interfaces with the Low Battery Alert Server

#### 3.15.3 Interface Requirements

##### 3.15.3.1 MD-REQ-341180/B-BattTracLoThres\_D\_Stat

Message Type: Status

Note: Status signal from the Low Battery Alert Server with the status of the Low Battery Alert function

Logical Signal Name	Literals	Value	Description
BattTracLoThres_D_Stat	Null	0x0	Cluster speedometer major speed scale units MPH
	20 mi / 32 km	0x1	
	30 mi / 48 km	0x2	
	50 mi / 80 km	0x3	
	30 km / 18 mi	0x4	Cluster speedometer major speed scale units Km/h
	50 km / 31 mi	0x5	
	80 km / 50 mi	0x6	
	Not Used	0x7	

##### 3.15.3.2 MD-REQ-341183/B-BattTracLoThres\_D\_Rq

Message Type: Request

Note: Request signal from the Low Battery Alert Client to the Low Battery Alert Server to set the feature

Logical Signal Name	Literals	Value	Description
BattTracLoThres_D_Rq	Null	0x0	Cluster speedometer major speed scale units MPH
	20 mi / 32 km	0x1	
	30 mi / 48 km	0x2	
	50 mi / 80 km	0x3	
	30 km / 18 mi	0x4	Cluster speedometer major speed scale units Km/h
	50 km / 31 mi	0x5	
	80 km / 50 mi	0x6	
	Not Used	0x7	

##### 3.15.3.3 MD-REQ-341190/A-SpeedoMajorUnit\_D\_Config

Message Type: Status



Note: Status signal from the Low Battery Alert Client with the status of the speedometer speed scale units

Logical Signal Name	Literals	Value	Description
SpeedoMajorUnit_D_Confg	Null	0x0	
	MPH	0x1	
	KPH	0x2	
	Not Used	0x3	

### 3.15.4 Requirements

#### 3.15.4.1 VS-REQ-341338/A-Low Battery Alert Server functional requirement

The Low Battery Alert Server shall publish the status of what Low Battery Alert value is used to alert the driver via the BattTracLoThres\_D\_Stat signal.

The Low Battery Alert Server shall use the SpeedoMajorUnit\_D\_Confg signal to determine if the BattTracLoThres\_D\_Stat uses encodings Speedometer Major Units MPH or KPH values.

- If SpeedoMajorUnit\_D\_Confg = MPH then 0x1, 0x2 and 0x3 shall be used.
- If SpeedoMajorUnit\_D\_Confg = KPH then 0x4, 0x5 and 0x6 shall be used
- If SpeedoMajorUnit\_D\_Confg = Null then use the last MPH or KPH setting. The Low Battery Alert Server will have to remember this setting between ignition cycles.

Note: The Low Battery Alert Client which sends SpeedoMajorUnit\_D\_Confg may set the signal to Null when powering up when ignition goes from OFF to Run.

BattTracLoThres_D_Stat	SpeedoMajorUnit_D_Confg
0x0 Null	
0x1 20 mi / 32 km	MPH
0x2 30 mi / 48 km	
0x3 50 mi / 80 km	
0x4 30 km / 18 mi	KPH
0x5 50 km / 31 mi	
0x6 80 km / 50 mi	
0x7 Not Used	

#### 3.15.4.2 VS-REQ-341290/A-Low Battery Alert Client functional requirement

The Low Battery Alert Client shall use the BattTracLoThres\_D\_Stat status signal to update the settings HMI to show what setting Low Battery Alert is set to.

The Low Battery Alert Client shall use the BattTracLoThres\_D\_Rq signal to request a Low Battery Alert setting selected by the user.

The Low Battery Alert Client shall broadcast the Speedometer Major Units that is used (MPH/KPH) in the SpeedoMajorUnit\_D\_Confg signal whenever the infotainment system is on (ie HMI\_HMIMode\_St = ON).

- The Low Battery Alert Client shall know the speedometer major units for a particular market based on:
  - the country code the Low Battery Alert Server is configured for, and
  - what Speedometer Major Unit is used for that country based on requirement "VS-REQ-341178-Mapping Table – Speedometer Major Units".



The Low Battery Alert Client shall use the Measure Units setting to determine if the Low Battery Alert setting is displayed in MPH or KPH on the HMI. See requirement VS-SR-REQ-234039-Measure Units in the Settings in the Centerstack SPSS for details.

- Ex. BattTracLoThresh\_D\_Stat is set to 0x1 20 mi / 32 km then,
  - If the measure units setting is set to miles, then 20 mi would be shown on the HMI
  - If the measure units setting is set to km, then 32 km would be shown on the HMI

The Low Battery Alert Client is only allowed to display the Low Battery Alert Setting HMI when Ignition\_Status = Run or Accessory. See HMI specification for when this setting is actually shown (could be more limited) but this setting cannot be shown outside for Run/ACC.

- Note: if show this setting in accessory the measure units last state would need to be remembered outside of Run so the Low Battery Alert Client know whether to show in MPH or KPH

HMI Setting ID
1023

#### 3.15.4.3 VS-HMI-REQ-342159/A-HMI display options for Low Battery Alert - Low Battery Alert Client

Possible Low Battery Alert HMI settings that can be displayed:

- Speedometer Major Units is MPH and Measure Units is set to miles:

20 miles
30 miles
50 miles

- Speedometer Major Units is MPH and Measure Units is set to kilometers:

32 km
48 km
80 km

- Speedometer Major Units is KPH and Measure Units is set to kilometers:

30 km
50 km
80 km

- Speedometer Major Units is KPH and Measure Units is set to miles:

18 miles
31 miles
50 miles

#### 3.15.4.4 VS-SR-REQ-341887/A-Selecting a Low Battery Alert Setting via the HMI

When a Low Battery Alert setting is selected via the HMI:

- The Low Battery Alert Client shall set BattTracLoThres\_D\_Rq to the selected setting.
- The Low Battery Alert Server shall respond within 100 msec to the BattTracLoThres\_D\_Rq signal setting request with the response via the BattTracLoThres\_D\_Stat signal and set the Low Battery Alert threshold to what was selected.



3. The Low Battery Alert Client shall update its HMI with the Low Battery Threshold value in the BattTracLoThres\_D\_Stat signal.

Note: See sequence diagram with example

#### 3.15.4.5 VS-SR-REQ-341178/B-Mapping Table - Speedometer Major Units

The table below maps the country to the Cluster major speedometer speed scale units (MPH or Km/h).

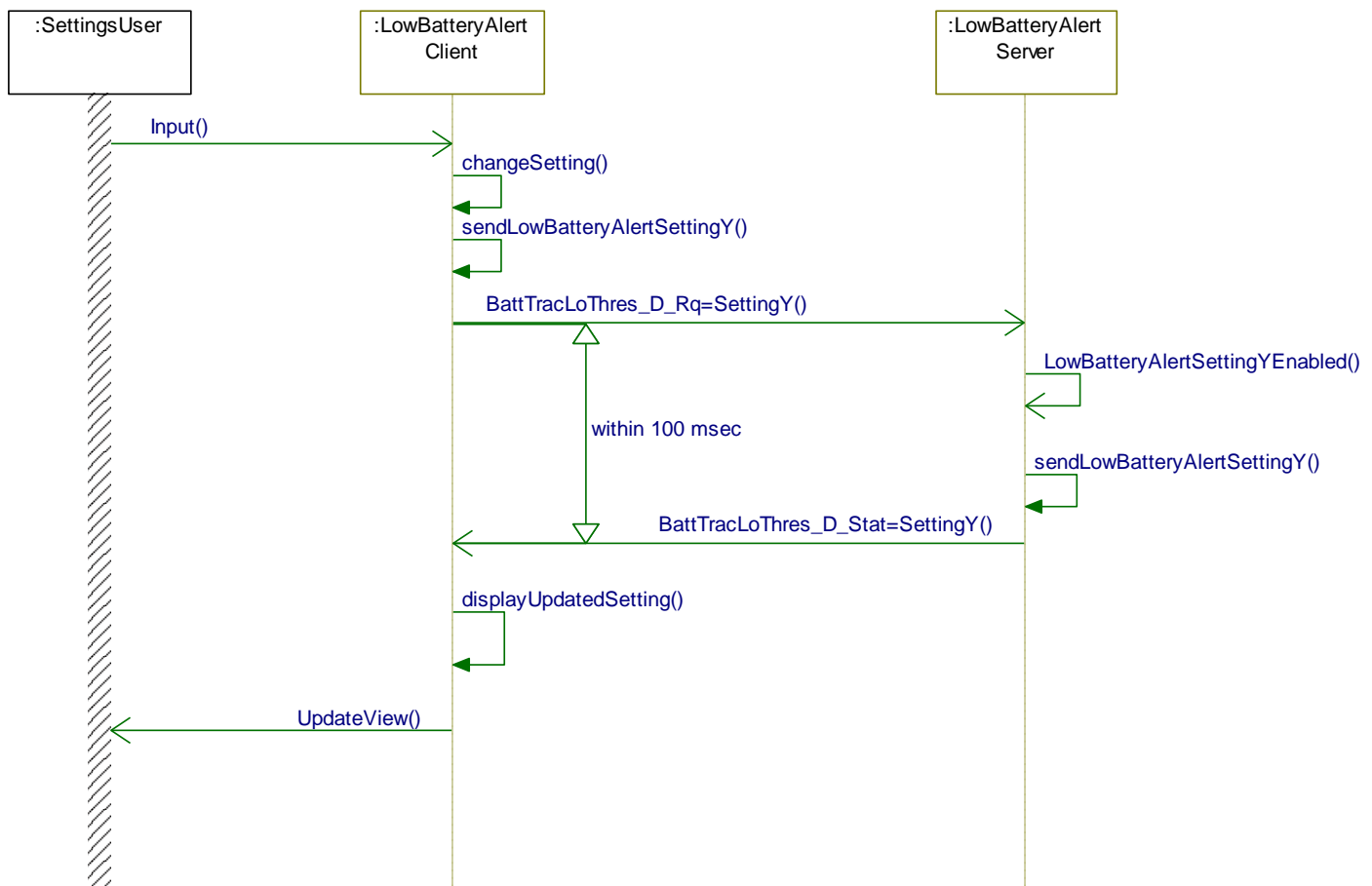
Market	Cluster Speedometer major speed scale units
US and US Territories	MPH
UK	MPH
All other markets	Km/h

### 3.15.5 Sequence Diagrams

#### 3.15.5.1 VS-SD-REQ-341844/A-Low Battery Alert Setting Selection

Pre-condition:

Low Battery Alert has setting X active





### 3.16 VS-FUN-REQ-339665/A-Propulsion Sound

#### 3.16.1 VS-CLD-REQ-339751/A-Propulsion Sound Client

The Propulsion Sound Client interfaces with the user via HMI and is responsible for sending the propulsion sound setting request to the propulsion sound server.

#### 3.16.2 VS-CLD-REQ-339752/B-Propulsion Sound Server

The Propulsion Sound Server is responsible for control of the propulsion sound function and interfaces with the Propulsion Sound Client.

#### 3.16.3 Use Case

##### 3.16.3.1 VS-UC-REQ-340217/A-User Enables Propulsion Sound Setting

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Infotainment system is ON Propulsion Sound is Disabled
<b>Scenario Description</b>	User change propulsion sound setting to enabled
<b>Post-conditions</b>	Propulsion sound is enabled Propulsion sound HMI is shown set to enabled.
<b>Notes</b>	Propulsion sound is just referring to propulsion sound interior to vehicle

##### 3.16.3.2 VS-UC-REQ-340218/A-User Disables Propulsion Sound Setting

<b>Actors</b>	Vehicle front seat occupant
<b>Pre-conditions</b>	Infotainment System is ON Propulsion Sound is Enabled
<b>Scenario Description</b>	User changes propulsion sound setting to disabled
<b>Post-conditions</b>	Propulsion sound is disabled Propulsion sound HMI is shown set to disabled
<b>Notes</b>	Propulsion sound is just referring to propulsion sound interior to vehicle

#### 3.16.4 Interface Requirements

##### 3.16.4.1 MD-REQ-339666/A-PrplSnd\_D\_Rq

Message Type: Request

Note: Request signal from the Propulsion Sound Client to the Propulsion Sound Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
PrplSnd_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	



**3.16.4.2 MD-REQ-339747/B-PrplSnd\_D\_Stat**

Message Type: Status

Note: Status signal from the Propulsion Sound Server with the status of Propulsion Sound feature

Logical Signal Name	Literals	Value	Description
PrplSnd_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	
	Faulty	0x3	

**3.16.5 Requirements****3.16.5.1 VS-SR-REQ-339667/A-Propulsion Sound Client requesting change to propulsion sound**

The Propulsion Sound Client shall use the PrplSnd\_D\_Stat status signal to show the propulsion sound feature as Enabled or Disabled.

Ex. At infotainment feature start-up (ex ignition OFF to RUN) there is no setting selected by the customer but the HMI shows the status of the propulsion sound setting based on if PrplSnd\_D\_Stat is set to Enabled or Disabled.

The propulsion sound setting can be changed (if HMI support outside of Run) whenever HMI\_HMIMode\_St = ON (ie infotainment system is ON).

When the propulsion sound setting is selected via the HMI:

1. The Propulsion Sound Client shall set the PrplSnd\_D\_Rq to enabled or disabled based on what the user selected
2. The Propulsion Sound Server shall respond within T\_PrplSnd\_Rsp to the PrplSnd\_D\_Rq request with the response of the propulsion sound via the PrplSnd\_D\_Stat signal.
3. The Propulsion Sound Client shall update its HMI (if there is an update) with the Propulsion Sound Status after receiving the PrplSnd\_D\_Stat response to the request.

**HMI Setting ID**

1025

**3.16.5.2 VS-TMR-REQ-339748/A-T\_PrplSnd\_Rsp**

Name	Description	Units	Range	Resolution	Default
T_PrplSnd_Rsp	Maximum time the Propulsion Sound Server shall take to respond to the request in the PrplSnd_D_Rq signal. The response will be in the PrplSnd_D_Stat signal.  Maximum time defined as the default value	msec	0-1000	5	100



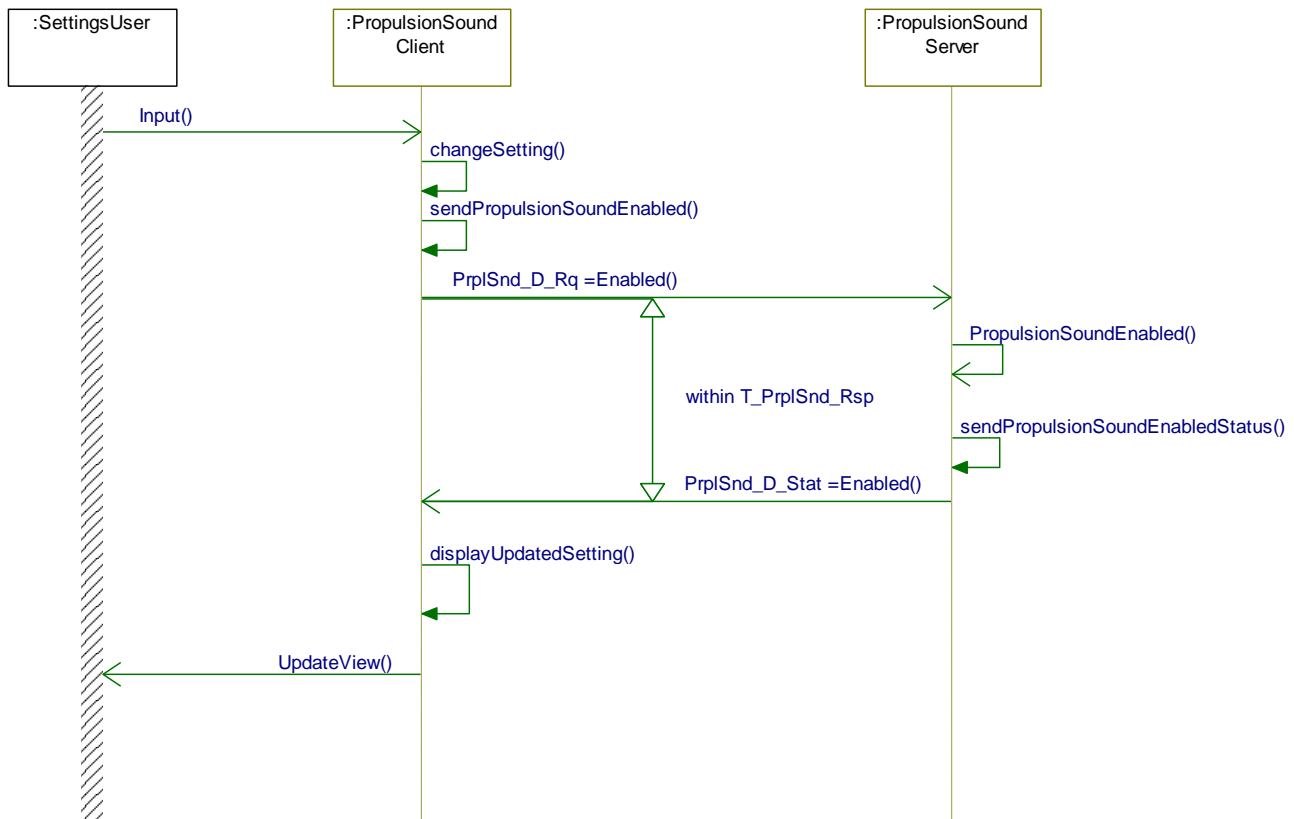
### 3.16.5.3 VS-SR-REQ-372580/A-Propulsion Sound Faulty state

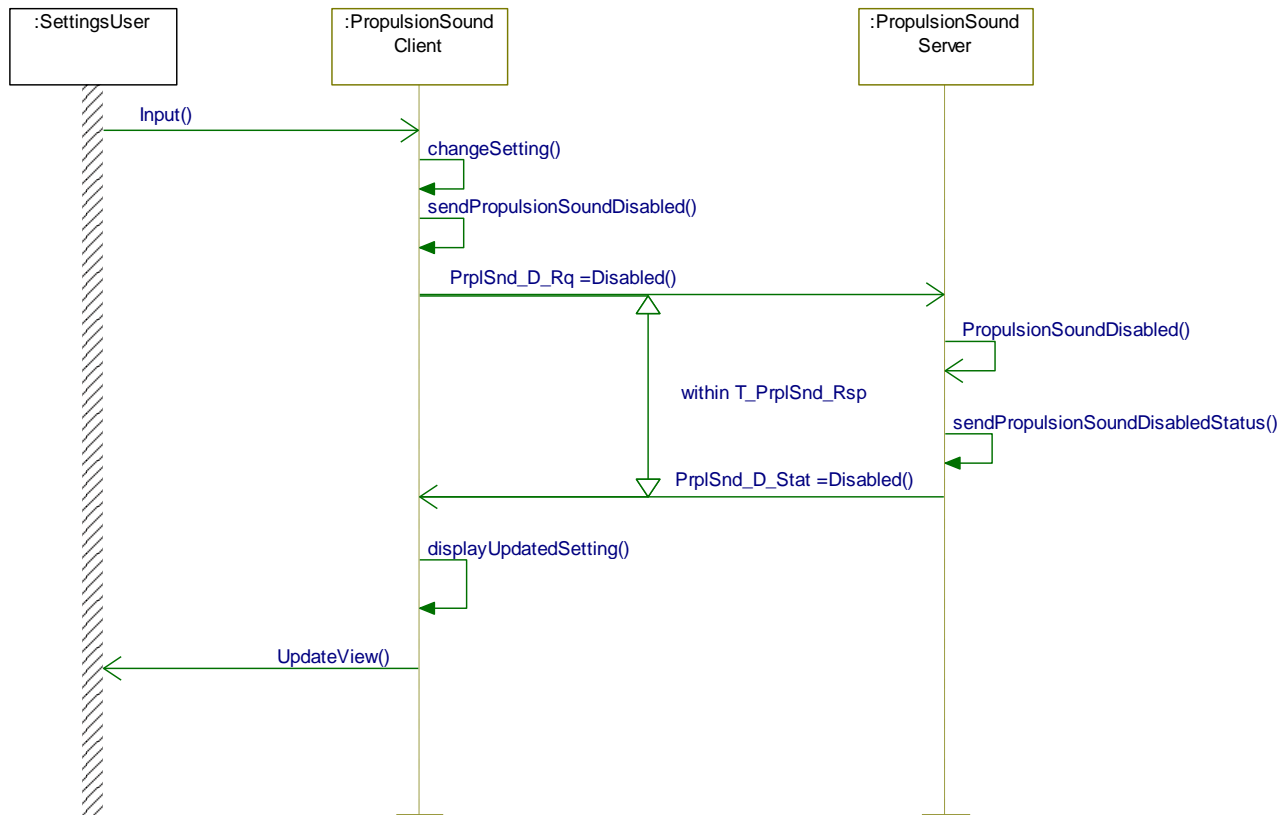
The Propulsion Sound Server shall set the signal PrplSnd\_D\_Stat = Faulty when there is fault in the propulsion sound system causing the propulsion sound feature to be disabled.

The Propulsion Sound Client HMI shall not allow the user to Enable/Disable the propulsion sounds setting when the Propulsion Sound Client receives PrplSnd\_D\_Stat = Faulty. See the HMI specification on how this is implemented (ex greying out the setting, removing the setting...).

## 3.16.6 Sequence Diagrams

### 3.16.6.1 VS-SD-REQ-340180/A-Propulsion Sound set to Enabled via the HMI



**3.16.6.2 VS-SD-REQ-340184/A-Propulsion Sound set to Disabled via the HMI**



### 3.17 VS-FUN-REQ-339729/A-Drive Mode Auto/Manual Ambient Lighting setting

#### 3.17.1 VS-CLD-REQ-340540/A-Ambient Lighting Drive Mode Client

The Ambient Lighting Drive Mode Client interfaces with the user via HMI and is responsible for sending the Ambient Lighting Drive Mode setting request to the Ambient Lighting Drive Mode Server.

#### 3.17.2 VS-CLD-REQ-340542/A-Ambient Lighting Drive Mode Server

The Ambient Lighting Drive Mode Server is responsible for the ambient lighting drive mode function and interfaces with the Ambient Lighting Drive Mode Client.

#### 3.17.3 Use Cases

##### 3.17.3.1 VS-UC-REQ-340546/A-User Enables Auto Ambient Lighting via HMI Setting

<b>Actors</b>	Vehicle front seat occupant(s)
<b>Pre-conditions</b>	Ambient Lighting is in manual mode Ambient Lighting auto/manual settings HMI shows manual as selected Ignition is in Run
<b>Scenario Description</b>	User selects the setting for auto mode via the HMI
<b>Post-conditions</b>	Ambient Lighting is in auto mode and the color is tied to drive mode  Ambient Lighting auto/manual settings HMI shows auto mode selected
<b>Notes</b>	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle.  Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

##### 3.17.3.2 VS-UC-REQ-340547/A-User Disables Auto Ambient Lighting via HMI Setting

<b>Actors</b>	Vehicle front seat occupant(s)
<b>Pre-conditions</b>	Ambient Lighting is in auto mode Ambient Lighting auto/manual settings HMI shows auto as selected Ignition is in Run
<b>Scenario Description</b>	User selects the setting for manual mode via the HMI
<b>Post-conditions</b>	Ambient Lighting is in manual mode and the color is not tied to drive mode  Last saved manual mode color becomes the ambient light color  Ambient Lighting auto/manual settings HMI shows manual mode selected
<b>Notes</b>	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle  Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

**3.17.3.3 VS-UC-REQ-340548/A-User changes color while in Auto Ambient Lighting**

<b>Actors</b>	Vehicle front seat occupant(s)
<b>Pre-conditions</b>	Ambient Lighting is in auto mode Ambient Lighting auto/manual settings HMI shows auto as selected Ignition is in Run
<b>Scenario Description</b>	User selects a color via the ambient lighting HMI
<b>Post-conditions</b>	The selected color is the new ambient lighting color and is the saved manual mode color  Ambient Lighting is in manual mode and the color is not tied to drive mode  Ambient Lighting auto/manual settings HMI shows manual mode selected
<b>Notes</b>	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle  Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

**3.17.3.4 VS-UC-REQ-340551/A-User changes color while in Manual Ambient Lighting**

<b>Actors</b>	Vehicle front seat occupant(s)
<b>Pre-conditions</b>	Ambient Lighting is in manual mode Ambient Lighting auto/manual settings HMI shows manual as selected Ignition is in Run
<b>Scenario Description</b>	User selects a color via the ambient lighting HMI
<b>Post-conditions</b>	The selected color is the new ambient lighting color and is the saved manual mode color  Ambient Lighting is in manual mode and the color is not tied to drive mode  Ambient Lighting auto/manual settings HMI shows manual mode selected
<b>Notes</b>	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle  Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

**3.17.3.5 VS-UC-REQ-340569/A-Drive Mode change while in Auto Ambient Lighting mode**

<b>Actors</b>	Vehicle front seat occupant(s)
<b>Pre-conditions</b>	Ambient Lighting is in auto mode The current drive mode ambient lighting color is active Ambient Lighting auto/manual settings HMI shows auto as selected Ignition is in Run



<b>Scenario Description</b>	The vehicle changes to new drive mode
<b>Post-conditions</b>	The ambient lighting color for the new drive mode is the new ambient lighting color (color could be the same or different from the previous color)  Ambient Lighting auto/manual settings HMI shows auto mode selected
<b>Notes</b>	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle  Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

### 3.17.4 Interface Requirements

#### 3.17.4.1 MD-REQ-339730/A-LghtAmbDrvMde\_D\_Rq

Message Type: Request

Note: Request signal from the Ambient Lighting Drive Mode Client to the Ambient Lighting Drive Mode Server to select if Ambient Lighting is tied to Drive Mode or not.

Logical Signal Name	Literals	Value	Description
LghtAmbDrvMde_D_Rq	Null	0x0	
	Manual	0x1	
	Automatic	0x2	

#### 3.17.4.2 MD-REQ-340538/A-LghtAmbDrvMde\_B\_Stat

Message Type: Status

Note: Status signal from the Ambient Lighting Drive Mode Server with the status of whether Ambient Lighting is tied to Drive Mode or not.

Logical Signal Name	Literals	Value	Description
LghtAmbDrvMde_B_Stat	Manual	0x0	
	Automatic	0x1	

#### 3.17.4.3 MD-REQ-192193/C-LightAmbColor\_No\_Actl - Variant 2

Message Type: Status

This signal gives status of ambient lighting color (variant 2) status.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	



	Color ID3	0x03	Reference separate document with the ambient light Colors and Color ID's used
	Cont.	0x04 – 0xFF	

#### 3.17.4.4 MD-REQ-192189/B-LightAmbColor\_No\_Rq - Variant 2

**Message Type:** Request

The Ambient Lighting Client uses this signal to request the color selection for ambient lighting from the Ambient Lighting Server.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	
	Reserved	0x11 to 0xFF	

### 3.17.5 Requirements

#### 3.17.5.1 VS-SR-REQ-341024/A-Ambient Lighting Strategy required to be used when supporting Automatic/Manual Ambient Lighting Drive Mode

In order to support Manual and Auto Mode (color tied to drive mode in auto) both the Ambient Lighting Drive Mode Client and Server shall support “VSv2-FUN-192195-Ambient Lighting – Variant 2”.

#### 3.17.5.2 VS-REQ-341020/A-Ambient Lighting Drive Mode Server functional requirement

The Ambient Lighting Drive Mode Server shall publish the Auto/Manual mode status via the LghtAmbDrMde\_B\_Stat signal

When in Auto mode, only the ambient lighting color is tied to Drive Mode. The Ambient Lighting Drive Mode Server shall update the ambient lighting color based on drive mode.

Ambient Lighting Intensity is not tied to auto mode (ie not tied to drive mode).

If enhanced memory is supported the Ambient Lighting Drive Mode Server shall update the LghtAmbDrMde\_B\_Stat signal to reflect the Auto/Manual status for the new personality profile. See Ambient Lighting Drive Mode Server enhanced memory specification for details.



If the user selects a color during auto mode (ie receives LightAmbColor\_No\_Rq) then the Ambient Lighting Drive Mode Server shall change to manual mode and update LghtAmbDrvMde\_B\_Stat to manual mode to reflect the update.

See Ambient Lighting Drive Mode Server specification for additional details and requirements.

### 3.17.5.3 VS-REQ-341017/A-Ambient Lighting Drive Mode Client functional requirement

The Ambient Lighting Drive Mode Client shall use the LghtAmbDrvMde\_B\_Stat status signal to update the settings HMI to show whether the Ambient Lighting is in Auto or Manual mode.

The Ambient Lighting Drive Mode Client shall use the LghtAmbDrvMde\_D\_Rq signal to request Auto or Manual mode.

HMI Setting ID
1026

### 3.17.5.4 VS-SR-REQ-341018/A-Enabling/Disabling Ambient Lighting Auto/Manual setting via the HMI

When the Ambient Lighting Automatic / Manual Drive Mode setting is selected via the HMI:

1. The Ambient Lighting Drive Mode Client shall set LghtAmbDrvMde\_D\_Rq to select Automatic or Manual based on what the user selected.
2. The Ambient Lighting Drive Mode Server shall respond with T\_LghtAmbDrvMde\_Rsp to the LghtAmbDrvMde\_D\_Rq Manual or Automatic request with the response via the LghtAmbDrvMde\_B\_Stat signal.
3. The Ambient Lighting Drive Mode Client shall update its HMI (if there is an update) with the Ambient Lighting Auto/Manual mode status after receiving the LightAmbDrvMde\_B\_Stat response to the request

Note: See sequence diagrams with examples

The Auto/Manual setting on the HMI should only be available for selection when the ignition\_status = Run.

### 3.17.5.5 VS-TMR-REQ-340545/A-T\_LghtAmbDrvMde\_Rsp

Name	Description	Units	Range	Resolution	Default
T_LghtAmbDrvMde_Rsp	Maximum time the Ambient Lighting Drive Mode Server shall take to respond to the request in the LghtAmbDrvMde_D_Rq signal. The response will be in the LghtAmbDrvMde_B_Stat signal.  Maximum time defined as the default value	msec	0-1000	5	100

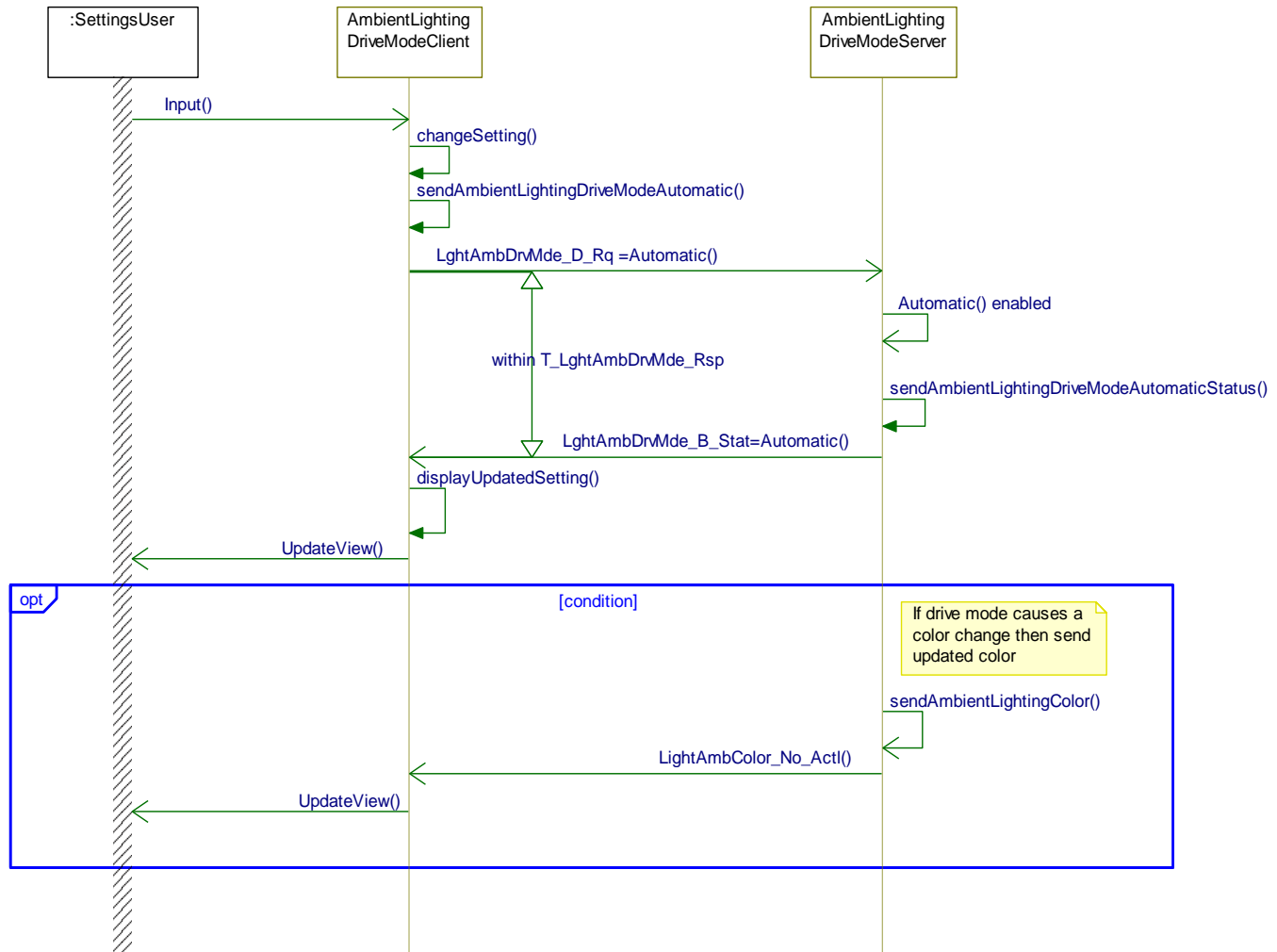
## 3.17.6 Sequence Diagrams

### 3.17.6.1 VS-SD-REQ-341028/A-Ambient Lighting Drive Mode set to Automatic via the HMI

Pre-Condition:

Ambient Lighting Drive Mode set to manual

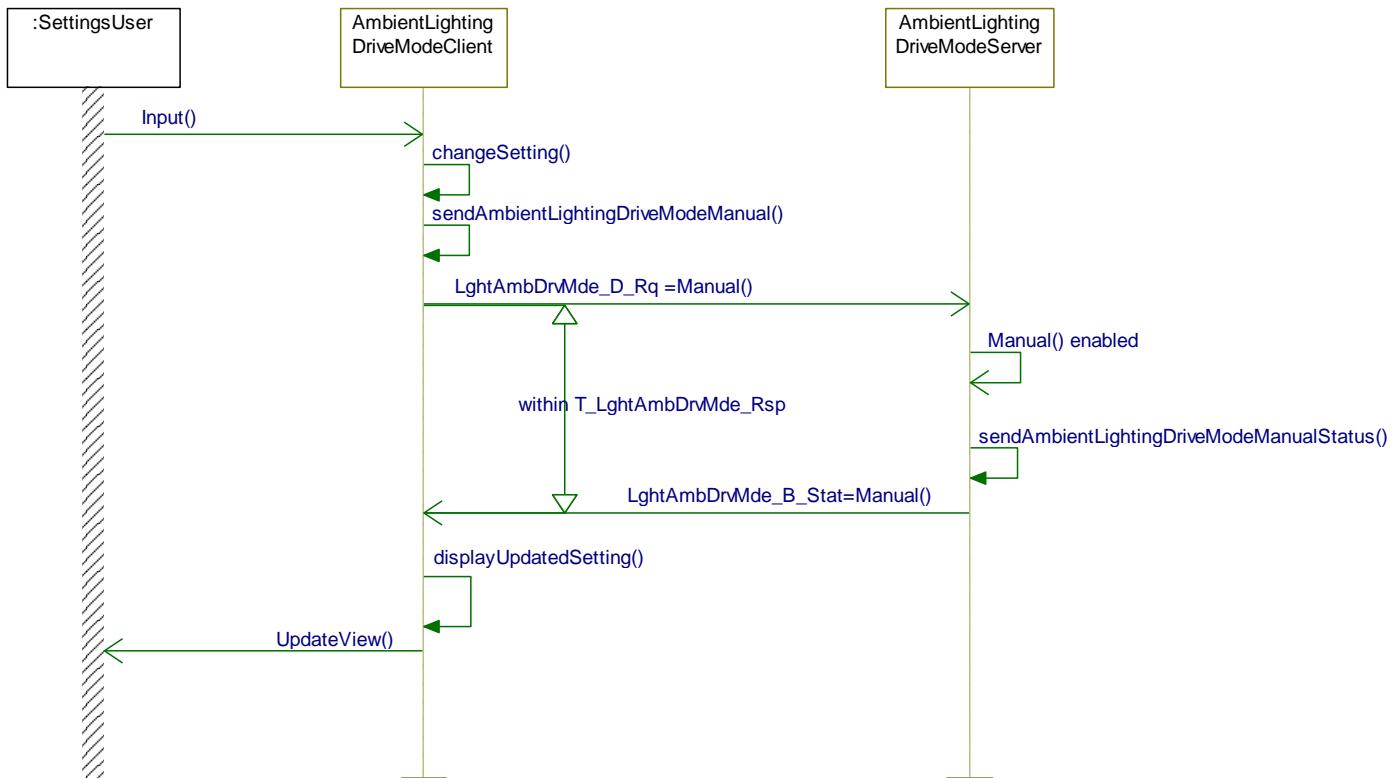




### 3.17.6.2 VS-SD-REQ-341027/A-Ambient Lighting Drive Mode set to Manual via the HMI

Pre-Condition:

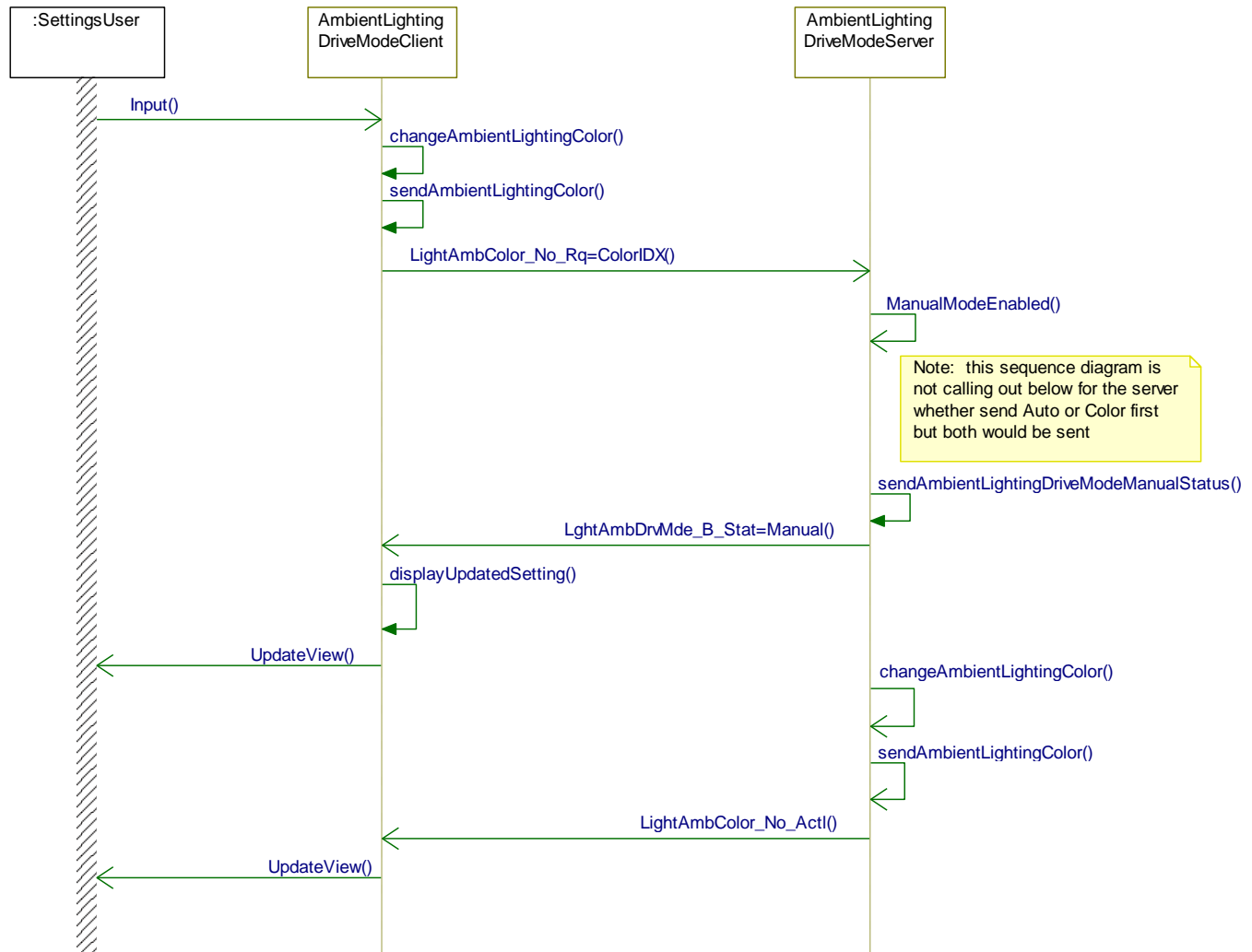
Ambient Lighting Drive Mode in Auto Mode



### 3.17.6.3 VS-SD-REQ-341050/A-User changes ambient lighting color while in auto mode

Pre-Condition:

Ambient Lighting Drive Mode in Auto mode





### 3.18 VS-FUN-REQ-347046/A-Eco-Idle

#### 3.18.1 VS-CLD-REQ-347054/A-Eco-Idle Client

The Eco-Idle Client interfaces with the user via the HMI and is responsible for sending the Eco-Idle Setting request to the Eco-Idle Server.

#### 3.18.2 VS-CLD-REQ-347055/A-Eco-Idle Server

The Eco-Idle Server is responsible for the control of the Eco-Idle function and interfaces with the Eco-Idle Client.

#### 3.18.3 Use Cases

##### 3.18.3.1 VS-UC-REQ-347814/A-User Enables Eco-Idle Setting

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run Eco-Idle is Disabled
<b>Scenario Description</b>	User changes Eco-Idle setting to enabled via the HMI
<b>Post-conditions</b>	Eco-Idle is enabled Eco-Idle HMI is shown set to enabled.
<b>Notes</b>	

##### 3.18.3.2 VS-UC-REQ-347815/A-User Disables Eco-Idle Setting

<b>Actors</b>	Vehicle front seat occupant
<b>Pre-conditions</b>	Ignition is in Run Eco-Idle is enabled
<b>Scenario Description</b>	User changes Eco-Idle setting to disabled via the HMI
<b>Post-conditions</b>	Eco-Idle is disabled Eco-Idle HMI is shown set to disabled
<b>Notes</b>	

#### 3.18.4 Interface Requirements

##### 3.18.4.1 MD-REQ-347056/A-EcoldI\_D\_Rq

Message Type: Request

Note: Request signal from the Eco-Idle Client to the Eco-Idle Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
EcoldI_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

**3.18.4.2 MD-REQ-347057/A-Ecoldl\_D\_Stat**

Message Type: Status

Note: Status signal from the Eco-Idle Server with the status of Eco-Idle feature

Logical Signal Name	Literals	Value	Description
Ecoldl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

**3.18.5 Requirements****3.18.5.1 VS-SR-REQ-347812/A-Eco-Idle Setting change**

The Eco-Idle Client shall use the Ecoldl\_D\_Stat status signal from the Eco-Idle Server to show the Eco-Idle setting as Enabled or Disabled.

The Eco-Idle setting shall be available on the HMI when ignition\_status = Run.

When the Eco-Idle setting is selected via the HMI:

1. The Eco-Idle Client shall set the Ecoldl\_D\_Rq signal to enabled or disabled based on what the user selected
2. The Eco-Idle Server shall respond within T\_Ecoldle\_Rsp to the Ecoldl\_D\_Rq request with the response of the Eco-Idle Server via the Ecoldle\_D\_Stat signal.
3. The Eco-Idle Client shall update the HMI (if there is an update) with the Eco-Idle status after receiving the Ecoldle\_D\_Stat response to the request.

**HMI Setting ID**

1037

**3.18.5.2 VS-TMR-REQ-347813/A-T\_Ecoldle\_Rsp**

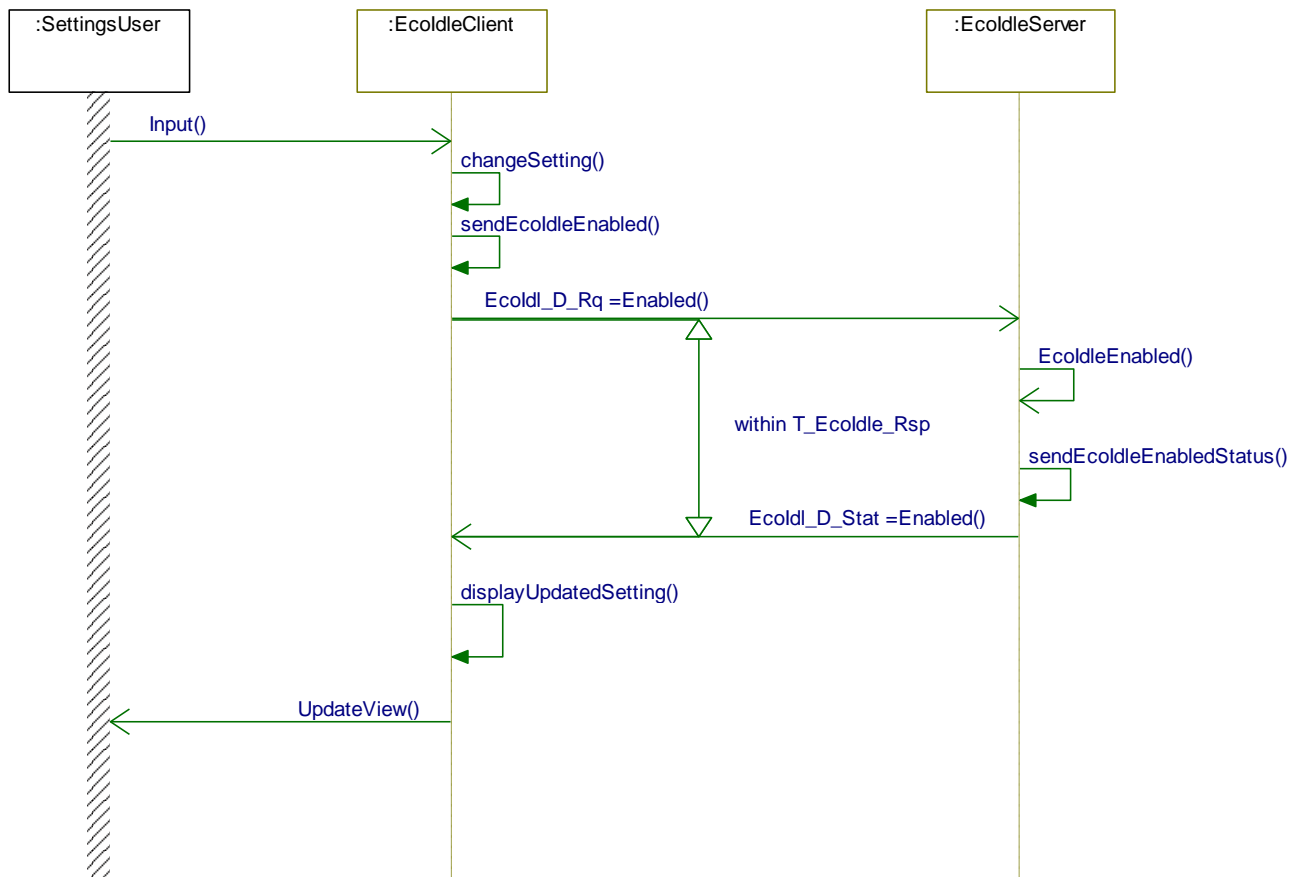
Name	Description	Units	Range	Resolution	Default
T_Ecoldle_Rsp	Maximum time the Eco-Idle Server shall take to respond to the Ecoldl_D_Rq signal. The response will be in the Ecoldl_D_Stat signal.  Maximum time defined as the default value	msec			100



### 3.18.6 Sequence Diagrams

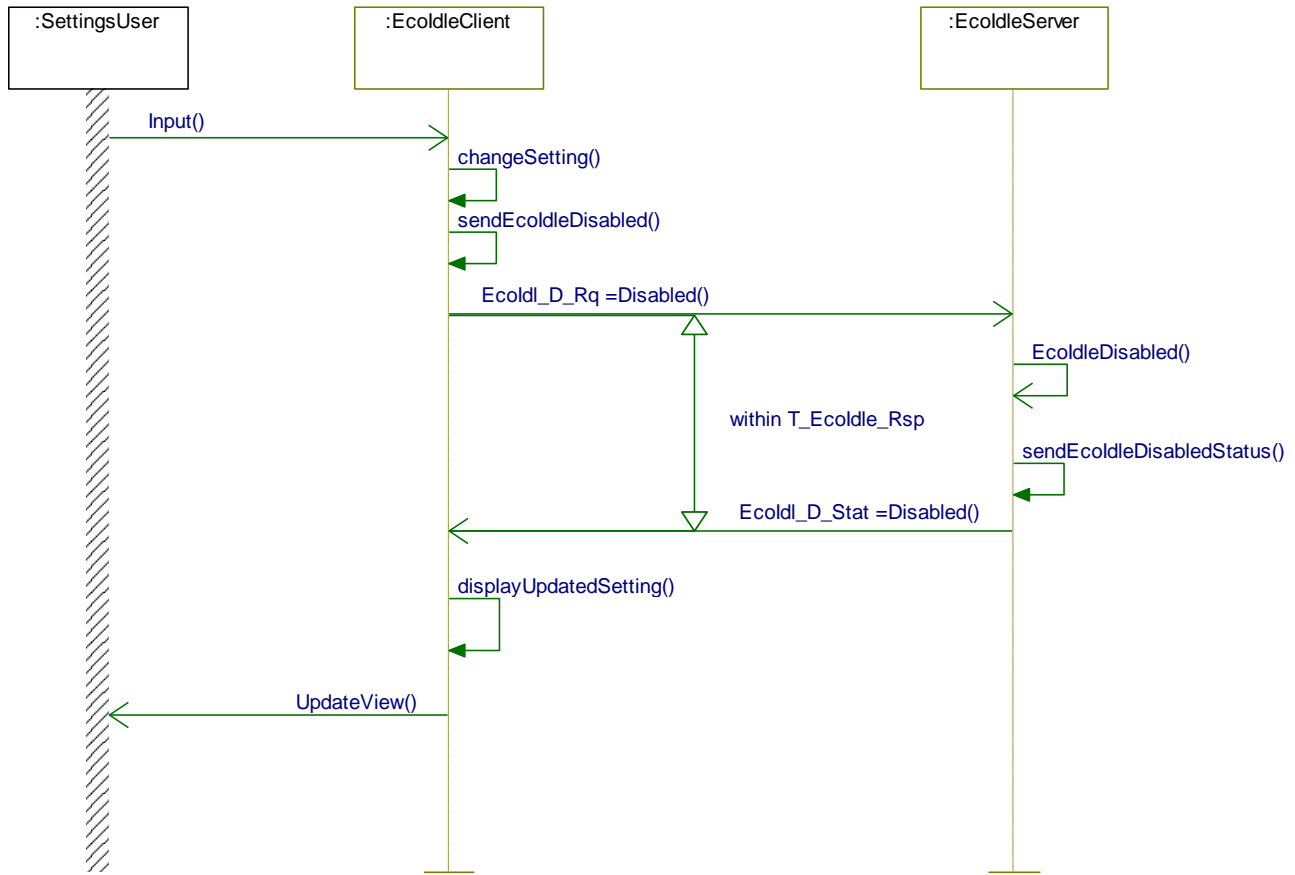
#### 3.18.6.1 VS-SD-REQ-347816/A-Eco-Idle set to Enabled via the HMI

Pre-Condition: Eco-Idle is Disabled



#### 3.18.6.2 VS-SD-REQ-347817/A-Eco-Idle set to Disabled via the HMI

Pre-condition: Eco-Idle is Enabled





### 3.19 VS-FUN-REQ-362897/A-Quiet Time for Exhaust Mode

#### 3.19.1 Overview

The user will be able to enable "Quiet Mode" thru the setting menu. This is so that a loud exhaust mode does not cause any noise disturbance to anybody based on the time of day (ex early in the morning). Once enabled, the user can schedule a start and end time for the quiet mode. If the vehicle is started between the quiet modes start and end time then the vehicle's exhaust will be in a quiet mode.

#### 3.19.2 VS-CLD-REQ-362990/A-Quiet Time Client

The Quiet Time Client interfaces with the user via the HMI and is responsible for interfacing with the Quiet Time Server. This includes sending the quiet time requests and receiving the quiet time responses from the Quiet Time Server. See SPSS requirements for details

#### 3.19.3 VS-CLD-REQ-362991/A-Quiet Time Server

The Quiet Time Server is responsible for the control of the Quiet Time function and interfaces with the Quiet Time Client.

#### 3.19.4 Use Cases

##### 3.19.4.1 VS-UC-REQ-365616/A-User Enabled Quiet Time Setting

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run Quiet Time setting is disabled
<b>Scenario Description</b>	User changes Quiet Time setting to enabled via the HMI
<b>Post-conditions</b>	Quiet Time setting is enabled Quiet Time setting HMI is shown set to enabled. The user can change the Quiet Time start and end times
<b>Notes</b>	

##### 3.19.4.2 VS-UC-REQ-365617/A-User Disabled Quiet Time Setting

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run Quiet Time setting is enabled
<b>Scenario Description</b>	User changes Quiet Time setting to disabled via the HMI
<b>Post-conditions</b>	Quiet Time setting is disabled Quiet Time setting HMI is shown set to disabled. The user cannot change the Quiet Time start and end times
<b>Notes</b>	

##### 3.19.4.3 VS-UC-REQ-365618/A-User changes Quiet Time start and end times

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run Quiet Time setting is enabled





<b>Scenario Description</b>	User changes, via the HMI, the Quiet Time start and quiet time end times
<b>Post-conditions</b>	The Quiet Time start and Quiet Time end times are updated and the exhaust is in quiet mode between those times. Quiet Time HMI shows the updated start and end times.
<b>Notes</b>	

### 3.19.5 Interface Requirements

#### 3.19.5.1 MD-REQ-365621/A-EngExhMdeHrEnbl\_D\_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quiet Time Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnbl_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	
	Menu Not Configured	0x3	

#### 3.19.5.2 MD-REQ-365620/A-EngExhMdeHrEnbl\_D\_Stat

Message Type: Status

Status signal from the Quiet Time Server with the status of the Quiet Time setting

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnbl_D_Stat	Null	0x0	HMI setting treated as unknown (ex HMI greyed out, setting not shown as selected...)
	Disabled	0x1	
	Enabled	0x2	

#### 3.19.5.3 MD-REQ-365623/A-EngExhMdeHrStrt\_D\_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quiet Time Server to request the Quiet Time start hour

Logical Signal Name	Literals	Value	Description
EngExhMdeHrStrt_D_Rq	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	...	...	
	Hour 21 (9 pm)	0x16	



	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.  
Reference function "[VS-FUN-REQ-025239-Set 12/24 hour mode setting](#)" in the Vehicle Setting SPSS for details.

#### 3.19.5.4 MD-REQ-365626/A-EngExhMdeHrStrt\_D\_Stat

Message Type: Status

Status signal from Quiet Time Server with the value the Quiet Time Start Hour is set to

Logical Signal Name	Literals	Value	Description
EngExhMdeHrStrt_D_Stat	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	...	...	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.  
Reference function "[VS-FUN-REQ-025239-Set 12/24 hour mode setting](#)" in the Vehicle Setting SPSS for details.

#### 3.19.5.5 MD-REQ-365627/A-EngExhMdeHrEnd\_D\_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quiet Time Server to request the Quiet Time end hour

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnd_D_Rq	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	...	...	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.  
Reference function "[VS-FUN-REQ-025239-Set 12/24 hour mode setting](#)" in the Vehicle Setting SPSS for details.

#### 3.19.5.6 MD-REQ-365628/A-EngExhMdeHrEnd\_D\_Stat

Message Type: Status

Status signal from Quiet Time Server with the value the Quiet Time End Hour is set to



Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnd_D_Stat	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	...	...	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.  
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

### 3.19.6 Requirements

#### 3.19.6.1 VS-SR-REQ-365809/A-Quiet Time Enable/Disable Setting change

The Quiet Time Client shall use the EngExhMdeHrEnbl\_D\_Stat status signal from the Quiet Time Server to show the Quiet Time setting as Enabled or Disabled.

The Quiet Time setting shall only be available on the HMI when the ignition\_status = Run.

When the Quiet Time enable/disable setting is selected via the HMI:

1. The Quiet Time Client shall set the EngExhMdeHrEnbl\_D\_Rq signal to enabled or disabled based on what the user selected, and then 100 msec +/- 10% later set the signal back to Null.
2. The Quiet Time Server shall respond within T\_QuietTime\_Rsp to the EngExhMdeHrEnbl\_D\_Rq request with the response of the Quiet Time Server via the EngExhMdeHrEnbl\_D\_Stat signal. Note, the Quiet Time Server does not wait for EngExhMdeHrEnbl\_D\_Rq = Null before responding, it responds to the initial EngExhMdeHrEnbl\_D\_Rq = enable/disable request.
3. The Quiet Time Client shall update the HMI (if there is an update) with the Quiet Time status after receiving the EngExhMdeHrEnbl\_D\_Stat response to the request.

See sequence diagrams for examples

The Quiet Time Server shall broadcast the current enable/disable state in the EngExhMdeHrEnbl\_D\_Stat status signal as long as that is current state of the Quiet Time feature.

Ex. If the Quiet Time feature is enabled on the vehicle, then the Quiet Time Server would be broadcasting the signal EngExhMdeHrEnbl\_D\_Stat set as enabled in its periodic status signal. Note that Null encoding state is only for start-up if the Quiet Time Server has not yet powered up and doesn't know the status of the feature.

When the Quiet Time Client has the Quiet Time feature configured OFF so that no Quiet Time HMI is shown, the Quiet Time Client shall set EngExhMdeHrEnbl\_D\_Rq equal to "Menu Not Configured". The EngExhMdeHrEnbl\_D\_Rq signal shall not be set back to Null in this case and shall instead always hold the "Menu Not Configured" encoding state (ie send "Menu Not Configured" periodically on the network bus).

HMI Setting ID
251



### 3.19.6.2 VS-SR-REQ-365811/A-Quiet Time Start and End time Setting change

The Quiet Time Client shall use the EngExhMdeHrStrt\_D\_Stat (start time) and EngExhMdeHrEnd\_D\_Stat (end time) status signals from the Quiet Time Server to show the Quiet Time Start and End times on the HMI.

The Quiet Time start and end time settings shall only be available on the HMI when the ignition\_status = Run.

When the Quiet Time Start time setting is selected via the HMI:

1. The Quiet Time Client shall set the EngExhMdeHrStrt\_D\_Rq signal to the start time (ex start hour 10 pm) based on what the user selected, and then 100 msec +/- 10% later set the signal back to Null.
2. The Quiet Time Server shall respond within T\_QuietTime\_Rsp to the EngExhMdeHrStrt\_D\_Rq request with the response of the Quiet Time Server via the EngExhMdeHrStrt\_D\_Stat signal. Note, the Quiet Time Server does not wait for EngExhMdeHrStrt\_D\_Rq = Null before responding, it responds to the EngExhMdeHrStrt\_D\_Rq = Hour\_X request.
3. The Quiet Time Client shall update the HMI (if there is an update) with the Quiet Time start time after receiving the EngExhMdeHrStrt\_D\_Stat response to the request.

See sequence diagrams for examples

When the Quiet Time End time setting is selected via the HMI:

1. The Quiet Time Client shall set the EngExhMdeHrEnd\_D\_Rq signal to the end time (ex end hour 8 am) based on what the user selected, and then 100 msec +/- 10% later set the signal back to Null.
2. The Quiet Time Server shall respond within T\_QuietTime\_Rsp to the EngExhMdeHrEnd\_D\_Rq request with the response of the Quiet Time Server via the EngExhMdeHrEnd\_D\_Stat signal. Note, the Quiet Time Server does not wait for EngExhMdeHrEnd\_D\_Rq = Null before responding, it responds to the EngExhMdeHrEnd\_D\_Rq = Hour\_X request.
3. The Quiet Time Client shall update the HMI (if there is an update) with the Quiet Time end time after receiving the EngExhMdeHrEnd\_D\_Stat response to the request.

See sequence diagrams for examples

The Quiet Time Server shall broadcast the current Quiet Time Start and End time in the EngExhMdeHrStrt\_D\_Stat and EngExhMdeHrEnd\_D\_Stat status signals as long as that is current state of the Quiet Time feature.

Ex. If the Quiet Time feature End time is set to 8 am on the vehicle, then the Quiet Time Server would be broadcasting the signal EngExhMdeHrEnd\_D\_Stat set as Hour 8 (8 am) in its periodic status signal. Note Null is only for start-up if the Quiet Time Server has not yet powered up and doesn't know the status of the feature.

HMI Setting ID
252

### 3.19.6.3 VS-TMR-REQ-365810/A-T\_QuietTime\_Rsp

Name	Description	Units	Range	Resolution	Default
T_QuietTime_Rsp	Maximum time the Quiet Time Server shall take to respond to the Quiet Time request signals. The response will be in the Quiet Time status signal.  Maximum time defined as the default value	msec			200

### 3.19.6.4 VS-SR-REQ-365642/A-HMI Speed Limited

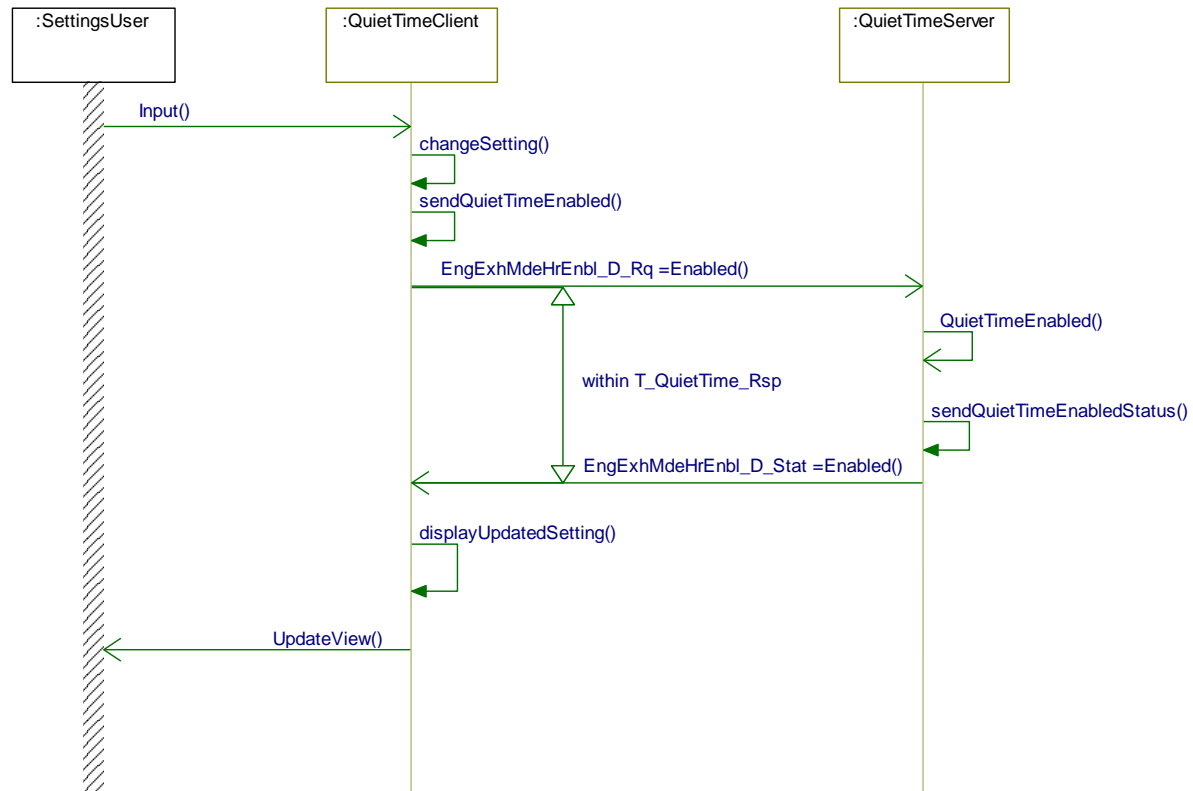
The Quiet Time HMI is speed limited. Reference requirement "DRIVE-REQ-025157-HMI Driving Restrictions – General Applications" in the Driver Restrictions SPSS for details and signal interface.



### 3.19.7 Sequence Diagrams

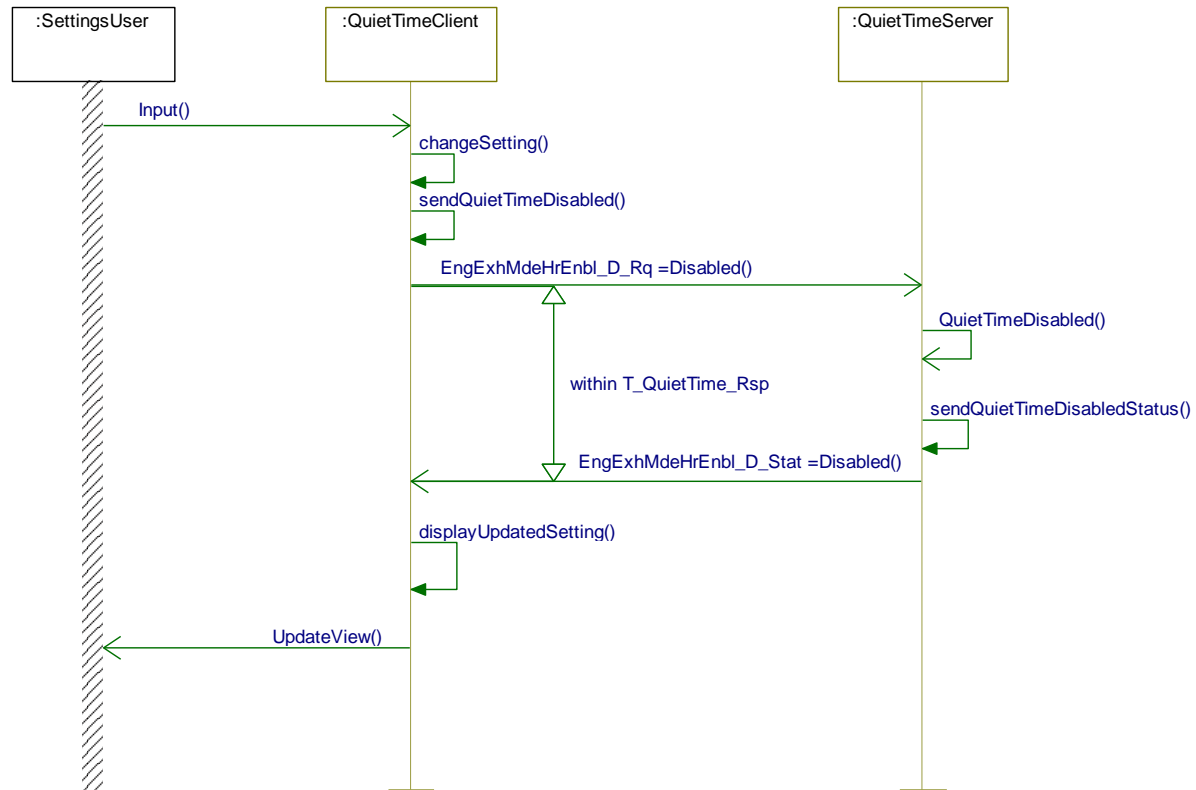
#### 3.19.7.1 VS-SD-REQ-365814/A-Quiet Time set to Enabled via the HMI

Pre-Condition: Quiet Time is Disabled



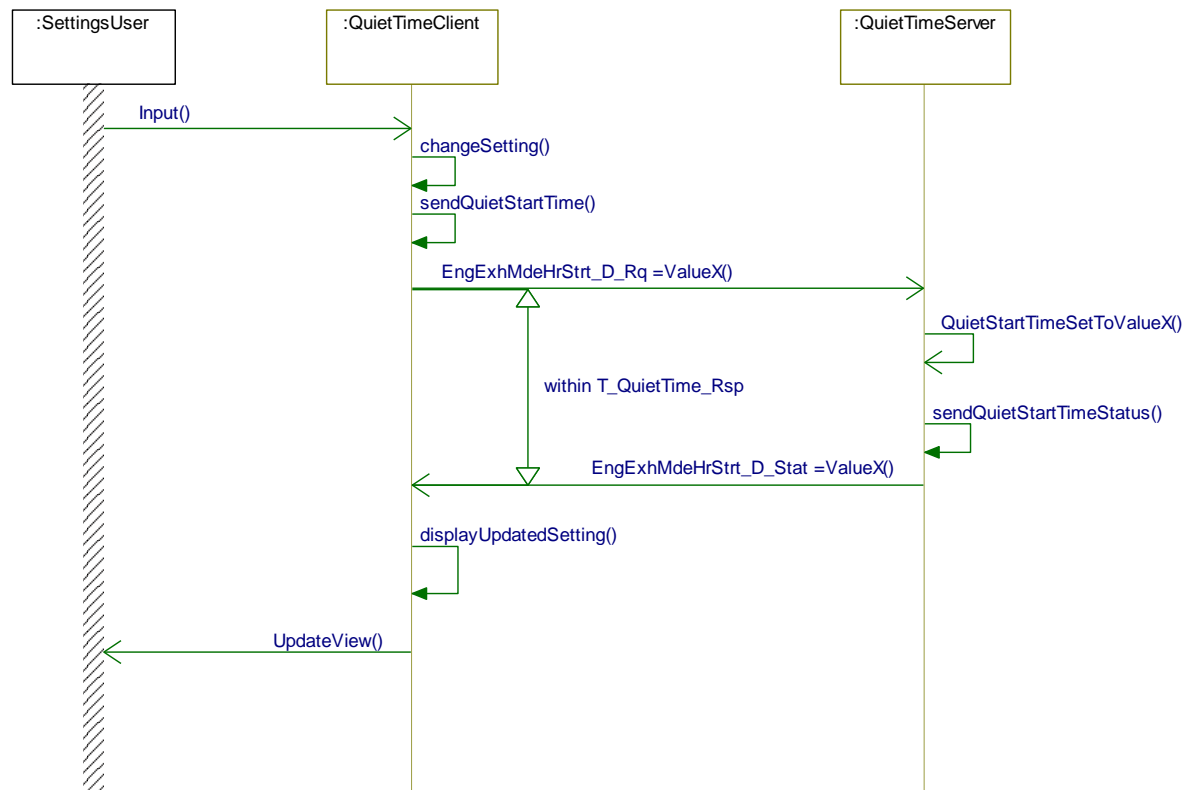
#### 3.19.7.2 VS-SD-REQ-365815/A-Quiet Time set to Disabled via the HMI

Pre-condition: Quiet Time is Enabled



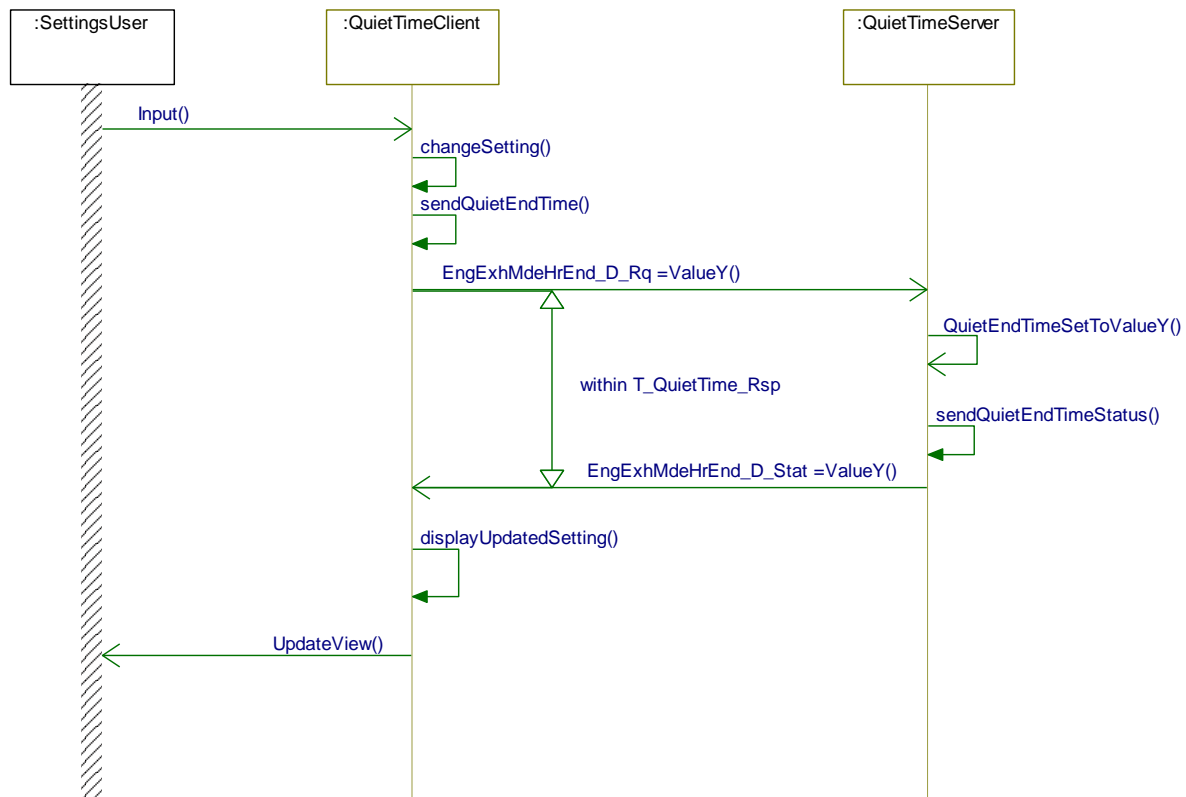
### 3.19.7.3 VS-SD-REQ-365816/A-Quiet Start Time set via the HMI

Pre-Condition: Quiet Time is enabled



**3.19.7.4 VS-SD-REQ-365820/A-Quiet End Time set via the HMI**

Pre-condition: Quiet Time is Enabled





## 3.20 VS-FUN-REQ-375892/A-Trail Turn Assist

### 3.20.1 Overview

Trail Turn Assist is a feature intended to assist the Driver by reducing the turning radius of the vehicle in low-speed, technical off-road environments that require large steering input. This is accomplished through application of negative (brake) torque to the inside rear wheel of the turning vehicle while the driver is steering in a given direction.

Trail Turn Assist is intended to enhance the User Experience by reducing the Driver effort required to negotiate difficult off-road terrain (for example, allowing the vehicle to make a tight turn in a single maneuver that might otherwise require a 3-point turn).

### 3.20.2 Terminology and Abbreviations

Term	Description
APIM	Accessory Protocol Interface Module
ABS	Antilock Braking System module

### 3.20.3 VS-CLD-REQ-375893/A-Trail Turn Assist Client

The Trail Turn Assist Client interfaces with the user via the HMI and is responsible for interfacing with the Trail Turn Assist Server. This includes sending the HMI settings requests and receiving the responses from the Trail Turn Assist Server. See SPSS requirements for details.

### 3.20.4 VS-CLD-REQ-375896/A-Trail Turn Assist Server

The Trail Turn Assist Server is responsible for the control of the Trail Turn Assist feature and interfaces with the Trail Turn Assist Client.

### 3.20.5 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Trail Turn Assist feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Trail Turn Assist Client	APIM
Trail Turn Assist Server	ABS

### 3.20.6 Interface Requirements

#### 3.20.6.1 MD-REQ-375908/A-TurnAsstSwrch\_D\_Stat

Message Type: Status

This signal is used by the Trail Turn Assist Client to broadcast the HMI Trail Turn Assist setting button status.

Logical Signal Name	Literals	Value	Description
TurnAsstSwrch_D_Stat	Not Pressed	0x0	
	Pressed	0x1	
	Not Used	0x2	





Faulty 0x3

**3.20.6.2 MD-REQ-375918/A-OrtaSwrchLamp\_B\_Rq**

Message Type: Request

This signal is used by the Trail Turn Assist Server to broadcast the Trail Turn Assist setting button status it requests to be displayed on the Trail Turn Assist Client HMI.

Logical Signal Name	Literals	Value	Description
OrtaSwrchLamp_B_Rq	OFF / Disabled	0x0	Show the Trail Turn Assist setting HMI as OFF / Disabled
	ON / Enabled	0x1	Show the Trail Turn Assist setting HMI as ON / Enabled

**3.20.7 Use Cases****3.20.7.1 VS-UC-REQ-375924/A-User Enables Trail Turn Assist**

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run The Trail Turn Assist feature is disabled The Trail Turn Assist setting is disabled
<b>Scenario Description</b>	User presses the Trail Turn Assist setting HMI
<b>Post-conditions</b>	The Trail Turn Assist feature is enabled The Trail Turn Assist setting HMI is shown as Enabled
<b>Notes</b>	

**3.20.7.2 VS-UC-REQ-375925/A-User Disables Trail Turn Assist**

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run The Trail Turn Assist feature is enabled The Trail Turn Assist setting is enabled
<b>Scenario Description</b>	User presses the Trail Turn Assist setting HMI
<b>Post-conditions</b>	The Trail Turn Assist feature is disabled The Trail Turn Assist setting HMI is shown as disabled
<b>Notes</b>	



### 3.20.8 Requirements

#### 3.20.8.1 VS-SR-REQ-375934/A-Trail Turn Assist Setting Soft Button Pressed / Not Pressed Handling

The Trail Turn Assist feature setting soft button shall be treated as a momentary push button. When the user presses anywhere in the touch zone of the soft button, the Trail Turn Assist Client shall set the value of the TurnAsstSwch\_D\_Stat signal to the Pressed value. The TurnAsstSwch\_D\_Stat signal shall be kept in the Pressed state as long as the user keeps the soft button pressed. When the user releases the soft button, the Trail Turn Assist Client shall set the value of the TurnAssSwch\_D\_Stat signal back to the Not Pressed value.

#### 3.20.8.2 VS-SR-REQ-375946/A-Trail Turn Assist Settings Change

The Trail Turn Assist Server shall broadcast the current Trail Turn Assist feature state as enabled or disabled in the OrtaSwchLamp\_B\_Rq signal.

The Trail Turn Assist Client shall use the OrtaSwchLamp\_B\_Rq signal from the Trail Turn Assist Server to show the Trail Turn Assist setting as enabled or disabled.

The Trail Turn Assist HMI setting shall only be available on the HMI when the ignition\_status = Run.

#### When the Trail Turn Assist setting is selected via the HMI:

1. The user pressing and releasing the Trail Turn Assist Client soft-button will generate a Pressed and then Not Pressed event in the TurnAsstSwch\_D\_Stat signal.
  - a. Note for when using an enable / disable HMI switch: if either enable or disable is selected a Pressed will be sent and kept at a pressed state until the user releases their finger then the Trail Turn Assist Client will send Not Pressed.
2. The Pressed and then Not Pressed in the TurnAsstSwch\_D\_Stat signal is then processed by the Trail Turn Assist Server. If all the conditions are met, the Trail Turn Assist Server will update the OrtaSwchLamp\_B\_Rq signal with the updated enabled/disabled state within T\_TrailTurnAssist\_Rsp.
3. The Trail Turn Assist Client shall then update the HMI setting to reflect the new feature state in the OrtaSwchLamp\_B\_Rq signal (enabled or disabled).

See sequence diagrams for examples.

HMI Setting ID
1080

#### 3.20.8.3 VS-TMR-REQ-375949/A-T\_TrailTurnAssist\_Rsp

Name	Description	Units	Range	Resolution	Default
T_TrailTurnAssist_Rsp	Maximum time the Trail Turn Assist Server shall take to respond to the Trail Turn Assist TurnAsstSwch_D_Stat signal Pressed then Not Pressed state change. The response will be in the OrtaSwchLamp_B_Rq signal.  Maximum time defined as the default value	msec			150



#### 3.20.8.4 VS-SR-REQ-375947/A-Conditions for setting TurnAsstSwch\_D\_Stat signal to Faulty

Anytime the Trail Turn Assist Client detects a failure with the Trail Turn Assist HMI or its controls, then the Trail Turn Assist Client shall set TurnAsstSwch\_D\_Stat equal to Faulty. This includes failure to register touch input, persistent contact or “stuck button” condition, etc.

Anytime the vehicle's ignition\_status = Run and the OrtaSwchLamp\_B\_Rq signal is missing for 5 seconds or more than the Trail Turn Assist Client shall set TurnAsstSwch\_D\_Stat equal to Faulty.

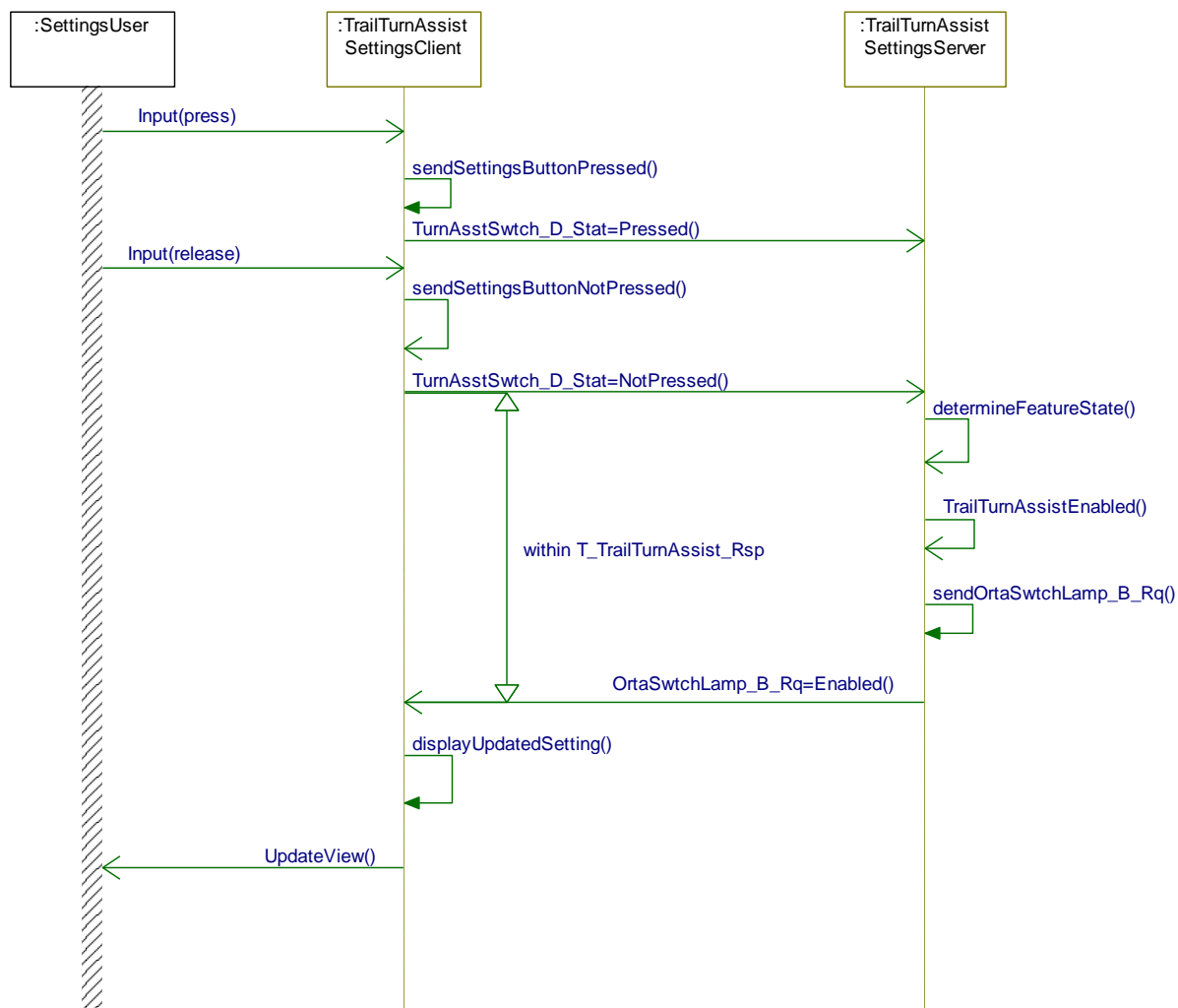
When the conditions above are not met for a fault condition then the TurnAsstSwch\_D\_Stat signal shall be set to the current button state (ie Pressed or Not Pressed).

### 3.20.9 Sequence Diagrams

#### 3.20.9.1 VS-SD-REQ-375951/A-Trail Turn Assist set to Enabled via the HMI

Pre-Condition: Trail Turn Assist is Disabled

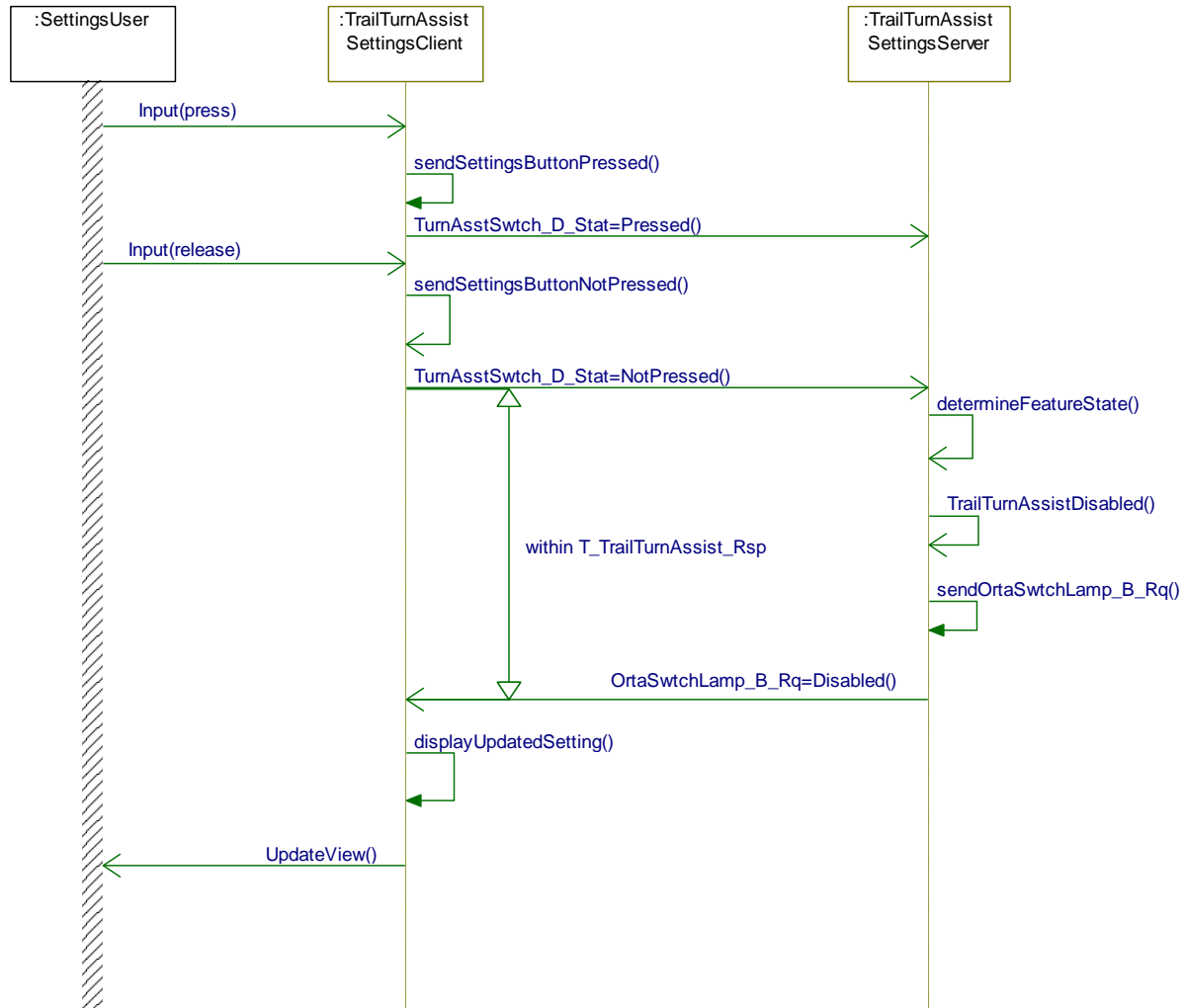
Event: User presses the Trail Turn Assist settings HMI



#### 3.20.9.2 VS-SD-REQ-375952/A-Trail Turn Assist set to Disabled via the HMI

Pre-condition: Trail Turn Assist Enabled

Event: User presses the Trail Turn Assist settings HMI





### 3.21 Clear Exit Assist

#### 3.21.1 VS-FUN-REQ-354248/A-Clear Exit Assist Setting

##### 3.21.1.1 VS-CLD-REQ-354250/A-Clear Exit Assist Settings Client

The Clear Exit Assist Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Clear Exit Assist Settings Server. The Clear Exit Assist Settings Client is responsible for sending the Clear Exit Assist setting request signal to the Clear Exit Assist Settings Server.

##### 3.21.1.2 VS-CLD-REQ-354251/A-Clear Exit Assist Settings Server

The Clear Exit Assist Settings Server is responsible for the control of the Clear Exit Assist settings function and interfaces with the Clear Exit Assist Settings Client.

##### 3.21.1.3 Use Cases

###### 3.21.1.3.1 VS-UC-REQ-354326/A-User Enables Clear Exit Assist Setting

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run Clear Exit Assist is Disabled
<b>Scenario Description</b>	User changes Clear Exit Assist setting to enabled via the HMI
<b>Post-conditions</b>	Clear Exist Assist is enabled Clear Exist Assist setting HMI is shown set to enabled.
<b>Notes</b>	

###### 3.21.1.3.2 VS-UC-REQ-354327/A-User Disables Clear Exit Assist Setting

<b>Actors</b>	Vehicle front seat occupant
<b>Pre-conditions</b>	Ignition is in Run Clear Exit Assist is enabled
<b>Scenario Description</b>	User changes Clear Exit Assist setting to disabled via the HMI
<b>Post-conditions</b>	Clear Exit Assist is disabled Clear Exit Assist Setting HMI is shown set to disabled
<b>Notes</b>	

##### 3.21.1.4 Interface Requirements

###### 3.21.1.4.1 MD-REQ-354255/A-ClrExitAsstEnbl\_D\_RqMnu

Message Type: Request

Request signal from the Clear Exit Assist Settings Client to the Clear Exit Assist Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
	Null	0x0	



ClrExitAsstEnbl_D_RqMnu	Disabled	0x1	
	Enabled	0x2	

### 3.21.1.4.2 MD-REQ-354256/A-ClrExitAsst\_D\_Stat

Message Type: Status

Status signal from the Clear Exit Assist Settings Server with the status of Clear Exit Assist feature

Logical Signal Name	Literals	Value	Description
ClrExitAsst_D_Stat	Null	0x0	HMI setting treated as unknown (ex HMI greyed out, setting not shown as selected...)
	Disabled	0x1	
	Enabled	0x2	

### 3.21.1.5 Requirements

#### 3.21.1.5.1 VS-SR-REQ-354328/A-Clear Exit Assist Setting change

The Clear Exit Assist Settings Client shall use the ClrExitAsst\_D\_Stat status signal from the Clear Exit Assist Server to show the Clear Exit Assist setting as Enabled or Disabled.

The Clear Exit Assist setting shall be available on the HMI when ignition\_status = Run.

When the Clear Exit Assist setting is selected via the HMI:

1. The Clear Exit Assist Settings Client shall set the ClrExitAsstEnbl\_D\_RqMnu signal to enabled or disabled based on what the user selected
2. The Clear Exit Assist Settings Server shall respond within T\_ClrExitAsst\_Rsp to the ClrExitAsstEnbl\_D\_RqMnu request with the response of the Clear Exit Assist Setting Server via the ClrExitAsst\_D\_Stat signal.
3. The Clear Exit Assist Setting Client shall update the HMI (if there is an update) with the clear exit assist settings status after receiving the ClrExitAsst\_D\_Stat response to the request.

HMI Setting ID
1037

#### 3.21.1.5.2 VS-TMR-REQ-354329/A-T\_ClrExitAsst\_Rsp

Name	Description	Units	Range	Resolution	Default
T_ClrExitAsst_Rsp	Maximum time the Clear Exit Assist Setting Server shall take to respond to the ClrExitAsstEnbl_D_RqMnu signal. The response will be in the ClrExitAsst_D_Stat signal.  Maximum time defined as the default value	msec			100



### 3.21.1.5.3 VS-SR-REQ-354254/A-MyKey settings

When a MyKey is active the Clear Exit Assist Setting shall be greyed out or not visible. See HMI specs for details.

Clear Exit Assist feature is enabled with a MyKey so any Centerstack clear exit assist warnings or pop-ups shall be supported.

#### Activating MyKey Settings Limit:

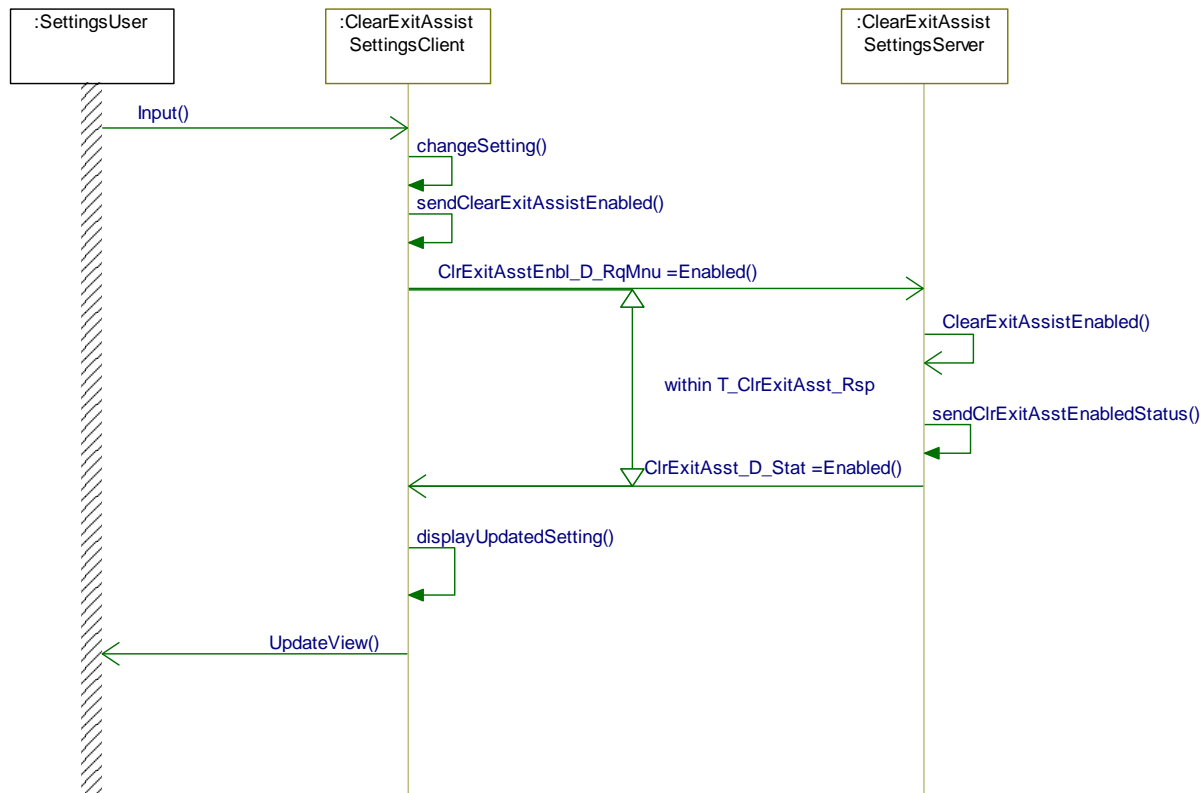
MyKey is active when IgnKeyType\_D\_Actl equals KeyInIgnMyKey.

Signal Name	Encodings	Value	Description
IgnitionKeyType	-	-	Type of key that is in the ignition
	KeyReadInProgress	0x0	Key(s) will be read now
	KeyInIgnStandardKey	0x1	Admin (full) mode
	KeyInIgnMyKey	0x2	MyKey restricted mode
	Unknown	0xE	Disable MyKey System mode
	Invalid	0xF	Initial value

### 3.21.1.6 Sequence Diagrams

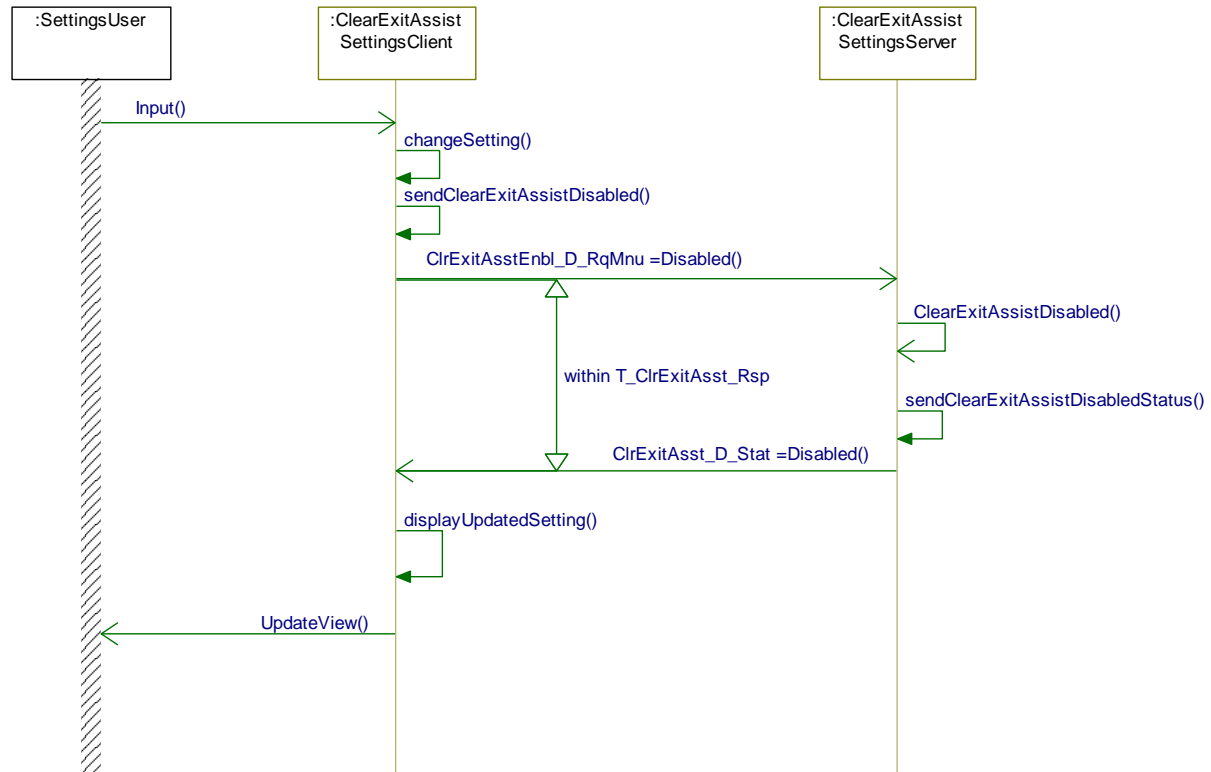
#### 3.21.1.6.1 VS-SD-REQ-354580/A-Clear Exit Assist set to Enabled via the HMI

Pre-Condition: Clear Exit Assist is set to Disabled



#### 3.21.1.6.2 VS-SD-REQ-354581/A-Clear Exit Assist set to Disabled via the HMI

Pre-condition: Clear Exit Assist is set to Enabled







### 3.21.2 VS-FUN-REQ-359558/A-Clear Exit Assist Warning

#### 3.21.2.1 VS-CLD-REQ-359585/A-Clear Exit Assist Warning Client

The Clear Exit Assist Warning Client interfaces with the user via the HMI and interfaces with the Clear Exit Assist Warning Server to determine if HMI updates are needed.

#### 3.21.2.2 VS-CLD-REQ-359586/A-Clear Exit Assist Warning Server

The Clear Exit Assist Warning Server is responsible for the control to the Clear Exit Assist function and interfaces with the Clear Exit Assist Warning Client.

#### 3.21.2.3 PWRMAN-CLD-REQ-359656/A-Infotainment System Master

#### 3.21.2.4 Use Cases

DA = Delayed Accessory

CEA = Clear Exit Assist

##### 3.21.2.4.1 VS-UC-REQ-362233/A-Activate Clear Exit Assist HMI Warning while the ignition is in Run/Acc

<b>Actors</b>	Vehicle front left seat occupant
<b>Pre-conditions</b>	Vehicle is parked Ignition is in Run or Accessory Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client)
<b>Scenario Description</b>	Road object is approaching the left door zone from behind.  Front left seat occupant pulls inner door handle triggering a Clear Exit Warning event.
<b>Post-conditions</b>	The Centerstack HMI warning is updated for the object approaching from rear left (ie left side object approaching from behind).
<b>Notes</b>	Not all the possible use cases are listed for the different seat occupants pulling the inner door handles and the warnings associated with them. See signal ClrExitAsstMsgTxt2_D_Rq encodings for the different possible HMI warnings to be displayed on the Clear Exit Assist Warning Client.  This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc...  The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

##### 3.21.2.4.2 VS-UC-REQ-362289/A-Second Clear Exit Assist HMI Warning while the ignition is in Run/Acc

<b>Actors</b>	Vehicle front left and front right seat occupant
<b>Pre-conditions</b>	Vehicle is parked Ignition is in Run or Accessory Clear Exit Assist is Enabled



	Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client). Clear Exit Assist rear left object approaching event is active with the HMI Warning displayed. The CEA rear left object approaching warning event was initiated by a front left occupant when pulling their door handle.
<b>Scenario Description</b>	Second road object is approaching the right door zone from behind.  Front right seat occupant pulls inner door handle
<b>Post-conditions</b>	The Centerstack HMI warning is updated for the object approaching from rear left and rear right at the same time.
<b>Notes</b>	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc...  The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

#### 3.21.2.4.3 VS-UC-REQ-362287/A-Activate Clear Exit Assist HMI Warning when in Delayed Accessory

<b>Actors</b>	Vehicle rear left seat occupant
<b>Pre-conditions</b>	Vehicle is parked Ignition is in Run Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client). The Clear Exit Assist Warning power mode timer has not expired
<b>Scenario Description</b>	User turns the ignition OFF entering delayed accessory  Road object is approaching the left door zone from behind.  Rear left seat occupant pulls inner door handle triggering a Clear Exit Warning event
<b>Post-conditions</b>	Delayed Accessory is not ended (rear door doesn't end delayed accessory).  The Centerstack HMI warning is updated for the object approaching from rear left (ie left side object approaching from behind).
<b>Notes</b>	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc...  The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

#### 3.21.2.4.4 VS-UC-REQ-362259/A-Activate Clear Exit Assist HMI Warning when exiting the vehicle causing DA to end and CEA timer has not expired

<b>Actors</b>	Vehicle front right seat occupant
<b>Pre-conditions</b>	Vehicle is parked



	Ignition is in Run Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client) The Clear Exit Assist Warning power mode timer has not expired
<b>Scenario Description</b>	User turns the ignition to OFF and Delayed Accessory becomes active  Road object is approaching the right door zone from behind.  Front right seat occupant pulls inner door handle.
<b>Post-conditions</b>	Delayed Accessory is ended when front right door is opened.  The Infotainment Centerstack display HMI module remains powered up with Delayed Accessory OFF.  The Centerstack HMI warning is updated for the object approaching from rear left (ie left side object approaching from behind).
<b>Notes</b>	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc...  At time this use case was written the clear exit assist power mode timer controlled by the Clear Exit Assist Warning Server was for 3 minutes after ignition OFF. The Clear Exit Assist Warning Client will display any ClrExitAsstMsgTxt2_D_Rq Clear Exit Assist warning it receives while powered up (ex HMI_HMIMode_St = ON, ClrExitAsstActv_B_Rq = True).  The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

#### 3.21.2.4.5 VS-UC-REQ-362293/A-No Clear Exit Assist HMI Warning when exiting the vehicle and CEA timer expired

<b>Actors</b>	Vehicle front left seat occupant
<b>Pre-conditions</b>	Vehicle is parked Ignition is OFF and Delayed Accessory OFF Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered down (ie Clear Exit Assist Warning Client) The Clear Exit Assist Warning power mode timer has expired
<b>Scenario Description</b>	Road object is approaching the right door zone from behind.  Front left seat occupant pulls inner door handle.
<b>Post-conditions</b>	The Infotainment Centerstack display HMI module remains powered down with Delayed Accessory OFF.  The Centerstack HMI warning is not updated for the object approaching from rear left (ie left side object approaching from behind).
<b>Notes</b>	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc...



At time this use case was written the clear exit assist power mode timer controlled by the Clear Exit Assist Warning Server was for 3 minutes after ignition OFF. The Clear Exit Assist Warning Client will display any ClrExitAsstMsgTxt2\_D\_Rq Clear Exit Assist warning it receives while powered up (ex HMI\_HMIMode\_St = ON, ClrExitAsstActv\_B\_Rq = True).

The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

#### 3.21.2.4.6 VS-UC-REQ-362296/A-Activate Clear Exit Assist HMI Warning when entering and exiting the vehicle when the CEA timer has not expired

<b>Actors</b>	Vehicle front left seat occupant
<b>Pre-conditions</b>	Vehicle is parked Ignition is OFF and Delayed Accessory is Active Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client) The Clear Exit Assist Warning power mode timer has not expired
<b>Scenario Description</b>	Person exits the vehicle ending delayed accessory and closes the door  Person re-enters the vehicle to the front left seat and closes the door  Road object is approaching the left door zone from behind.  Front left seat occupant pulls inner door handle.
<b>Post-conditions</b>	The Clear Exit Assist Warning power mode timer has not expired  The Infotainment Centerstack display HMI module remains powered up with Delayed Accessory OFF.  The Centerstack HMI warning is updated for the object approaching from rear left (ie left side object approaching from behind).
<b>Notes</b>	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc...  At time this use case was written the clear exit assist power mode timer controlled by the Clear Exit Assist Warning Server was for 3 minutes after ignition OFF. The Clear Exit Assist Warning Client will display any ClrExitAsstMsgTxt2_D_Rq Clear Exit Assist warning it receives while powered up (ex HMI_HMIMode_St = ON, ClrExitAsstActv_B_Rq = True).  The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

#### 3.21.2.4.7 VS-UC-REQ-362295/A-No Clear Exit Assist HMI Warning when entering and exiting vehicle with CEA timer expired

<b>Actors</b>	Vehicle front left seat occupant
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<b>Pre-conditions</b>	Vehicle is parked Ignition is OFF and Delayed Accessory is Active Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client) The Clear Exit Assist Warning power mode timer has not expired
<b>Scenario Description</b>	Person exits the vehicle ending delayed accessory and closes the door  The Clear Exit Assist Warning power mode timer expires  Person re-enters the vehicle to the front left seat and closes the door  Road object is approaching the left door zone from behind.  Front left seat occupant pulls inner door handle.
<b>Post-conditions</b>	The Infotainment Centerstack display HMI module does not remain powered up with Delayed Accessory OFF.  The Centerstack HMI warning is not updated for the object approaching from rear left (ie left side object approaching from behind).
<b>Notes</b>	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc...  At time this use case was written the clear exit assist power mode timer controlled by the Clear Exit Assist Warning Server was for 3 minutes after ignition OFF. The Clear Exit Assist Warning Client will display any ClrExitAsstMsgTxt2_D_Rq Clear Exit Assist warning it receives while powered up (ex HMI_HMIMode_St = ON, ClrExitAsstActv_B_Rq = True).  The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

### 3.21.25 Interface Requirements

#### 3.21.25.1 MD-REQ-359587/A-ClrExitAsstMsgTxt2\_D\_Rq

Message Type: Request

Request signal from the Clear Exit Assist Warning Server to the Clear Exit Assist Warning Client to display the warning HMI

Logical Signal Name	Literals	Value	Description
ClrExitAsstMsgTxt2_D_Rq	No Info / No Warning	0x0	
	Rear Left	0x1	
	Rear Right	0x2	
	Front Left	0x3	
	Front Right	0x4	
	Rear Left and Rear Right	0x5	
	Front Left and Front Right	0x6	
	Rear Left and Front Right	0x7	
	Front Left and Rear Right	0x8	



	Reserved	...	
	Reserved	0xF	

### 3.21.2.5.2 MD-REQ-359588/A-ClrExitAsstActv\_B\_Rq

Message Type: Request

Request signal from the Clear Exit Assist Warning Server to the Clear Exit Assist Warning Client / Infotainment System Master to remain powered up to display the clear exit assist warning HMI

Logical Signal Name	Literals	Value	Description
ClrExitAsstActv_B_Rq	False	0x0	
	True	0x1	

### 3.21.2.6 Requirements

#### 3.21.2.6.1 VS-SR-REQ-359973/A-Clear Exit Assist warning HMI

When the Clear Exit Assist Warning Client receives the ClrExitAsstMsgTxt2\_D\_Rq request signal from the Clear Exit Assist Warning Server set to a warning value (ex Front Left) then the Clear Exit Assist Warning Client shall display the corresponding warning HMI.

- As long as a warning encoding in ClrExitAsstMsgTxt2\_D\_Rq is held to a specific warning value then the Clear Exit Assist Warning Client shall continue to show the warning HMI.
  - Ex. if ClrExitAsstMsgTxt2\_D\_Rq = Rear Left then hold the corresponding HMI for Rear Left as long as the signal is held at Rear Left.

Note: see HMI spec for priority of pop-ups between different features

The Clear Exit Assist Warning Server shall only hold the signal ClrExitAsstMsgTxt2\_D\_Rq set to a warning value as long as the condition is true. Once the warning event has ended the ClrExitAsstMsgTxt2\_D\_Rq signal shall be set back to "No Info / No Warning".

- Note: if the Clear Exit Assist Warning Server does not put the ClrExitAsstMsgTxt2\_D\_Rq signal back to "No Info / No Warning" signal encoding immediately after the event ends then this may cause other important HMI to not be shown on the Clear Exit Assist Warning Client HMI.

#### 3.21.2.6.2 PWRMAN-SR-REQ-359648/A-Clear Exit Assist Power Moding

The Clear Exit Assist Warning Client shall update the HMI with the applicable HMI Warning when it receives the signal ClrExitAsstMsgTxt\_D\_Rq2 from the Clear Exit Assist Warning Server set to a particular warning encoding.

For the Clear Exit Assist feature the Clear Exit Assist Warnings can be displayed on the Clear Exit Assist Warning Client's HMI whenever the infotainment system is on (ie HMI\_HMIMode\_St = ON) or in MMInactive (Sleep/Standby) power mode as specified below.

The Infotainment System Master / Clear Exit Assist Warning Client shall support Clear Exit Assist Warning HMI in MMInactive (Sleep/Standby) power mode (ie HMI\_HMIMode\_St = OFF) when the following applies:

- The Clear Exit Assist Warning Server power mode signal is set as ClrExitAsstActv\_B\_Rq = True, AND
- 240 seconds has not elapsed since the signal Delay\_Acc went from ON to OFF.

The Infotainment System Master / Clear Exit Assist Warning Client shall NOT remain powered up capable of displaying Clear Exit Assist HMI in MMInactive (Sleep/Standby) power mode because of the Clear Exit feature (might remain powered up because of other features) when the following applies:

- The Clear Exit Assist Warning Server power mode signal ClrExitAsstActv\_B\_Rq = False, OR
- 240 seconds has elapsed since the signal Delay\_Acc went from ON to OFF





The Infotainment System Master / Clear Exit Assist Warning Client shall NOT keep the network awake for the Clear Exit Assist feature. This includes not keeping the network bus awake when ClrExitAsstActv\_B\_Rq = True and HMIAudioMode = OFF.

If the infotainment system master is in MMInactive (Sleep/Standby), with the network asleep but the conditions are true to be powered up for the Clear Exit Assist Warning feature then the Infotainment System Master shall power up locally (ie remain powered up waiting for warning signals even though the network bus is asleep).

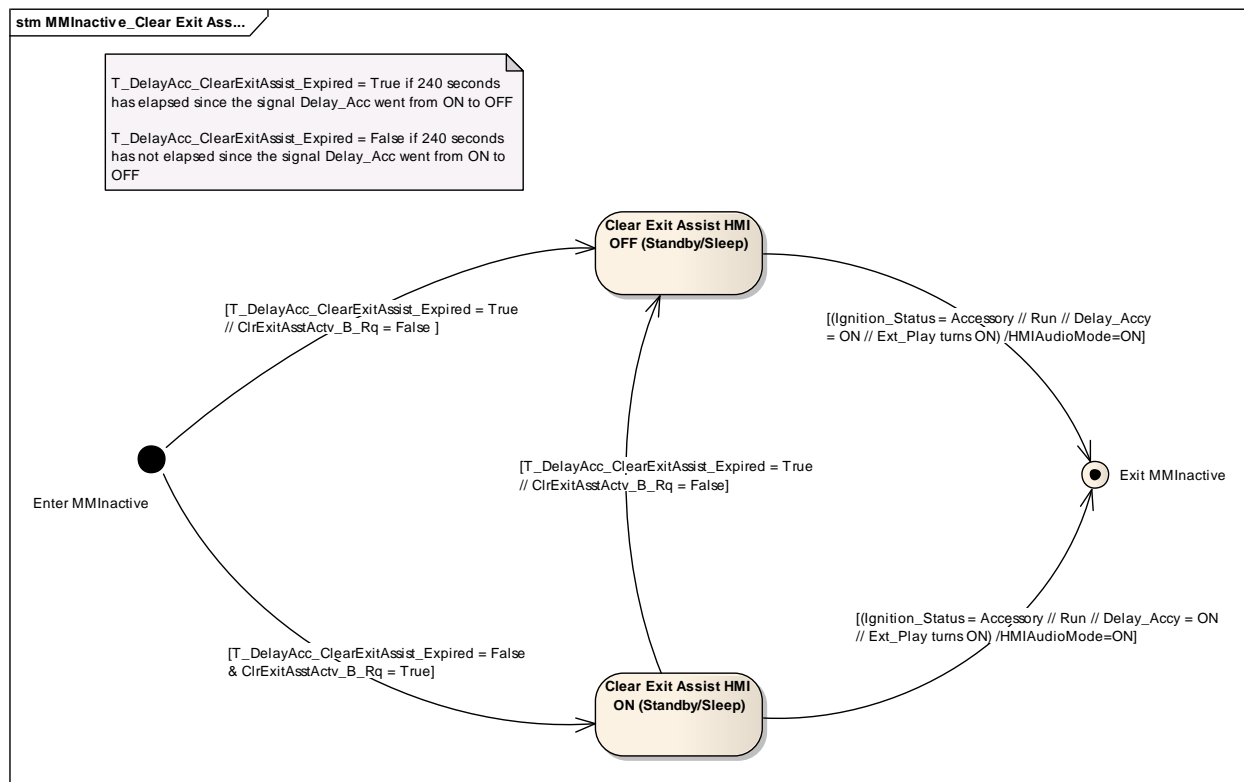
- Note: if the network bus is asleep then the Infotainment System Master / Clear Exit Assist Warning Client shall assume the last state of the ClrExitAsstActv\_B\_Rq signal.

If the ClrExitAsstActv\_B\_Rq is not on the network bus for 5 seconds or more while the signal Ignition\_Status = RUN then the Infotainment System Master / Clear Exit Assist Warning Client shall consider the signal ClrExitAsstActv\_B\_Rq missing. When ClrExitAsstActv\_B\_Rq is missing the Infotainment System Master shall NOT remain powered up capable of displaying Clear Exit Assist HMI in MMInactive (Sleep/Standby) power mode because of the Clear Exit feature (might remain powered up because of other features).

Note:

- The Infotainment System Master and Clear Exit Assist Warning Client may be the same module. See implementation guide for details

### 3.21.2.6.3 PWRMAN-SR-REQ-359676/A-MMInactive Sleep Standby Clear Exit Assist Power Mode Diagram

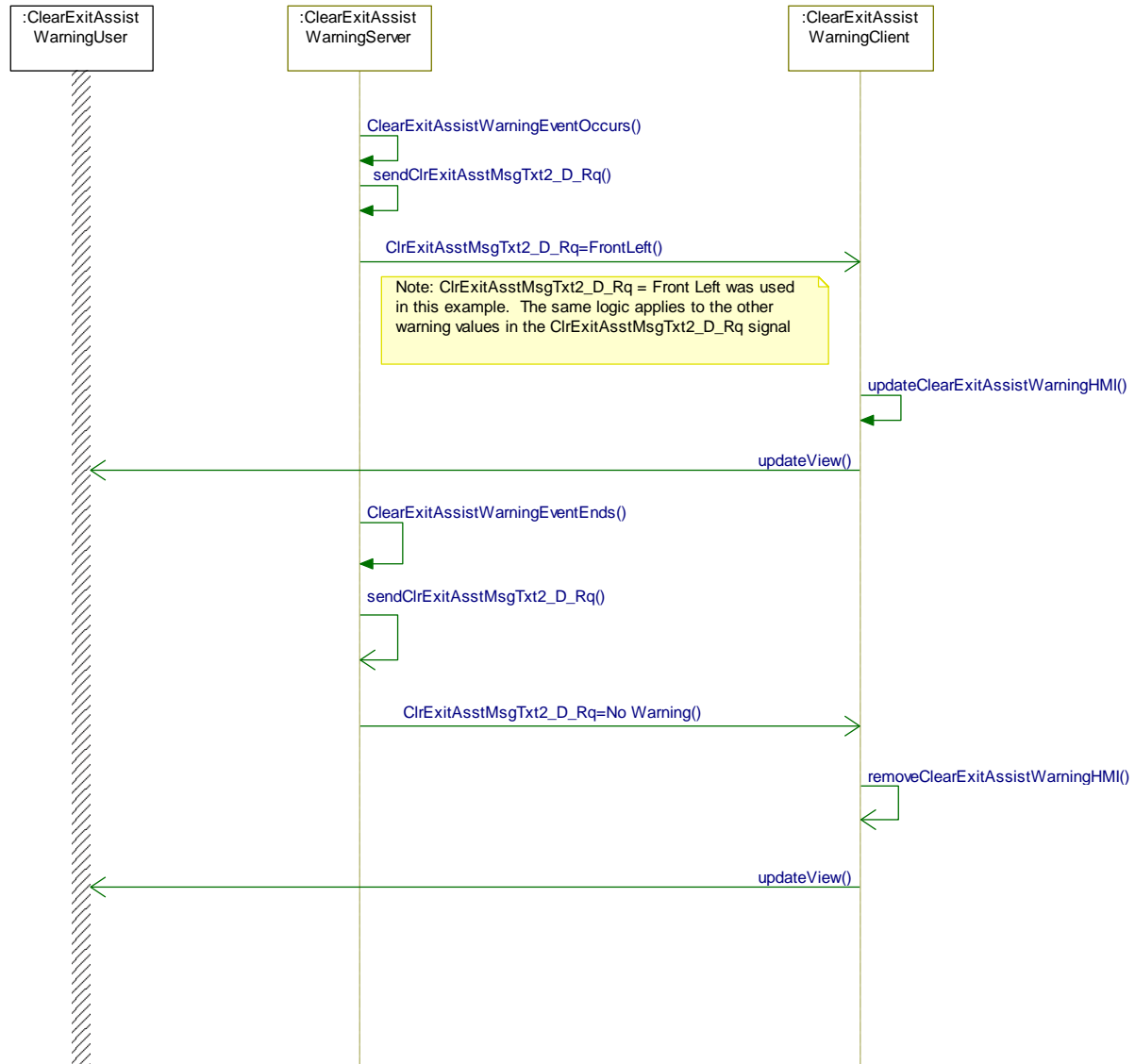


## 3.21.2.7 Sequence Diagrams

### 3.21.2.7.1 VS-SD-REQ-361333/A-Clear Exist Assist HMI Warning Event

Pre-condition:

No Clear Exit Assist HMI warning is active with the signal ClrExitAsstMsgTxt2\_D\_Rq = No Warning.







## 3.22 VS-FUN-REQ-383899/A-Lane Biasing Setting (Highway Assist)

### 3.22.1 Overview

To mimic normal driving behavior, the Lane Biasing feature will move the vehicle laterally in certain driving situations e.g. when passing other vehicles, driver selected to drive with an offset, building an extra lane for emergency vehicles in certain regions.

### 3.22.2 VS-CLD-REQ-383974/A-Lane Biasing Settings Client

The Lane Biasing Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Lane Biasing Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Lane Biasing Settings Server.

### 3.22.3 VS-CLD-REQ-383975/A-Lane Biasing Settings Server

The Lane Biasing Assist Settings Server is responsible for the control of the Lane Biasing settings function and interfaces with the Lane Biasing Settings Client.

### 3.22.4 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Lane Biasing Setting feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Lane Biasing Settings Client	APIM
Lane Biasing Settings Server	ADAS

### 3.22.5 Interface Requirements

#### 3.22.5.1 MD-REQ-383981/A-TjaLaneBiasEnbl\_D\_RqMnu

Message Type: Request

Request signal from the Lane Biasing Setting Client to the Lane Biasing Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
TjaLaneBiasEnbl_D_RqMnu	Null	0x0	
	Disable	0x1	
	Enable	0x2	

#### 3.22.5.2 MD-REQ-383982/A-TjaLaneBiasEnbl\_D\_Stat

Message Type: Status

Status signal from the Lane Biasing Settings Server with the status of Lane Biasing feature

Logical Signal Name	Literals	Value	Description
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TjaLaneBiasEnbl_D_Stat	Inactive	0x0	
	Disabled	0x1	
	Enabled	0x2	

### 3.22.6 Use Cases

#### 3.22.6.1 VS-UC-REQ-383983/A-User Enables Lane Biasing Setting

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run Lane Biasing is Disabled
<b>Scenario Description</b>	User changes Lane Biasing setting to enabled via the HMI
<b>Post-conditions</b>	Lane Biasing is enabled Lane Biasing setting HMI is shown set to enabled.
<b>Notes</b>	

#### 3.22.6.2 VS-UC-REQ-383987/A-User Disables Lane Biasing Setting

<b>Actors</b>	Vehicle front seat occupant
<b>Pre-conditions</b>	Ignition is in Run Lane Biasing setting is enabled
<b>Scenario Description</b>	User changes Lane Biasing setting to disabled via the HMI
<b>Post-conditions</b>	Lane Biasing is disabled Lane Biasing Setting HMI is shown set to disabled
<b>Notes</b>	

### 3.22.7 Requirements

#### 3.22.7.1 VS-SR-REQ-384253/A-Lane Biasing Setting change

The Lane Biasing Settings Client shall use the TjaLaneBiasEnbl\_D\_Stat status signal from the Lane Biasing Setting Server to show the Lane Biasing setting as Enabled or Disabled on the HMI.

The Lane Biasing setting shall be available on the HMI when ignition\_status = Run.

When the Lane Biasing setting is selected via the HMI:

1. The Lane Biasing Setting Client shall set the TjaLaneBiasEnbl\_D\_RqMnu signal to enabled or disabled based on what the user selected and then 100 msec (+/- 10%) after setting enabled/disabled set the signal back to Null.
2. The Lane Biasing Settings Server shall respond within T\_LaneBias\_Rsp to the TjaLaneBiasEnbl\_D\_RqMnu enable/disable request with the response via the TjaLanBiasEnbl\_D\_Stat signal. Note: the Lane Biasing Settings Server does not wait for the Null before responding.
3. The Lane Biasing Setting Client shall update the HMI (if there is an update) with the Lane Biasing assist settings status after receiving the TjaLaneBiasEnbl\_D\_Stat response to the request.

HMI Setting ID



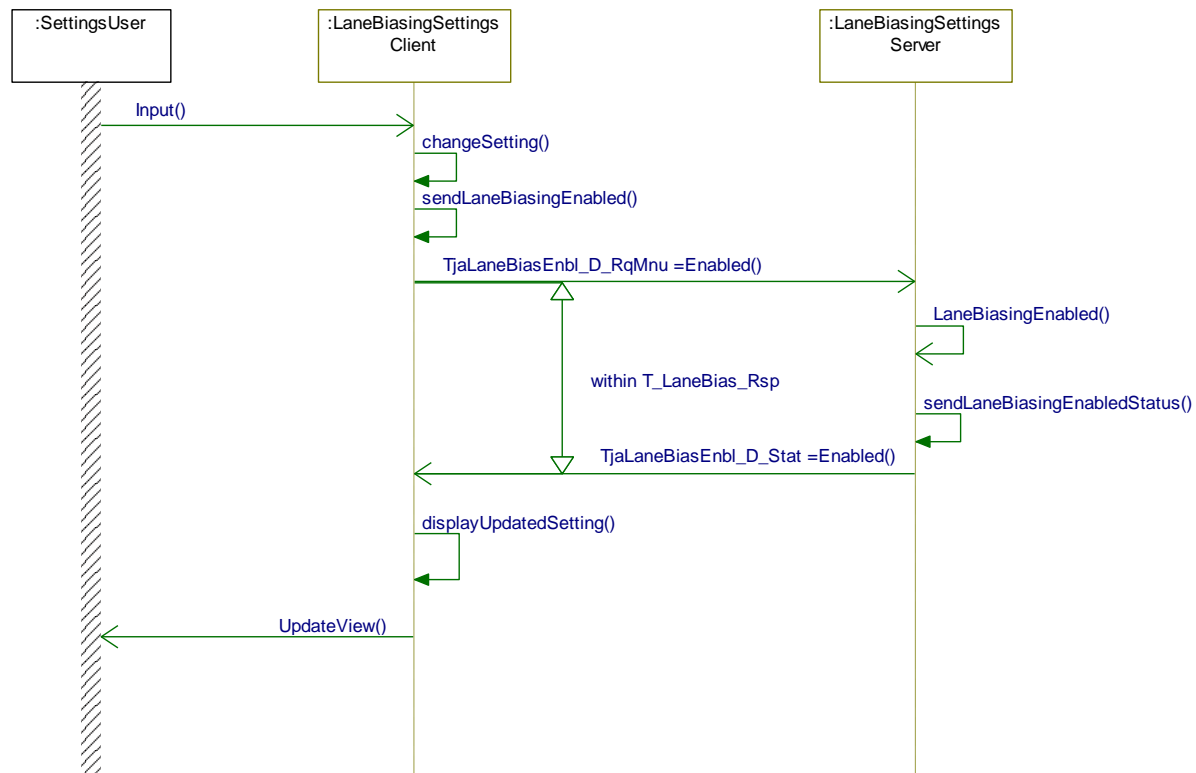
1081

**3.22.7.2 VS-TMR-REQ-384254/A-T\_LaneBias\_Rsp**

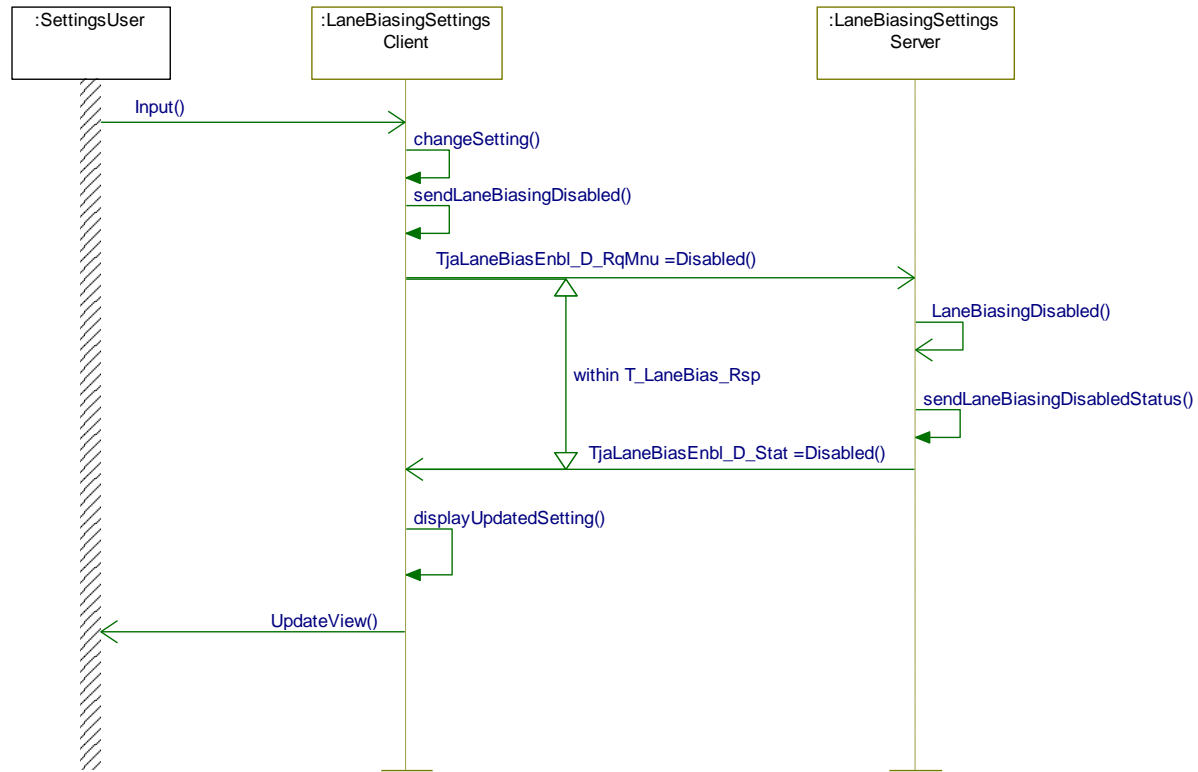
Name	Description	Units	Range	Resolution	Default
T_LaneBias_Rsp	Maximum time the Lane Biasing Setting Server shall take to respond to the TjaLaneBiasEnble_D_RqMnu request signal. The response will be in the TjaLaneBiasEnbl_D_Stat signal.  Maximum time defined as the default value	msec			100

**3.22.8 Sequence Diagrams****3.22.8.1 VS-REQ-384257/A-Lane Biasing set to Enabled via the HMI**

Pre-Condition: Lane Biasing setting is set to Disabled

**3.22.8.2 VS-REQ-384276/A-Lane Biasing set to Disabled via the HMI**

Pre-condition: Lane Biasing setting is set to Enabled





### 3.23 VS-FUN-REQ-392197/A-Curve Speed Control - Intelligent Adaptive Cruise Control

#### 3.23.1 Overview

Adaptive cruise control with curve speed control will adjust the vehicle speed to road geometry such as for roundabouts, curves or highway exits.

#### 3.23.2 VS-CLD-REQ-392418/A-Curve Speed Control Settings Client

The Curve Speed Control Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Curve Speed Control Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Curve Speed Control Settings Server.

#### 3.23.3 VS-CLD-REQ-392419/A-Curve Speed Control Settings Server

The Curve Speed Control Settings Server is responsible for the control of the Curve Speed Control function and interfaces with the Curve Speed Control Settings Client.

#### 3.23.4 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Curve Speed Control Setting feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Curve Speed Control Settings Client	APIM
Curve Speed Control Settings Server	ADAS

#### 3.23.5 Interface Requirements

##### 3.23.5.1 MD-REQ-399907/A-laccCrvVCtlEnbl\_D\_Rq

Message Type: Request

Request signal from the Curve Speed Control Setting Client to the Curve Speed Control Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
laccCrvVCtlEnbl_D_Rq	Null	0x0	
	Disable	0x1	
	Enable	0x2	

##### 3.23.5.2 MD-REQ-399906/A-laccCrvVCtlEnbl\_D\_Stat

Message Type: Status

Status signal from the Curve Speed Control Settings Server with the status of Curve Speed Control feature

Logical Signal Name	Literals	Value	Description
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laccCrwCtlEnbl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

### 3.23.6 Use Cases

#### 3.23.6.1 VS-UC-REQ-399909/A-User Enables Curve Speed Control Setting

<b>Actors</b>	Vehicle front seat Occupant
<b>Pre-conditions</b>	Ignition is in Run Curve Speed Control is Disabled
<b>Scenario Description</b>	User changes the Curve Speed Control setting to enabled via the HMI
<b>Post-conditions</b>	Curve Speed Control is enabled Curve Speed Control setting HMI is shown set to enabled.
<b>Notes</b>	

#### 3.23.6.2 VS-UC-REQ-399910/A-User Disables Curve Speed Control Setting

<b>Actors</b>	Vehicle front seat occupant
<b>Pre-conditions</b>	Ignition is in Run Curve Speed Control setting is enabled
<b>Scenario Description</b>	User changes the Curve Speed Control setting to disabled via the HMI
<b>Post-conditions</b>	Curve Speed Control is disabled The Curve Speed Control Setting HMI is shown set to disabled
<b>Notes</b>	

### 3.23.7 Requirements

#### 3.23.7.1 VS-SR-REQ-400065/A-Curve Speed Control Setting change

The Curve Speed Control Client shall use the laccCrwCtlEnbl\_D\_Stat status signal from the Curve Speed Control Setting Server to show the Curve Speed Control setting as Enabled or Disabled on the HMI.

The Curve Speed Control setting shall be available on the HMI when ignition\_status = Run.

When the Curve Speed Control setting is selected via the HMI:

1. The Curve Speed Control Setting Client shall set the laccCrwCtlEnbl\_D\_Rq signal to enabled or disabled based on what the user selected and then 100 msec (+/- 10%) after setting enabled/disabled set the signal back to Null.
2. The Curve Speed Control Settings Server shall respond within T\_CurveSpeedControl\_Rsp to the laccCrwCtlEnbl\_D\_Rq enable/disable request with the response via the laccCrwCtlEnbl\_D\_Stat signal. Note: the Curve Speed Control Setting Server does not wait for the Null before responding.
3. The Curve Speed Control Client shall update the HMI (if there is an update) with the Curve Speed Control settings status after receiving the laccCrwCtlEnbl\_D\_Stat response to the request.

HMI Setting ID



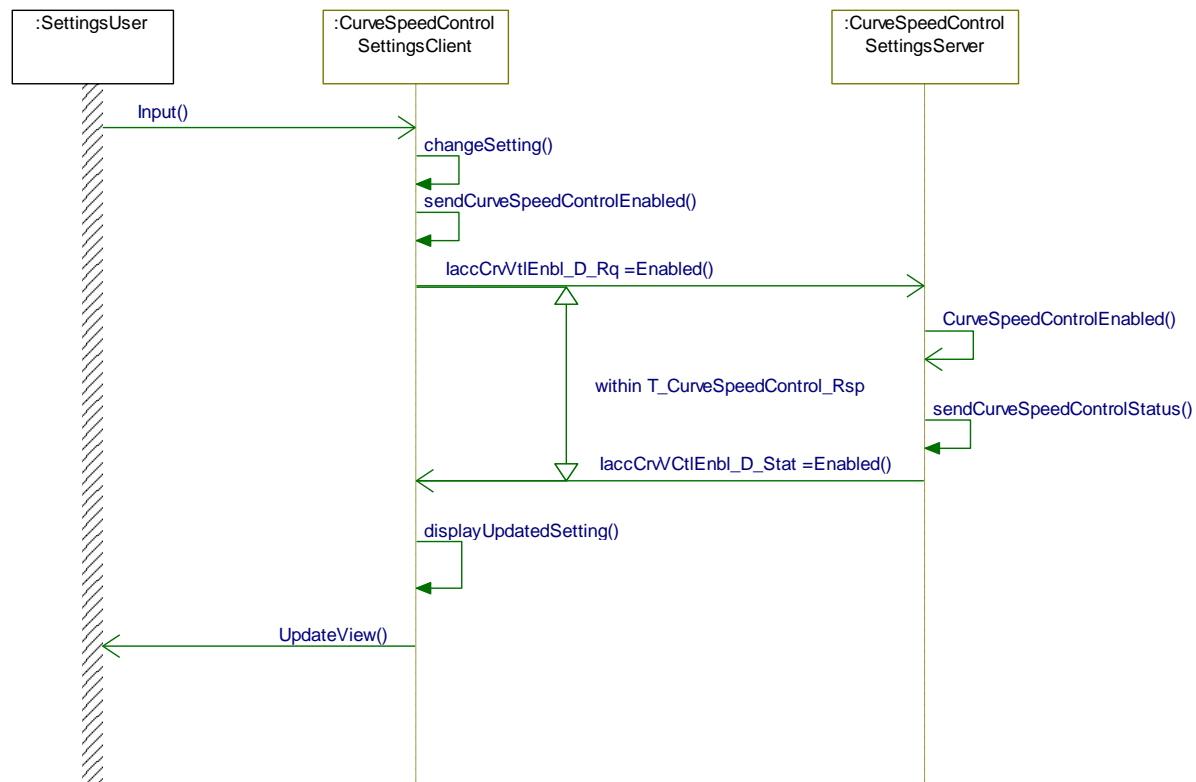
1086

**3.23.7.2 VS-TMR-REQ-400066/A-T\_CurveSpeedControl\_Rsp**

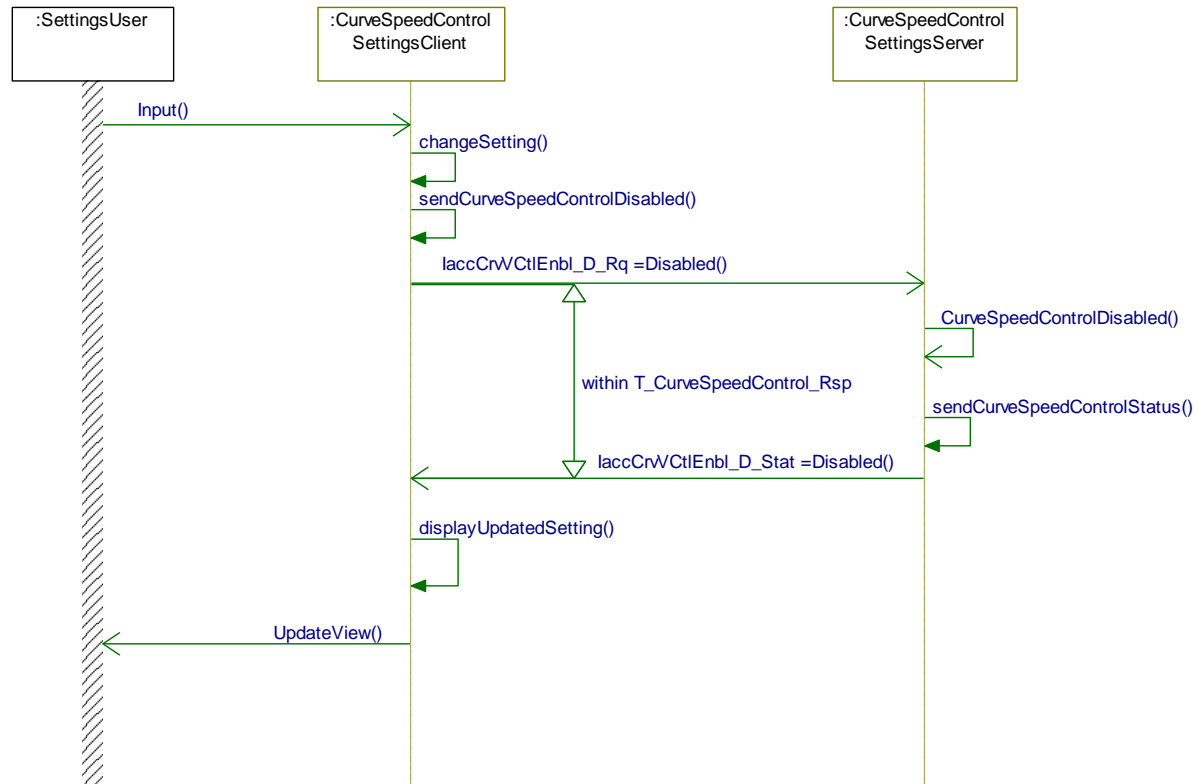
Name	Description	Units	Range	Resolution	Default
T_CurveSpeedControl_Rsp	Maximum time the Curve Speed Control Setting Server shall take to respond to the laccCrVctlEnbl_D_Rq request signal. The response will be in the laccCrVctlEnbl_D_Stat signal.  Maximum time defined as the default value	msec			100

**3.23.8 Sequence Diagrams****3.23.8.1 VS-SD-REQ-400195/A-Curve Speed Control set to Enabled via the HMI**

Pre-Condition: Curve Speed Control is set to Disabled

**3.23.8.2 VS-SD-REQ-400196/A-Curve Speed Control set to Disabled via the HMI**

Pre-Condition: Curve Speed Control is set to Enabled







## 4 Appendix: Reference Documents

Reference #	Document Title
1	Cluster STSS specs from Cluster group – for APIM 4.2 if Cluster is integrated.
2	Settings in the Centerstack SPSS – for settings that moved from the Cluster to Centerstack/APIM
3	APIM Clock Spec
4	A69 Language spec
5	HMI specifications
6	
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