



Research & Vehicle Technology
“Infotainment Systems Product Development”

Feature – LiftGate Softswitch
Interface Client

Infotainment Subsystem Part Specific
Specification (SPSS)

Version 1.4 Draft
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FORD CONFIDENTIAL



Revision History

| Date | Version | Notes | |
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| February 8, 2019 | 1.1 | | |
| | LGSS-IIR-REQ-323817/B-LGSSInterfaceClient_Rx | | MBORREL4: Removed REQ-332999 & REQ-333000, Added REQ-201601 |
| | LGSS-REQ-328538/B-Powermode Conditions | | MBORREL4: Added Delayed Acc, Acc, and Start |
| | STR-572684/B-Requirements | | MBORREL4: Removed REQ-332486 |
| | LGSS-REQ-332246/B-LiftGate Release - User Input Enable/Disable | | MBORREL4: Changed to a precondition table for clarity. Added some new preconditions |
| | LGSS-UC-REQ-323953/B-User selects Manual LiftGate Softswitch on LGSSInterfaceClient (switch enabled) | | MBORREL4: Updated postcondition as LGSSServer1 opens manual liftgates |
| | LGSS-UC-REQ-323963/B-User selects Open Power LiftGate Softswitch on LGSSInterfaceClient (switch enabled) | | MBORREL4: Updated postconditions (no switch updates) |
| | LGSS-UC-REQ-323974/B-User selects Close Power LiftGate Softswitch on LGSSInterfaceClient (switch enabled) | | MBORREL4: Updated postconditions (no switch updates) |
| | LGSS-UC-REQ-323975/B-User selects Power LiftGate Softswitch on LGSSInterfaceClient while LiftGate in motion (switch enabled) | | MBORREL4: Updated postconditions (no switch updates) |
| | LGSS-ACT-REQ-333020/B-User Selects Power LiftGate Softswitch On LGSSInterfaceClient | | MBORREL4: Updated to remove HMI button text update |
| | LGSS-SD-REQ-333007/B-User Selects Manual LiftGate Softswitch On LGSSInterfaceClient | | MBORREL4: Updated postcondition as LGSSServer1 opens manual liftgates |
| | LGSS-SD-REQ-333021/B-User Selects Power LiftGate Softswitch On LGSSInterfaceClient | | MBORREL4: Updated to remove HMI button text update |
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| | LGSS-IIR-REQ-323817/C-LGSSInterfaceClient_Rx | | MBORREL4: Added REQ-333000 |
| | STR-572684/C-Requirements | | MBORREL4: Added REQ-354975 |
| | LGSS-REQ-354975/A-LiftGate Ajar Status | | MBORREL4: New req. |
| | LGSS-UC-REQ-323953/C-User selects Manual LiftGate Softswitch on LGSSInterfaceClient (switch enabled) | | MBORREL4: Updated to include liftgate ajar status |
| | LGSS-UC-REQ-323963/C-User selects Open Power LiftGate Softswitch on LGSSInterfaceClient (switch enabled) | | MBORREL4: Updated to include liftgate ajar status |
| | LGSS-UC-REQ-323974/C-User selects Close Power LiftGate Softswitch on LGSSInterfaceClient (switch enabled) | | MBORREL4: Updated to include liftgate ajar status |
| | LGSS-UC-REQ-323975/C-User selects Power LiftGate Softswitch on LGSSInterfaceClient while LiftGate in motion (switch enabled) | | MBORREL4: Updated to include liftgate ajar status |
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| | STR-572054/B-Architectural Design | | nmajjiga: updated for Splitgate |
| | LGSS-CLD-REQ-323809/B-LiftGate Softswitch Interface Client | | nmajjiga: updated for Splitgate |
| | LGSS-CLD-REQ-323811/B-LiftGate Softswitch Server2 | | nmajjiga: updated for Splitgate |
| | DOC-572058/B-Physical Mapping of Classes | | nmajjiga: updated for Splitgate |
| | STR-1019270/A-Logical Signal Mapping | | nmajjiga: added signal mapping |
| | LGSS-IIR-REQ-323816/B-LGSSInterfaceClient_Tx | | nmajjiga: added new signals for splitgate |
| | MD-REQ-474664/A-SplitgateReleaseCounter_Rq | | nmajjiga: signal for splitgate release counter |
| | MD-REQ-474665/A-Splitgate_Remote_Oper_Rq | | nmajjiga: signal for remote operation configuration setting request |
| | MD-REQ-479257/A-SplitgateEnable_Rq | | nmajjiga: signal to enable power vs manual mode |
| | LGSS-IIR-REQ-323817/D-LGSSInterfaceClient_Rx | | nmajjiga: added new signals for splitgate |
| | MD-REQ-474666/A-Liftgate_Position_St | | nmajjiga: signal for liftgate position |



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| MD-REQ-474667/A-Tailgate_Position_St | nmajjiga: signal for tailgate position |
| MD-REQ-474668/A-Splitgate_Remote_Oper_St | nmajjiga: signal for remote operation configuration setting status |
| MD-REQ-479258/A-SplitgateEnable_St | nmajjiga: signal to enable power vs manual mode |
| MD-REQ-479259/A-TailgateAjar_St | nmajjiga: signal for Tailgate Ajar status in Splitgate |
| STR-572055/B-General Requirements | nmajjiga: updated for Splitgate |
| LGSS-REQ-328539/B-Feature Configuration | nmajjiga: updated for Splitgate |
| LGSS-REQ-476077/A-Feature Configuration - SplitGate | nmajjiga: new requirement for Splitgate |
| LGSS-REQ-328540/B-Speed Restriction Configuration | nmajjiga: updated for Splitgate |
| LGSS-REQ-477617/A-Back End Enclosure Type Configuration | nmajjiga: new requirement for Backend Enclosure |
| LGSS-REQ-478025/A-Back End Enclosure Type Configuration - SplitGate | nmajjiga: new requirement for Backend Enclosure |
| LGSS-REQ-479237/A-Missing Message DTC - SplitGate | nmajjiga: new requirement for Splitgate |
| STR-572056/B-Functional Definition | nmajjiga: updated for Splitgate |
| STR-572684/D-Requirements | nmajjiga: added new requirement for liftgate position status |
| LGSS-REQ-332245/B-LiftGate Release - User Input | nmajjiga: updated to add configuration details |
| LGSS-REQ-354975/B-LiftGate Ajar Status | nmajjiga: updated to include configuration detail |
| LGSS-REQ-474677/A-LiftGate Position Status | nmajjiga: new requirement for liftgate position status |
| LGSS-REQ-477817/A-Decklid/Trunk Ajar Status | nmajjiga: added new requirement for Decklid/Trunk |
| LGSS-REQ-479277/A-TailGate Ajar Status - SplitGate | nmajjiga: Tailgate Ajar details for Splitgate |
| STR-572685/B-Use Cases | nmajjiga: updated usecase to support splitgate configuration |
| LGSS-UC-REQ-477837/A-User selects Manual LiftGate Only Softswitch on LGSSInterfaceClient - SplitGate | nmajjiga: new usecase usecase to support splitgate configuration |
| LGSS-UC-REQ-477838/A-User selects Open Power LiftGate Only Softswitch on LGSSInterfaceClient - SplitGate | nmajjiga: new usecase usecase to support splitgate configuration |
| LGSS-UC-REQ-477839/A-User selects Close Power LiftGate Only Softswitch on LGSSInterfaceClient when TailGate is Closed - SplitGate | nmajjiga: new usecase to support splitgate configuration |
| LGSS-UC-REQ-474707/A-User selects Close Power LiftGate Only Softswitch on LGSSInterfaceClient when Tailgate is Open - SplitGate Low Trim | nmajjiga: new usecase to support splitgate configuration |
| LGSS-UC-REQ-474708/A-User selects Close Power LiftGate Only Softswitch on LGSSInterfaceClient when Tailgate is Open - SplitGate High Trims | nmajjiga: new usecase to support splitgate configuration |
| LGSS-UC-REQ-477840/A-User selects Power LiftGate Only Softswitch on LGSSInterfaceClient while LiftGate in motion - SplitGate | nmajjiga: new usecase to support splitgate configuration |
| LGSS-UC-REQ-477841/A-User selects Power LiftGate Only Softswitch on LGSSInterfaceClient while LiftGate and TailGate in motion - SplitGate | nmajjiga: new usecase to support splitgate configuration |
| LGSS-UC-REQ-477842/A-User selects Manual/Power LiftGate Only Softswitch on LGSSInterfaceClient (switch disabled) - SplitGate | nmajjiga: new usecase to support splitgate configuration |
| LGSS-FUN-REQ-474717/A-Manual/Power LiftGate + TailGate Softswitch | nmajjiga: new function defination for Liftgate + Tailgate Softswitch |
| STR-1019290/A-Requirements | nmajjiga: new requirements for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474718/A-SplitGate Release - Interface Client Request | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| STR-1019310/A-Event Counter Requirements_Splitgate Release Counter | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474737/A-Initial Value_Splitgate Release Counter | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474738/A-Valid Events_Splitgate Release Counter | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474739/A-Voltage Range_Splitgate Release Counter | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474740/A-Bus Wakeup_Splitgate Release Counter | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474741/A-Bus Sleep Voting_Splitgate Release Counter | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474742/A-Value Retention_Splitgate Release Counter | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474743/A-SplitGate Release - User Input | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |



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| LGSS-REQ-474744/A-SplitGate Release - User Input Enable/Disable | nmajjiga: new requirement for Liftgate + Tailgate Softswitch |
| LGSS-REQ-474745/A-SplitGate Position Status | nmajjiga: new requirement for Liftgate and Tailgate position status |
| STR-1019291/A-Use Cases | nmajjiga: new usecases for Liftgate + Tailgate Softswitch |
| LGSS-UC-REQ-474709/A-User selects Manual LiftGate + TailGate Softswitch on LGSSInterfaceClient (switch enabled) | nmajjiga: new usecase for Liftgate and Tailgate position status |
| LGSS-UC-REQ-474710/A-User presses LiftGate + TailGate Softswitch on LGSSInterfaceClient while Liftgate is Closed and TailGate is Closed | nmajjiga: new usecase for Liftgate and Tailgate position status |
| LGSS-UC-REQ-474711/A-User presses LiftGate + TailGate Softswitch on LGSSInterfaceClient while LiftGate is Lower-Unlatched and TailGate is Open | nmajjiga: new usecase for Liftgate and Tailgate position status |
| LGSS-UC-REQ-474712/A-User presses LiftGate + TailGate Softswitch on LGSSInterfaceClient while LiftGate is Open and TailGate is Closed | nmajjiga: new usecase for Liftgate and Tailgate position status |
| LGSS-UC-REQ-474713/A-User presses LiftGate + TailGate Softswitch on LGSSInterfaceClient while LiftGate and TailGate are Open | nmajjiga: new usecase for Liftgate and Tailgate position status |
| LGSS-UC-REQ-474714/A-User selects Power LiftGate + TailGate Softswitch on LGSSInterfaceClient while LiftGate and/or TailGate in motion | nmajjiga: new usecase for Liftgate and Tailgate position status |
| LGSS-UC-REQ-474715/A-User selects Manual/Power LiftGate + TailGate Softswitch on LGSSInterfaceClient (switch disabled) | nmajjiga: new usecase for Liftgate and Tailgate position status |
| LGSS-STR-1019292/A-White Box Views | nmajjiga: new diagrams for manual/power splitage operation |
| LGSS-STR-1019293/A-Activity Diagrams | nmajjiga: new activity diagrams for manual/power splitage operation |
| LGSS-ACT-REQ-474659/A-User Selects Power LiftGate + TailGate Softswitch On LGSSInterfaceClient | nmajjiga: new activity diagram for power splitage operation |
| LGSS-ACT-REQ-474657/A-User Selects Manual LiftGate + TailGate Softswitch On LGSSInterfaceClient | nmajjiga: new activity diagram for manual splitage operation |
| LGSS-STR-1019294/A-Sequence Diagrams | nmajjiga: new sequence diagrams for manual/power splitage operation |
| LGSS-SD-REQ-474658/A-User Selects Manual LiftGate + TailGate Softswitch On LGSSInterfaceClient | nmajjiga: new sequence diagram for manual splitage operation |
| LGSS-SD-REQ-474661/A-User Selects Power LiftGate + TailGate Softswitch On LGSSInterfaceClient | nmajjiga: new sequence diagram for power splitage operation |
| LGSS-FUN-REQ-474722/A-SplitGate Remote Operation Configuration Setting | nmajjiga: new function defination for splitgate remote operation configuration setting |
| STR-1019295/A-Requirements | nmajjiga: new requirements for splitgate remote operation configuration setting |
| LGSS-REQ-474747/A-SplitGate Remote Operation Configuration Setting - User Input | nmajjiga: new requirement for splitgate remote operation configuration setting |
| LGSS-REQ-479297/A-SplitGate Remote Operation Configuration Setting - User Input Enable/Disable | nmajjiga: new requirement for splitgate remote operation configuration setting |
| LGSS-REQ-474723/A-SplitGate Remote Operation Configuration Setting - Interface Client Request | nmajjiga: new requirement for splitgate remote operation configuration setting |
| LGSS-REQ-474746/A-SplitGate Remote Operation Configuration Setting - Server Response | nmajjiga: new requirement for splitgate remote operation configuration setting |
| LGSS-REQ-479357/A-SplitGate Remote Operation Configuration Setting - Startup/Shutdown | nmajjiga: new requirement for splitgate remote operation configuration setting |
| STR-1019296/A-Use Cases | nmajjiga: new usecase for splitgate remote operation configuration setting |
| LGSS-UC-REQ-474716/A-User Enable SplitGate Remote Operation Configuration Setting On LGSSInterfaceClient | nmajjiga: new usecase for remote operation configuration setting |
| LGSS-UC-REQ-479317/A-User Disable SplitGate Remote Operation Configuration Setting On LGSSInterfaceClient | nmajjiga: new usecase for remote operation configuration setting |
| LGSS-STR-1019297/A-White Box Views | nmajjiga: new diagrams for splitgate remote operation configuration setting |
| LGSS-STR-1019298/A-Activity Diagrams | nmajjiga: new activity diagram for splitgate remote operation configuration setting |
| LGSS-ACT-REQ-474662/A-User Selects Remote Operation Configuration Setting On LGSSInterfaceClient | nmajjiga: new activity diagram for remote operation configuration setting |
| LGSS-STR-1019299/A-Sequence Diagrams | nmajjiga: new sequence diagram for splitgate remote operation configuration setting |



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| | LGSS-SD-REQ-474663/A-User Selects Remote Operation Configuration Setting On LGSSInterfaceClient | nmajjiga: new sequence diagram for splitgate remote operation configuration setting |
| | LGSS-FUN-REQ-479337/A-Enable/Disable Power SplitGate Feature | nmajjiga: new function definition for power splitgate setting |
| | STR-1031070/A-Requirements | nmajjiga: new requirements for power splitgate setting |
| | LGSS-REQ-479338/A-Power SplitGate Setting - User Input | nmajjiga: new requirement for power splitgate setting |
| | LGSS-REQ-479339/A-Power SplitGate Setting - User Input Enable/Disable | nmajjiga: new requirement for power splitgate setting |
| | LGSS-REQ-479340/A-Power SplitGate Setting - Interface Client Request | nmajjiga: new requirement for power splitgate setting |
| | LGSS-REQ-479341/A-Power SplitGate Setting - Server Response | nmajjiga: new requirement for power splitgate setting |
| | LGSS-REQ-479358/A-Power SplitGate Setting - Startup/Shutdown | nmajjiga: new requirement for power splitgate setting |
| | STR-1031071/A-Use Cases | nmajjiga: new usecase for power splitgate setting |
| | LGSS-UC-REQ-479342/A-User Enable Power SplitGate Setting On LGSSInterfaceClient | nmajjiga: new usecase for power splitgate setting |
| | LGSS-UC-REQ-479343/A-User Disable Power SplitGate Setting On LGSSInterfaceClient | nmajjiga: new usecase for power splitgate setting |
| | LGSS-STR-1031072/A-White Box Views | nmajjiga: new diagrams for power splitgate setting |
| | LGSS-STR-1031073/A-Activity Diagrams | nmajjiga: new activity diagram for power splitgate setting |
| | LGSS-ACT-REQ-479344/A-User Enables/Disables Power SplitGate Setting On LGSSInterfaceClient | nmajjiga: new activity diagram for power splitgate setting |
| | LGSS-STR-1031074/A-Sequence Diagrams | nmajjiga: new sequence diagram for power splitgate setting |
| | LGSS-SD-REQ-479346/A-User Enables/Disables Power SplitGate Setting On LGSSInterfaceClient | nmajjiga: new sequence diagram for power splitgate setting |
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| | LGSS-REQ-332246/C-LiftGate Release - User Input Enable/Disable | nmajjiga: updated to capture Manual Transmission |
| | LGSS-UC-REQ-323954/B-User selects Manual/Power LiftGate Softswitch on LGSSInterfaceClient (switch disabled) | nmajjiga: modified post-condition |
| | LGSS-UC-REQ-477842/B-User selects Manual/Power LiftGate Only Softswitch on LGSSInterfaceClient (switch disabled) - SplitGate | nmajjiga: modified post-condition |
| | LGSS-ACT-REQ-333006/B-User Selects Manual LiftGate Softswitch On LGSSInterfaceClient | nmajjiga: removed "show Disabled Popup" |
| | LGSS-ACT-REQ-333020/C-User Selects Power LiftGate Softswitch On LGSSInterfaceClient | nmajjiga: removed "show Disabled Popup" |
| | LGSS-SD-REQ-333007/C-User Selects Manual LiftGate Softswitch On LGSSInterfaceClient | nmajjiga: removed "show Disabled Popup" |
| | LGSS-SD-REQ-333021/C-User Selects Power LiftGate Softswitch On LGSSInterfaceClient | nmajjiga: removed "show Disabled Popup" |
| | LGSS-UC-REQ-474715/B-User selects Manual/Power LiftGate + TailGate Softswitch on LGSSInterfaceClient (switch disabled) | nmajjiga: modified post-condition |
| | LGSS-STR-1019293/B-Activity Diagrams | nmajjiga: revised to show Manual Softswitch Activity Diagram before Power Softswitch |
| | LGSS-ACT-REQ-474657/B-User Selects Manual LiftGate + TailGate Softswitch On LGSSInterfaceClient | nmajjiga: removed "show Disabled Popup" |
| | LGSS-ACT-REQ-474659/B-User Selects Power LiftGate + TailGate Softswitch On LGSSInterfaceClient | nmajjiga: removed "show Disabled Popup" |
| | LGSS-SD-REQ-474658/B-User Selects Manual LiftGate + TailGate Softswitch On LGSSInterfaceClient | nmajjiga: removed "show Disabled Popup" |
| | LGSS-SD-REQ-474661/B-User Selects Power LiftGate + TailGate Softswitch On LGSSInterfaceClient | nmajjiga: removed "show Disabled Popup" |
| | LGSS-REQ-474723/B-SplitGate Remote Operation Configuration Setting - Interface Client Request | nmajjiga: updated to capture correct default value |
| | LGSS-UC-REQ-479342/B-User Enable Power SplitGate Setting On LGSSInterfaceClient | nmajjiga: updated to capture Manual/Power Mode in place of Disable/Enable |
| | LGSS-UC-REQ-479343/B-User Disable Power SplitGate Setting On LGSSInterfaceClient | nmajjiga: updated to capture Manual/Power Mode in place of Disable/Enable |



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1 Architectural Design

1.1 LGSS-CLD-REQ-323809/B-LiftGate Softswitch Interface Client

The LiftGate Softswitch Interface Client (LGSSInterfaceClient) is responsible for the tasks listed below:

- Providing a user interface for the LiftGate Softswitch and LiftGate + TailGate Softswitch feature
- Managing feature restricted status
- Transmitting user input to LGSSServer1
- Displaying active feature state on user interface

Please review the implementation guide/block diagram to locate the LGSSInterfaceClient class.

1.2 LGSS-CLD-REQ-323810/A-LiftGate Softswitch Server1

The LiftGate Softswitch Server1 (LGSSServer1) is responsible for the tasks listed below:

- Receiving user request from LGSSInterfaceClient
- Transmitting request to LGSSServer2

Please review the implementation guide/block diagram to locate the LGSSServer1 class.

1.3 LGSS-CLD-REQ-323811/B-LiftGate Softswitch Server2

The LiftGate Softswitch Server2 (LGSSServer2) is responsible for the tasks listed below:

- Receiving release request from LGSSServer1
- Releasing the LiftGate, TailGate (when configured for SplitGate as High Trims)

Please review the implementation guide/block diagram to locate the LGSSServer2 class.

1.4 Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the LiftGate Softswitch / LiftGate + TailGate Softswitch feature can be mapped into physical modules. This mapping is an example only and does not necessarily carryover to other carlines or vehicle architectures.

| Logical Class | Physical Module (ECU) |
|---------------------|-----------------------|
| LGSSInterfaceClient | SYNC / PDC |
| LGSSServer1 | BCM |
| LGSSServer2 | RGTM |

1.5 Logical Signal Mapping

The CAN signals mentioned throughout this document shall refer to the CAN signal's logical name. The logical names shall be mapped to their actual CAN signal names. Please use the table below to perform the mapping.

| Logical Name | CAN Signal Name |
|----------------------------|-------------------------|
| LiftgateReleaseCounter_Rq | BecRleas_No_RqMnu |
| SplitgateReleaseCounter_Rq | Bec2Oprt_No_RqMnu |
| Splitgate_Remote_Oper_Rq | BecConfig_B_RqMnu |
| SplitGateEnable_Rq | Power_Liftgate_Mode_Cmd |
| Ignition_Status | Ignition_Status |
| VehicleSpeed_St | Veh_V_ActlEng |
| LockInhibit_St | LockInhibit |
| GearLvrPos_D_Actl | GearLvrPos_D_Actl |
| CarMode_St | LifeCycMde_D_Actl |



| | |
|--------------------------|-------------------------|
| Delay_Accy | Delay_Accy |
| LiftgateAjar_St | DrStatInnrTgate_B_Actl |
| TrunkTailgateStatus | DrStatTgate_B_Actl |
| Liftgate_Position_St | LftgtPos_Pc_Actl |
| Tailgate_Position_St | DrTgatePos_Pc_Actl |
| Splitgate_Remote_Oper_St | BecConfig_D_Stat |
| SplitGateEnable_St | Power_Liftgate_Mode_Stt |
| TailGateAjar_St | Bec2Ajar_B_Stat |

Table: Logical name/CAN signal mapping

1.6 LGSSInterfaceClient Interface

1.6.1 LGSS-IIR-REQ-323816/B-LGSSInterfaceClient_Tx

1.6.1.1 MD-REQ-328278/A-LiftgateReleaseCounter_Rq

Message Type: Request

This signal is used to request a release of the LiftGate. This signal increments by 1 everytime it is sent to request a release.

| Name | Literals | Value | Description |
|------|---------------|------------|---|
| Type | - | - | Unit: SED Resolution: 1 Offset: 0 |
| | Initial Value | 0x0 | Reserved for transmitter reset |
| | Code Value | 0x1 To 0x6 | |
| | Not Used | 0x7 | |

1.6.1.2 MD-REQ-474664/A-SplitgateReleaseCounter_Rq

Message Type: Request

This signal is sent when Liftgate+Tailgate button is pressed. This signal increments by 1 everytime it is sent to request a release.

| Name | Literals | Value | Description |
|------|---------------|------------|---|
| Type | - | - | Unit: SED Resolution: 1 Offset: 0 |
| | Initial Value | 0x0 | Reserved for transmitter reset |
| | Code Value | 0x1 To 0x6 | |
| | Not Used | 0x7 | |

1.6.1.3 MD-REQ-474665/A-Splitgate_Remote_Oper_Rq

Message Type: Request

This signal is sent when the user to manages RKE/hands free configuration setting.



| Name | Literals | Value | Description |
|------|----------|-------|--------------------------------------|
| Type | - | - | RKE/hands free configuration setting |
| | Disabled | 0x0 | Operate Liftgate only |
| | Enabled | 0x1 | Operate Liftgate and Tailgate |

1.6.1.4 MD-REQ-479257/A-SplitgateEnable_Rq

Message Type: Request

The signal is used by the LGSSInterfaceClient to enable/disable the Power SplitGate feature.

| Name | Literals | Value | Description |
|------|----------|-------|---|
| Type | - | - | Request to enable/disable the Power SplitGate feature |
| | Disable | 0x0 | |
| | Enable | 0x1 | |

1.6.2 LGSS-IIR-REQ-323817/D-LGSSInterfaceClient_Rx

1.6.2.1 MD-REQ-027149/A-IgnitionStatus_St (TcSE ROIN-225464-1)

Message Type: Status

Signal used to indicate ignition state.

| Name | Literals | Value | Description |
|------|-----------|-------|--------------------------|
| Type | - | - | Indicates ignition state |
| | Unknown | 0x0 | |
| | Off | 0x1 | |
| | Accessory | 0x2 | |
| | Run | 0x4 | |
| | Start | 0x8 | |
| | Invalid | 0xF | |

1.6.2.2 MD-REQ-014025/A-VehicleSpeed_St (TcSE ROIN-223023-1)

Message Type: Status

Status used to indicate vehicle speed.

| Name | Literals | Value | Description |
|------|----------|---------------|--|
| Type | - | - | Indicates vehicle speed. Unit: kph Resolution:0.01 Offset:0 |
| | kph | 0x0 to 0xFFFF | |

**1.6.2.3 MD-REQ-333022/A-LockInhibit_St**

Message Type: Status

This signal is used to indicate the lock inhibit status.

| Name | Literals | Value | Description |
|------|------------|-------|-----------------------------|
| Type | - | - | Current Lock Inhibit status |
| | No Inhibit | 0x0 | |
| | Inhibit | 0x1 | |

1.6.2.4 MD-REQ-014023/A-GearLvrPos_D_Actl (TcSE ROIN-266648-1)

Message Type: Status

Vehicle status signal for the Gear Lever Position on an automatic transmission vehicle.

| Name | Literals | Value | Description |
|------|---------------------------|-------|-------------|
| Type | - | - | - |
| | Park | 0x0 | |
| | Reverse | 0x1 | |
| | Neutral | 0x2 | |
| | Drive | 0x3 | |
| | Sport_DriveSport | 0x4 | |
| | Low | 0x5 | |
| | First | 0x6 | |
| | Second | 0x7 | |
| | Third | 0x8 | |
| | Fourth | 0x9 | |
| | Fifth | 0xA | |
| | Sixth | 0xB | |
| | Undefined_Treat_as_Fault | 0xC | |
| | Undefined_Treat_as_Fault1 | 0xD | |
| | Unknown_Position | 0xE | |
| | Fault | 0xF | |

1.6.2.5 MD-REQ-086348/A-CarMode_St

Message Type: Status

| Name | Literals | Value | Description |
|------|----------------|-------|--|
| Type | - | - | Defines what car mode state is active. |
| | Normal | 0x0 | |
| | Factory | 0x1 | |
| | NotUsed | 0x2 | |
| | Transportation | 0x3 | |

1.6.2.6 MD-REQ-201601/A-Delay_Accy

Message Type: Status

This signal is used indicate whether Delayed Accessory is active or not.

| Name | Literals | Value | Description |
|------|----------|-------|-----------------------------|
| Type | - | - | Status of delayed accessory |



| | | | |
|--|-----|------|--|
| | Off | 0x00 | |
| | On | 0x01 | |

1.6.2.7 MD-REQ-333000/A-LiftgateAjar_St

Message Type: Status

The signal is used to inform the LGSSInterfaceClient of the current Liftgate ajar status.

| Name | Literals | Value | Description |
|--------|----------|-------|--|
| Status | - | - | Indicates the current liftgate ajar status |
| | Closed | 0x0 | |
| | Open | 0x1 | |

1.6.2.8 MD-REQ-330585/A-TrunkTailgateStatus

Message Type: Status

This method is indicating the trunk/tailgate status.

| Name | Literals | Value | Description |
|---------------------|----------|-------|-------------|
| TrunkTailgateStatus | - | - | |
| | Closed | 0x0 | |
| | Ajar | 0x1 | |

1.6.2.9 MD-REQ-474666/A-Liftgate_Position_St

Message Type: Status

The signal is used to inform the LGSSInterfaceClient of the current Liftgate Position.

| Name | Literals | Value | Description |
|------|----------|----------|--|
| Type | - | - | Indicates current liftgate position Unit: percent Resolution:1 Offset:0 |
| | percent | 0 to 127 | |

1.6.2.10 MD-REQ-474667/A-Tailgate_Position_St

Message Type: Status

The signal is used to inform the LGSSInterfaceClient of the current Tailgate Position.

| Name | Literals | Value | Description |
|------|----------|----------|--|
| Type | - | - | Indicates current tailgate position Unit: percent Resolution:1 Offset:0 |
| | percent | 0 to 127 | |

**1.6.2.11 MD-REQ-474668/A-Splitgate_Remote_Oper_St**

Message Type: Status

This signal is to indicate RKE/hands free configuration setting status.

| Name | Literals | Value | Description |
|------|---------------|-------|---|
| Type | - | - | RKE/hands free configuration setting status |
| | Disabled | 0x0 | Operate Liftgate only |
| | Enabled | 0x1 | Operate Liftgate and Tailgate |
| | Not used | 0x2 | |
| | Not supported | 0x3 | |

1.6.2.12 MD-REQ-479258/A-SplitgateEnable_St

Message Type: Status

The signal is used to inform the LGSSInterfaceClient of the current Power SplitGate feature status.

| Name | Literals | Value | Description |
|--------|---------------|-------|--|
| Status | - | - | Indicates the current Power SplitGate feature status |
| | Disabled | 0x0 | |
| | Enabled | 0x1 | |
| | Not Used | 0x2 | |
| | Not Supported | 0x3 | |

1.6.2.13 MD-REQ-479259/A-TailgateAjar_St

Message Type: Status

The signal is used to inform the LGSSInterfaceClient of the current Tailgate ajar status.

| Name | Literals | Value | Description |
|--------|----------|-------|--|
| Status | - | - | Indicates the current Tailgate ajar status |
| | Closed | 0x0 | |
| | Ajar | 0x1 | |



2 General Requirements

2.1 LGSS-REQ-328538/B-Powermode Conditions

The LGSSInterfaceClient shall only allow the functionality of this feature when:

- IgnitionStatus_St = Run, Start, or Acc and the touch screen display is On, OR
- IgnitionStatus_St = Off and Delay_Accy = On and the touch screen display is On

2.2 LGSS-REQ-328539/B-Feature Configuration

The LGSSInterfaceClient shall have a configurable parameter to determine whether the vehicle supports LiftGate Softswitch.

- If the parameter indicates the vehicle supports LiftGate Softswitch, then LGSS-FUN-REQ-323940-Manual/Power LiftGate shall be supported.
- If the parameter indicates the vehicle does not support LiftGate Softswitch, then none of the functionality defined in this SPSS shall be supported.

Note: This configuration is to be used for all single back end enclosure types (power liftgate, manual liftgate, decklid, etc) requiring the release softswitch. The LGSSServer1 shall manage the different back end enclosures and send the appropriate request signal to the LGSSServer2.

2.3 LGSS-REQ-476077/A-Feature Configuration - SplitGate

The LGSSInterfaceClient shall have a configurable parameter to determine whether the vehicle supports SplitGate (LiftGate Softswitch or LiftGate + TailGate Softswitch).

- If the parameter indicates 0x1 (Low Trim) the vehicle supports LiftGate Softswitch, then LGSS-FUN-REQ-323940-Manual/Power LiftGate Softswitch and LGSS-FUN-REQ-479337- Enable/Disable Power SplitGate Feature shall be supported.
- If the parameter indicates 0x2 (High Trim) or 0x3 (High Trim w/o Hands Free) the vehicle supports "LiftGate + TailGate" Softswitch, then all the functionality and signals defined in this SPSS shall be supported.
- If the parameter indicates 0x0 (Disabled) the vehicle does not support LiftGate Softswitch or "LiftGate +TailGate" Softswitch, then none of the functionality defined in this SPSS shall be supported.

Note: This configuration is to be used for dual back end enclosure types (i.e. SplitGate) requiring the release softswitch. "SplitGate" and "LiftGate + TailGate" shall be used interchangeably.

2.4 LGSS-REQ-328540/B-Speed Restriction Configuration

The LGSSInterfaceClient shall have a configurable parameter to set the vehicle speed threshold by which the LiftGate Softswitch and "LiftGate + TailGate" Softswitch menu shall be made available/unavailable.

2.5 LGSS-REQ-477617/A-Back End Enclosure Type Configuration

The LGSSInterfaceClient shall determine the type of back end enclosure for this feature via the following configurable parameters:

- Power Liftgate shall be determined by:
 - Liftgate Softswitch (DE08 Byte 19 Bit 2-1) = 0x1 - Power Liftgate, AND
 - Power Liftgate/Decklid HMI (DE08 Byte 13 Bit 2) = 0x0 – Liftgate, AND
- Manual Liftgate shall be determined by:
 - Liftgate Softswitch (DE08 Byte 19 Bit 2-1) = 0x2 – Manual Liftgate, AND
 - Power Liftgate/Decklid HMI (DE08 Byte 13 Bit 2) = 0x0 – Liftgate, AND
- Decklid/Trunk shall be determined by:
 - Liftgate Softswitch (DE08 Byte 19 Bit 2-1) = 0x2 – Manual Liftgate, AND
 - Power Liftgate/Decklid HMI (DE08 Byte 13 Bit 2) = 0x1 - Decklid, AND



This determination shall be used by the LGSSInterfaceClient for all relevant HMI graphics, indicators, etc. as well the ajar signals that indicate their status.

2.6 LGSS-REQ-478025/A-Back End Enclosure Type Configuration - SplitGate

The LGSSInterfaceClient shall determine the type of back end enclosure for this feature via the following configurable parameters:

- Power Liftgate shall be determined by:
 - Liftgate Softswitch (DE08 Byte 19 Bit 2-1) = 0x1 - Power Liftgate, AND
 - Power Liftgate/Decklid HMI (DE08 Byte 13 Bit 2) = 0x0 – Liftgate, AND
 - 3-Way Splitgate Softswitch and Menu Settings (DE0A Byte 9 Bit 4-3) = 0x0 - Disabled
- Manual Liftgate shall be determined by:
 - Liftgate Softswitch (DE08 Byte 19 Bit 2-1) = 0x2 – Manual Liftgate, AND
 - Power Liftgate/Decklid HMI (DE08 Byte 13 Bit 2) = 0x0 – Liftgate, AND
 - 3-Way Splitgate Softswitch and Menu Settings (DE0A Byte 9 Bit 4-3) = 0x0 - Disabled
- Decklid/Trunk shall be determined by:
 - Liftgate Softswitch (DE08 Byte 19 Bit 2-1) = 0x2 – Manual Liftgate, AND
 - Power Liftgate/Decklid HMI (DE08 Byte 13 Bit 2) = 0x1 - Decklid, AND
 - 3-Way Splitgate Softswitch and Menu Settings (DE0A Byte 9 Bit 4-3) = 0x0 - Disabled
- Manual/Power Liftgate + Tailgate (Splitgate) shall be determined by:
 - Liftgate Softswitch (DE08 Byte 19 Bit 2-1) = 0x0 - Off, AND
 - Power Liftgate/Decklid HMI (DE08 Byte 13 Bit 2) = 0x0 - Liftgate, AND
 - 3-Way Splitgate Softswitch and Menu Settings (DE0A Byte 9 Bit 4-3) = 0x1 - Low Trim OR 0x2 - HighTrim OR 0x3 - HighTrim w/o Hands Free

This determination shall be used by the LGSSInterfaceClient for all relevant HMI graphics, indicators, etc. as well the ajar signals that indicate their status.

2.7 LGSS-REQ-479237/A-Missing Message DTC - SplitGate

When SplitGate is configured as Low Trim or High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate), the LGSSInterfaceClient shall set a “lost communication” DTC for any expected LGSS periodic messages that are not received for more than 5 seconds.



3 Functional Definition

3.1 LGSS-FUN-REQ-323940/A-Manual/Power LiftGate Softswitch

3.1.1 Requirements

3.1.1.1 LGSS-REQ-332237/A-LiftGate Release - Interface Client Request

When the LiftGate Release is selected by the user via HMI, the LGSSInterfaceClient shall increment the event counter LiftgateReleaseCounter_Rq by a value of 1.

When LiftgateReleaseCounter_Rq reaches a count value of 6, the next increment shall reset the counter to a value of 1. The count value of 0 is reserved, and shall not be used in the increment operation of this counter.

3.1.1.2 **Event Counter Requirements**

3.1.1.2.1 LGSS-REQ-332238/A-Initial Value

When the LGSSInterfaceClient resets, it shall initialize and publish LiftgateReleaseCounter_Rq = 0.

Immediately following a reset, the LGSSInterfaceClient shall monitor for events that will cause LiftgateReleaseCounter_Rq to increment.

The LGSSInterfaceClient shall continue to publish 0 until an event causes LiftgateReleaseCounter_Rq to increment.

3.1.1.2.2 LGSS-REQ-332239/A-Valid Events

For a count event to be deemed valid, the LGSSInterfaceClient must first detect a "non-button press" before an actual "press." Only then shall the LGSSInterfaceClient increment LiftgateReleaseCounter_Rq.

When powering back On from a reset, the LGSSInterfaceClient shall not increment LiftgateReleaseCounter_Rq if the first value it reads for the corresponding button is a "pressed" value. This is to avoid any possible "stuck button" error conditions.

Ex. If the interface is a manual switch that is pressed/not pressed, the module shall ensure that the switch is first not pressed, and then when it sees a pressed event, it shall increment the counter.

3.1.1.2.3 LGSS-REQ-332241/A-Voltage Range

The LGSSInterfaceClient shall not increment LiftgateReleaseCounter_Rq when voltage is out of range, even if an incrementing event occurs (refer to Ford Next Generation Infotainment Engineering Spec VerX_SYNC4 for voltage requirements).

3.1.1.2.4 LGSS-REQ-332242/A-Bus Wakeup

The LGSSInterfaceClient shall wake CAN whenever LiftgateReleaseCounter_Rq has changed.

3.1.1.2.5 LGSS-REQ-332243/A-Bus Sleep Voting

The LGSSInterfaceClient is allowed to vote for CAN Sleep 5 seconds after the last change in LiftgateReleaseCounter_Rq, independent of the FNOS wakeup strategy.

3.1.1.2.6 LGSS-REQ-332244/A-Value Retention

The LGSSInterfaceClient shall retain the last transmitted value of LiftgateReleaseCounter_Rq through sleep/wake cycle.

3.1.1.3 LGSS-REQ-332245/B-LiftGate Release - User Input

When configured for Manual/Power LiftGate (see LGSS-REQ-477617-Back End Enclosure Type Configuration) or SplitGate for Low Trim or High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate) the LGSSInterfaceClient shall provide a user interface (button/graphic) to allow selection of the LiftGate Softswitch release button.



3.1.1.4 LGSS-REQ-332246/C-LiftGate Release - User Input Enable/Disable

The LGSSInterfaceClient shall enable/disable (show/hide, grey-out, etc.) the LiftGate Softswitch user interface (button/graphic) based on the following:

| LockInhibit_St | CarMode_St | VehicleSpeed_St | IgnitionStatus_St | Delay_Accy | Transmission Type config. | GearLvPos_D_Actl | LiftGate Softswitch User Interface |
|----------------|------------|-----------------------------------|-------------------|------------|---------------------------|------------------|------------------------------------|
| Inhibit | D/C | D/C | D/C | D/C | D/C | D/C | Disabled |
| No_Inhibit | Normal | Less than threshold in REQ-328540 | OFF | ON | D/C | D/C | Enabled |
| No_Inhibit | Normal | Less than threshold in REQ-328540 | ACC | D/C | D/C | D/C | Enabled |
| No_Inhibit | Normal | Less than threshold in REQ-328540 | RUN or START | D/C | Automatic | Park | Enabled |
| No_Inhibit | Normal | Less than threshold in REQ-328540 | D/C | D/C | Manual | D/C | Enabled |
| No_Inhibit | Factory | D/C | D/C | D/C | D/C | D/C | Enabled |
| No_Inhibit | Transport | D/C | D/C | D/C | D/C | D/C | Disabled |

*D/C – Don't Care

3.1.1.5 LGSS-REQ-354975/B-LiftGate Ajar Status

The LGSSInterfaceClient shall display a graphic indicating the ajar (open/close) status of the LiftGate when configured Manual/Power LiftGate (see LGSS-REQ-477617-Back End Enclosure Type Configuration) or SplitGate as Low Trim or High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate).

The graphic shall be shown as such:

- When LiftgateAjar_St = "(0x0) Closed" the LiftGate shall be shown as Closed
- When LiftgateAjar_St = "(0x1) Open" the LiftGate shall be shown as Opened

If LiftgateAjar_St is not available on the bus or cannot be read, the LiftGate shall be shown as Closed.

3.1.1.6 LGSS-REQ-474677/A-LiftGate Position Status

As per "LGSS-REQ-354975-LiftGate Ajar Status" when LiftgateAjar_St = (0x1) Open the LGSSInterfaceClient shall monitor Liftgate_Position_St to display the actual position of the LiftGate.

3.1.1.7 LGSS-REQ-477817/A-Decklid/Trunk Ajar Status

The LGSSInterfaceClient shall display a graphic indicating the ajar (open/close) status of the Decklid/Trunk when configured for Decklid/Trunk (see LGSS-REQ-477617-Back End Enclosure Type Configuration / LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate). The graphic shall be shown as such:

- When TrunkTailgateStatus = "(0x0) Closed" the Decklid/Trunk shall be shown as Closed
- When TrunkTailgateStatus = "(0x1) Ajar" the Decklid/Trunk shall be shown as Opened

If TrunkTailgateStatus is not available on the bus or cannot be read, the Decklid/Trunk shall be shown as Closed.



3.1.1.8 LGSS-REQ-479277/A-TailGate Ajar Status - SplitGate

The LGSSInterfaceClient shall display a graphic indicating the ajar (open/close) status of the TailGate when configured for SplitGate as Low Trim or High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate).

The graphic shall be shown as such:

- When TailgateAjar_St = "(0x0) Closed" the TailGate shall be shown as Closed
- When TailgateAjar_St = "(0x1) Ajar" the TailGate shall be shown as Opened

If TailgateAjar_St is not available on the bus or cannot be read, the LiftGate shall be shown as Closed.

3.1.2 Use Cases

3.1.2.1 **LGSS-UC-REQ-323953/C-User selects Manual LiftGate Softswitch on LGSSInterfaceClient (switch enabled)**

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON LiftGate Softswitch is Enabled Manual LiftGate is Closed |
| Scenario Description | The user selects the LiftGate softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer1 releases the Manual LiftGate LGSSInterfaceClient displays the LiftGate as Opened |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.2 **LGSS-UC-REQ-323963/C-User selects Open Power LiftGate Softswitch on LGSSInterfaceClient (switch enabled)**

| | |
|------------------------------------|---|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON LiftGate Softswitch is Enabled Power LiftGate is Closed |
| Scenario Description | The user selects the LiftGate softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to open the Power LiftGate LGSSInterfaceClient displays the LiftGate as Opened |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.3 **LGSS-UC-REQ-323974/C-User selects Close Power LiftGate Softswitch on LGSSInterfaceClient (switch enabled)**

| | |
|---------------|------------------|
| Actors | Vehicle Occupant |
|---------------|------------------|



| | |
|------------------------------------|--|
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON LiftGate Softswitch is Enabled Power LiftGate is Open |
| Scenario Description | The user selects the LiftGate softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to close the Power LiftGate LGSSInterfaceClient displays the LiftGate as Opened until it fully closes. When closed, the LGSSInterfaceClient displays the LiftGate as Closed. |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.4 LGSS-UC-REQ-323975/C-User selects Power LiftGate Softswitch on LGSSInterfaceClient while LiftGate in motion (switch enabled)

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON LiftGate Softswitch is Enabled Power LiftGate is in motion (opening/closing) |
| Scenario Description | The user selects the LiftGate softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 stops/pauses Power LiftGate operation/motion LGSSInterfaceClient displays the LiftGate as Opened |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.5 LGSS-UC-REQ-323954/B-User selects Manual/Power LiftGate Softswitch on LGSSInterfaceClient (switch disabled)

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON LiftGate Softswitch is Disabled |
| Scenario Description | The user selects the LiftGate softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSInterfaceClient does not send any request to server |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

**3.1.2.6 LGSS-UC-REQ-477837/A-User selects Manual LiftGate Only Softswitch on LGSSInterfaceClient - SplitGate**

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as Low Trim or High Trim or High Trim w/o Hands Free LiftGate Only Softswitch is Enabled Manual LiftGate is Closed |
| Scenario Description | The user selects the LiftGate Only softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer1 releases the Manual LiftGate LGSSInterfaceClient displays the LiftGate as Opened |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.7 LGSS-UC-REQ-477838/A-User selects Open Power LiftGate Only Softswitch on LGSSInterfaceClient - SplitGate

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as Low Trim or High Trim or High Trim w/o Hands Free LiftGate Only Softswitch is Enabled Power LiftGate is Closed or Lower Unlatched Tailgate is Open or Closed |
| Scenario Description | The user selects the LiftGate Only softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to open the Power LiftGate LGSSInterfaceClient displays the LiftGate as Opened |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.8 LGSS-UC-REQ-477839/A-User selects Close Power LiftGate Only Softswitch on LGSSInterfaceClient when TailGate is Closed - SplitGate

| | |
|-----------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as Low Trim or High Trim or High Trim w/o Hands Free |



| | |
|------------------------------------|--|
| | LiftGate Only Softswitch is Enabled Power LiftGate is Open Tailgate is Closed |
| Scenario Description | The user selects the LiftGate Only softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to close the Power LiftGate LGSSInterfaceClient displays the LiftGate as Opened until it fully closes. When closed, the LGSSInterfaceClient displays the LiftGate as Closed. |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.9 LGSS-UC-REQ-474707/A-User selects Close Power LiftGate Only Softswitch on LGSSInterfaceClient when Tailgate is Open - SplitGate Low Trim

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as Low Trim LiftGate Only Softswitch is Enabled Power LiftGate is Open Tailgate is Open |
| Scenario Description | The user selects the LiftGate Only softswitch on the LGSSInterfaceClient |
| Post-conditions | LGSSInterfaceClient sends request to LGSSServer1 LGSSServer2 notifies customer that Liftgate cannot be closed while Tailgate it open LGSSInterfaceClient displays the LiftGate as Opened |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.10 LGSS-UC-REQ-474708/A-User selects Close Power LiftGate Only Softswitch on LGSSInterfaceClient when Tailgate is Open - SplitGate High Trims

| | |
|-----------------------------|---|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate Only Softswitch is Enabled Power LiftGate is Open Power Tailgate is Open |
| Scenario Description | The user selects the LiftGate Only softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to close both LiftGate and TailGate LGSSInterfaceClient displays the LiftGate and TailGate as Closed |



| | |
|-----------------------------|-----------------------------------|
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.11 LGSS-UC-REQ-477840/A-User selects Power LiftGate Only Softswitch on LGSSInterfaceClient while LiftGate in motion - SplitGate

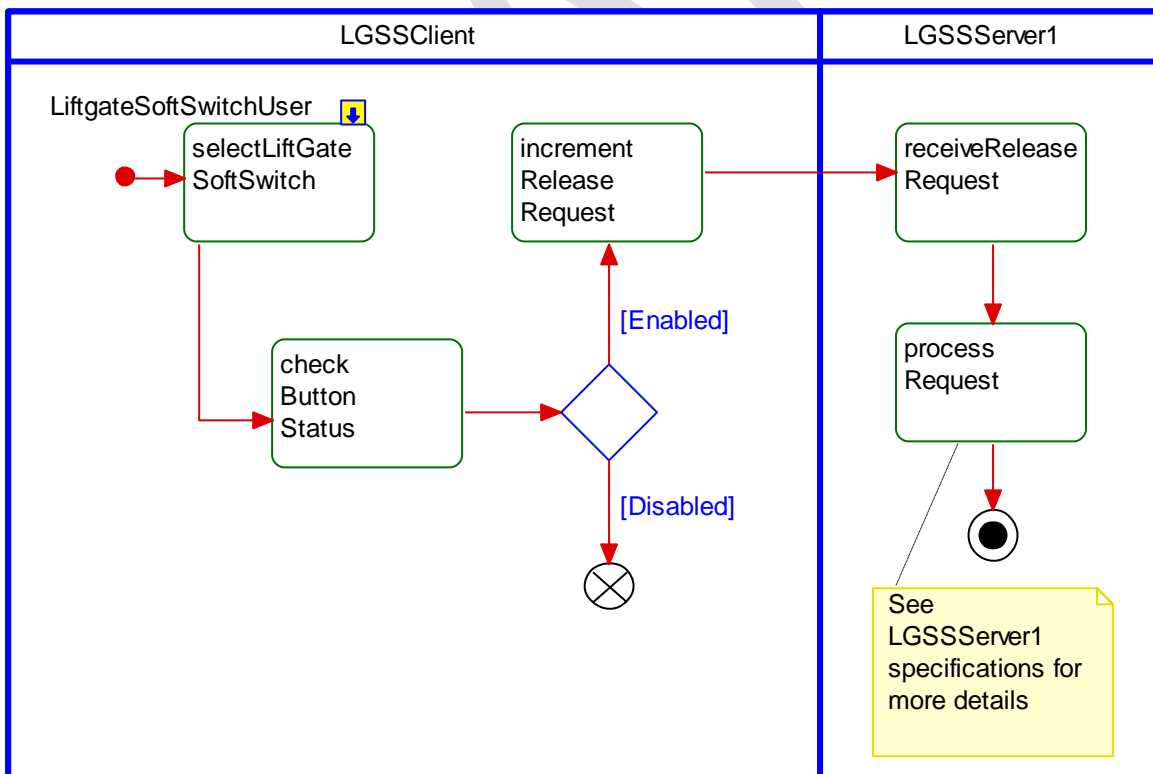
| | |
|-----------------------------|---|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as Low Trim or High Trim or High Trim w/o Hands Free LiftGate Softswitch is Enabled Power LiftGate is in motion (opening/closing) |
| Scenario Description | The user selects the LiftGate Only softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 stops/pauses Power LiftGate operation/motion LGSSInterfaceClient displays the LiftGate as Opened or current position |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.1.2.12 LGSS-UC-REQ-477841/A-User selects Power LiftGate Only Softswitch on LGSSInterfaceClient while LiftGate and TailGate in motion - SplitGate

| | |
|-----------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate Softswitch is Enabled Power LiftGate is in motion (opening/closing) Power TailGate is in motion (opening/closing) |
| Scenario Description | The user selects the LiftGate Only softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 stops/pauses Power LiftGate and Power TailGate operation/motion LGSSInterfaceClient displays the LiftGate and TailGate as Opened or current position |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

**3.1.2.13 LGSS-UC-REQ-477842/B-User selects Manual/Power LiftGate Only Softswitch on LGSSInterfaceClient (switch disabled) - SplitGate**

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate Only Softswitch is Disabled |
| Scenario Description | The user selects the LiftGate Only softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSInterfaceClient does not send any request to server |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

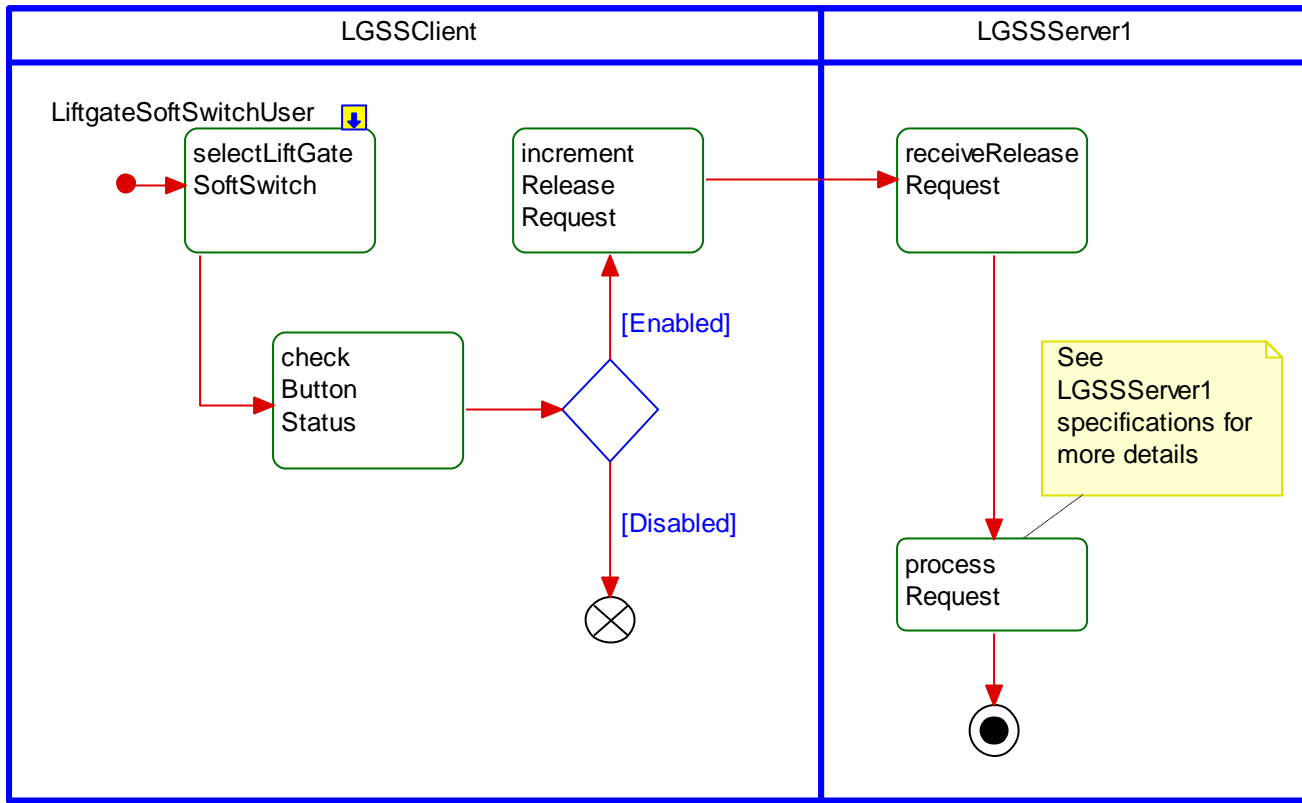
3.1.3 White Box View**3.1.3.1 Activity Diagrams****3.1.3.1.1 LGSS-ACT-REQ-333006/B-User Selects Manual LiftGate Softswitch On LGSSInterfaceClient Activity Diagram**

Note: This is applicable for "LiftGate Only" softswitch as well when vehicle configured for Splitgate as Low Trim or High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate).



3.1.3.1.2 LGSS-ACT-REQ-333020/C-User Selects Power LiftGate Softswitch On LGSSInterfaceClient

Activity Diagram



Note: This is applicable for "LiftGate Only" softswitch as well when vehicle configured for Splitgate as Low Trim or High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate).

3.1.3.2 Sequence Diagrams

3.1.3.2.1 LGSS-SD-REQ-333007/C-User Selects Manual LiftGate Softswitch On LGSSInterfaceClient

Constraints

Pre-Condition

Powermode Conditions are met
LGSSInterfaceClient is ON
LiftGate Softswitch is Enabled
Manual LiftGate is Closed

Scenarios

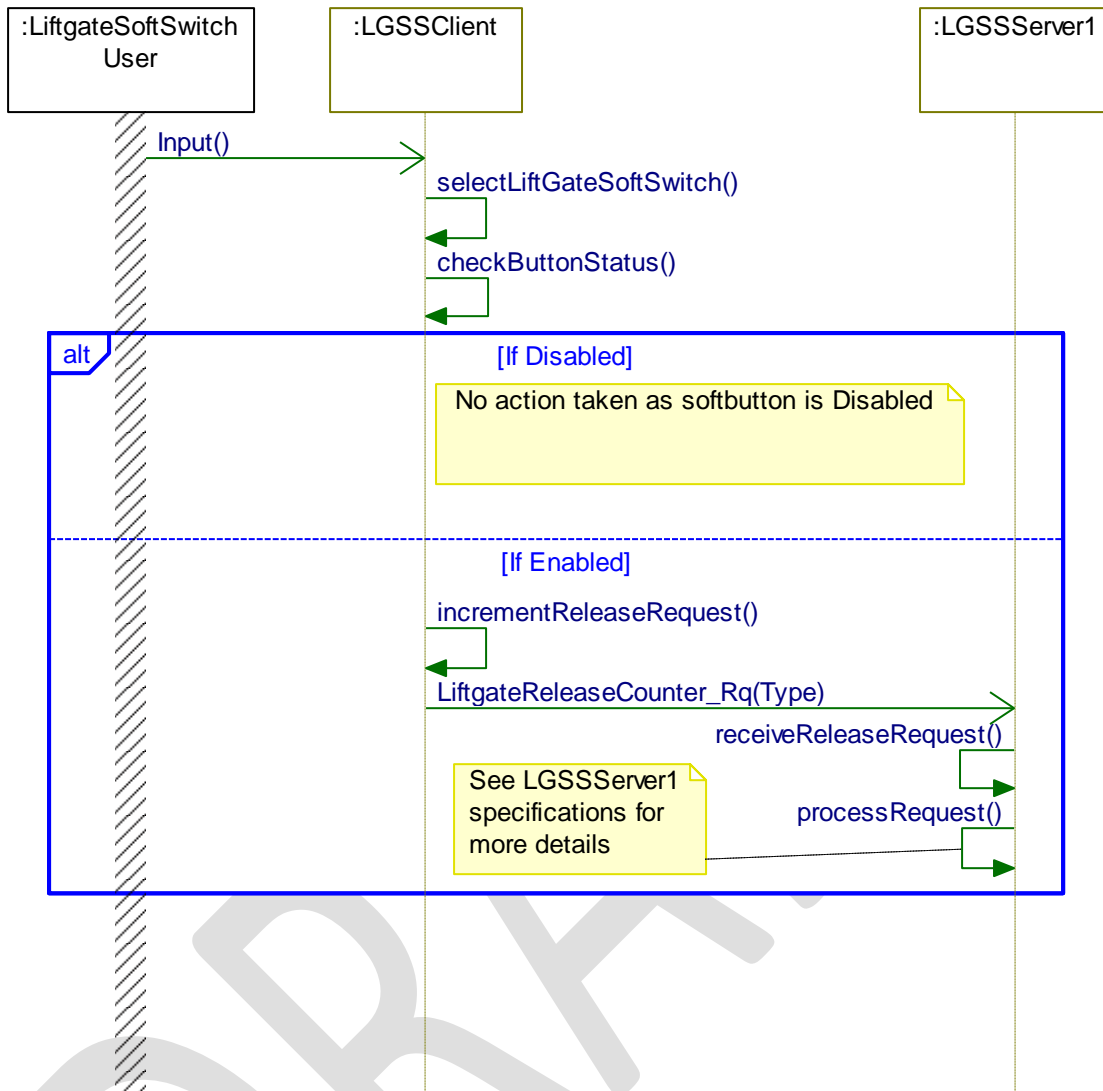
Normal Usage

The user selects the LiftGate softswitch on the LGSSInterfaceClient

Post-Condition

The LGSSServer1 releases the Manual LiftGate

Sequence Diagram



Note: This is applicable for “LiftGate Only” softswitch as well when vehicle configured for Splitgate as Low Trim or High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate).

3.1.3.2.2 LGSS-SD-REQ-333021/C-User Selects Power LiftGate Softswitch On LGSSInterfaceClient

Constraints

Pre-Condition

Powermode Conditions are met
LGSSInterfaceClient is ON
LiftGate Softswitch is Enabled
Power LiftGate is Closed

Scenarios

Normal Usage

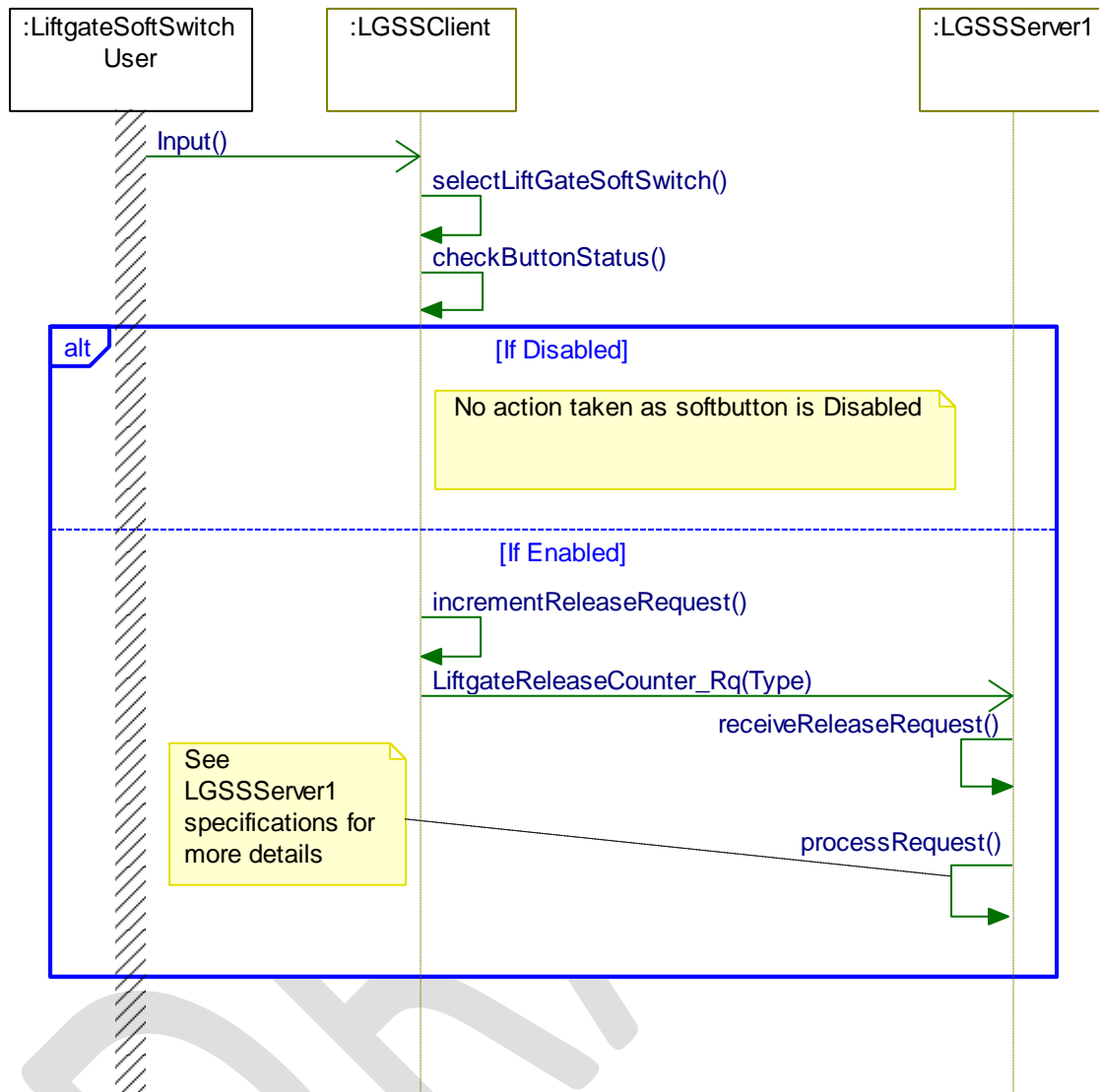
The user selects the LiftGate softswitch on the LGSSInterfaceClient

Post-Condition

The LGSSServer2 begins to open the Power LiftGate



Sequence Diagram



Note: This is applicable for "LiftGate Only" softswitch as well when vehicle configured for Splitgate as Low Trim or High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate).



3.2 LGSS-FUN-REQ-474717/A-Manual/Power LiftGate + TailGate Softswitch

3.2.1 Requirements

3.2.1.1 LGSS-REQ-474718/A-SplitGate Release - Interface Client Request

When the LiftGate + TailGate Release is selected by the user via HMI, the LGSSInterfaceClient shall increment the event counter SplitgateReleaseCounter_Rq by a value of 1.

When SplitgateReleaseCounter_Rq reaches a count value of 6, the next increment shall reset the counter to a value of 1. The count value of 0 is reserved, and shall not be used in the increment operation of this counter.

3.2.1.2 Event Counter Requirements_Splitgate Release Counter

3.2.1.2.1 LGSS-REQ-474737/A-Initial Value_Splitgate Release Counter

When the LGSSInterfaceClient resets, it shall initialize and publish SplitgateReleaseCounter_Rq = 0.

Immediately following a reset, the LGSSInterfaceClient shall monitor for events that will cause SplitgateReleaseCounter_Rq to increment.

The LGSSInterfaceClient shall continue to publish 0 until an event causes SplitgateReleaseCounter_Rq to increment.

3.2.1.2.2 LGSS-REQ-474738/A-Valid Events_Splitgate Release Counter

For a count event to be deemed valid, the LGSSInterfaceClient must first detect a "non-button press" before an actual "press." Only then shall the LGSSInterfaceClient increment SplitgateReleaseCounter_Rq.

When powering back On from a reset, the LGSSInterfaceClient shall not increment SplitgateReleaseCounter_Rq if the first value it reads for the corresponding button is a "pressed" value. This is to avoid any possible "stuck button" error conditions.

Ex. If the interface is a manual switch that is pressed/not pressed, the module shall ensure that the switch is first not pressed, and then when it sees a pressed event, it shall increment the counter.

3.2.1.2.3 LGSS-REQ-474739/A-Voltage Range_Splitgate Release Counter

The LGSSInterfaceClient shall not increment SplitgateReleaseCounter_Rq when voltage is out of range, even if an incrementing event occurs (refer to Ford Next Generation Infotainment Engineering Spec VerX_SYNC4 for voltage requirements).

3.2.1.2.4 LGSS-REQ-474740/A-Bus Wakeup_Splitgate Release Counter

The LGSSInterfaceClient shall wake CAN whenever SplitgateReleaseCounter_Rq has changed.

3.2.1.2.5 LGSS-REQ-474741/A-Bus Sleep Voting_Splitgate Release Counter

The LGSSInterfaceClient is allowed to vote for CAN Sleep 5 seconds after the last change in SplitgateReleaseCounter_Rq, independent of the FNOS wakeup strategy.

3.2.1.2.6 LGSS-REQ-474742/A-Value Retention_Splitgate Release Counter

The LGSSInterfaceClient shall retain the last transmitted value of SplitgateReleaseCounter_Rq through sleep/wake cycle.

3.2.1.3 LGSS-REQ-474743/A-SplitGate Release - User Input

When configured for SplitGate as High Trim or High Trim w/o Hands Free (see LGSS-REQ-478025-Back End Enclosure Type Configuration - SplitGate) the LGSSInterfaceClient shall provide a user interface (button/graphic) to allow selection of the LiftGate Only and LiftGate + TailGate Softswitch release buttons.



Note: For LiftGate Only button refer to LGSS-REQ-332245-LiftGate Release - User Input

3.2.1.4 LGSS-REQ-474744/A-SplitGate Release - User Input Enable/Disable

The LGSSInterfaceClient shall enable/disable (show/hide, grey-out, etc.) the LiftGate + TailGate Softswitch user interface (button/graphic) based on the following:

| LockInhibit_St | CarMode_St | VehicleSpeed_St | IgnitionStatus_St | Delay_Accy | Transmission Type config. | GearLvrPos_D_Actl | LiftGate + TailGate Softswitch User Interface |
|----------------|------------|-----------------------------------|-------------------|------------|---------------------------|-------------------|---|
| Inhibit | D/C | D/C | D/C | D/C | D/C | D/C | Disabled |
| No_Inhibit | Normal | Less than threshold in REQ-328540 | OFF | ON | D/C | D/C | Enabled |
| No_Inhibit | Normal | Less than threshold in REQ-328540 | ACC | D/C | D/C | D/C | Enabled |
| No_Inhibit | Normal | Less than threshold in REQ-328540 | RUN or START | D/C | Automatic | Park | Enabled |
| No_Inhibit | Factory | D/C | D/C | D/C | D/C | D/C | Enabled |
| No_Inhibit | Transport | D/C | D/C | D/C | D/C | D/C | Disabled |

*D/C – Don't Care

Note: Transmission Type config. = Manual will be considered at a later time. As of this SPSS release, the LGSSInterfaceClient shall not support this feature on a Manual Transmission vehicle.

3.2.1.5 LGSS-REQ-474745/A-SplitGate Position Status

The LGSSInterfaceClient shall display a graphic indicating the actual position of the LiftGate and TailGate.

Refer section LGSS-REQ-474677-LiftGate Position Status for LiftGate position graphic details.

As per "LGSS-REQ-479277-TailGate Ajar Status - SplitGate" when TailgateAjar_St = (0x1) Ajar the LGSSInterfaceClient shall monitor the TailGate Position Status signal "Tailgate_Position_St" to display actual position of TailGate.

3.2.2 Use Cases

3.2.2.1 LGSS-UC-REQ-474709/A-User selects Manual LiftGate + TailGate Softswitch on LGSSInterfaceClient (switch enabled)

| | |
|-----------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate + TailGate Softswitch is Enabled Manual LiftGate and TailGate are Closed |
| Scenario Description | The user selects the LiftGate + TailGate softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer1 releases the Manual LiftGate |



| | |
|-----------------------------|---|
| | LGSSInterfaceClient displays the LiftGate as Opened |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.2.2.2 LGSS-UC-REQ-474710/A-User presses LiftGate + TailGate Softswitch on LGSSInterfaceClient while Liftgate is Closed and TailGate is Closed

| | |
|-----------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle Configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate + TailGate Softswitch is Enabled Power LiftGate is Closed or Lower-Unlatched Power TailGate is Closed |
| Scenario Description | The user selects the LiftGate + TailGate Softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to open the Power LiftGate and Power TailGate LGSSInterfaceClient displays the LiftGate and Tailgate as Opened |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.2.2.3 LGSS-UC-REQ-474711/A-User presses LiftGate + TailGate Softswitch on LGSSInterfaceClient while LiftGate is Lower-Unlatched and TailGate is Open

| | |
|-----------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle Configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate + TailGate Softswitch is Enabled Power LiftGate is Lower-Unlatched Power TailGate is Open |
| Scenario Description | The user selects the LiftGate + TailGate Softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to open the Power LiftGate LGSSInterfaceClient displays the LiftGate and TailGate as Opened |
| List of Exception Use Cases | |



| | |
|-------------------|-----------------------------------|
| Interfaces | LGSSInterfaceClient CAN, G-HMI |
|-------------------|-----------------------------------|

3.2.2.4 *LGSS-UC-REQ-474712/A-User presses LiftGate + TailGate Softswitch on LGSSInterfaceClient while LiftGate is Open and TailGate is Closed*

| | |
|------------------------------------|---|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle Configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate + TailGate Softswitch is Enabled Power LiftGate is Open Power TailGate is Closed |
| Scenario Description | The user selects the LiftGate + TailGate Softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to Open the Power TailGate LGSSInterfaceClient displays the LiftGate and TailGate as Open |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.2.2.5 *LGSS-UC-REQ-474713/A-User presses LiftGate + TailGate Softswitch on LGSSInterfaceClient while LiftGate and TailGate are Open*

| | |
|------------------------------------|---|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle Configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate + TailGate Softswitch is Enabled Power LiftGate is Open Power TailGate is Open |
| Scenario Description | The user selects the LiftGate + TailGate Softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 begins to Close the Power LiftGate and Power TailGate LGSSInterfaceClient displays the LiftGate and TailGate as Closed |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient |



CAN, G-HMI

3.2.2.6 LGSS-UC-REQ-474714/A-User selects Power LiftGate + TailGate Softswitch on LGSSInterfaceClient while LiftGate and/or TailGate in motion

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate + TailGate Softswitch is Enabled Power LiftGate and/or Power TailGate is in motion (opening/closing) |
| Scenario Description | The user selects the LiftGate + TailGate softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSServer2 stops/pauses Power LiftGate and/or Power TailGate operation/motion LGSSInterfaceClient displays the LiftGate and TailGate as Opened or current position |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.2.2.7 LGSS-UC-REQ-474715/B-User selects Manual/Power LiftGate + TailGate Softswitch on LGSSInterfaceClient (switch disabled)

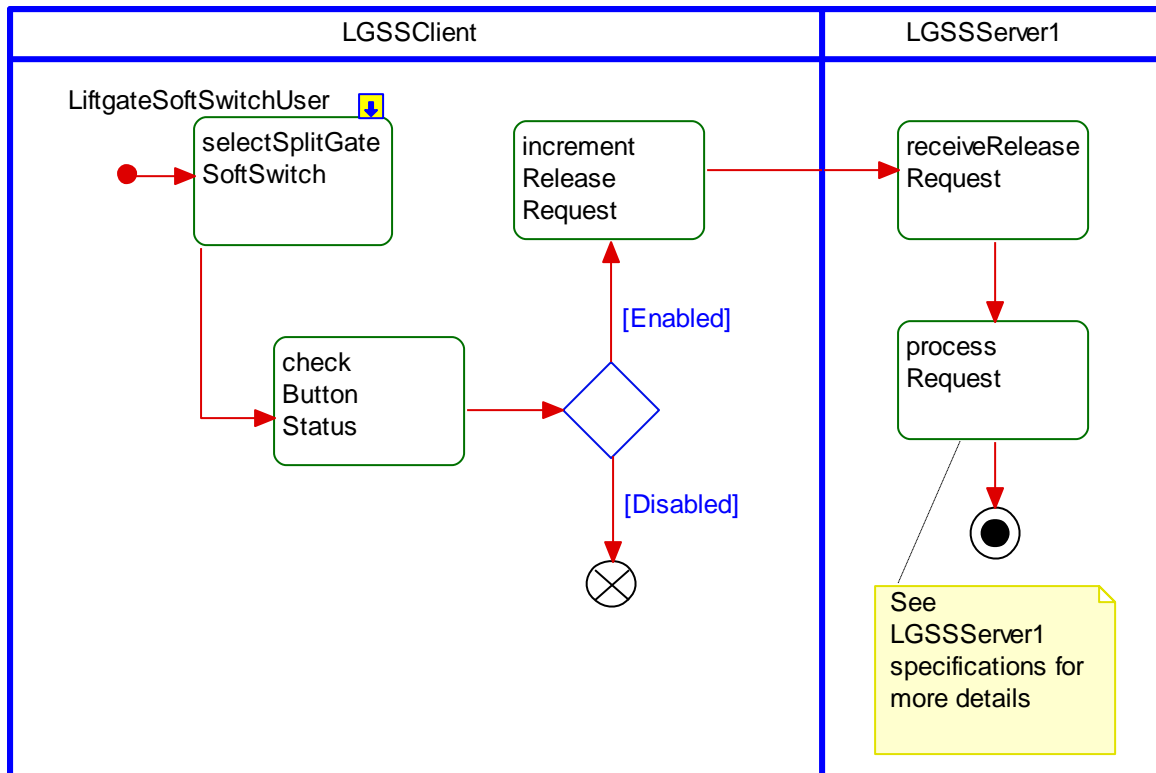
| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as High Trim or High Trim w/o Hands Free LiftGate + TailGate Softswitch is Disabled |
| Scenario Description | The user selects the LiftGate + TailGate softswitch on the LGSSInterfaceClient |
| Post-conditions | The LGSSInterfaceClient does not send any request to server |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

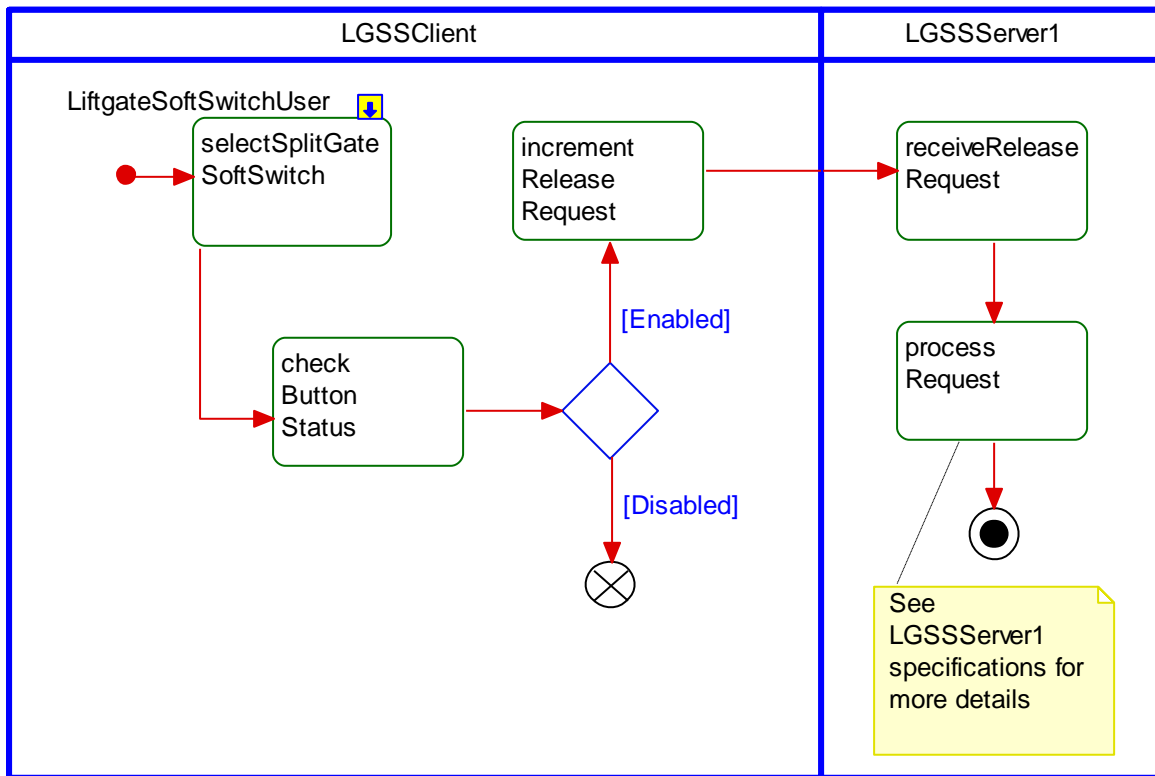


3.2.3 White Box Views

3.2.3.1 Activity Diagrams

3.2.3.1.1 LGSS-ACT-REQ-474657/B-User Selects Manual LiftGate + TailGate Softswitch On LGSSInterfaceClient



**3.2.3.1.2 LGSS-ACT-REQ-474659/B-User Selects Power LiftGate + TailGate Softswitch On LGSSInterfaceClient****3.2.3.2 Sequence Diagrams****3.2.3.2.1 LGSS-SD-REQ-474658/B-User Selects Manual LiftGate + TailGate Softswitch On LGSSInterfaceClient****Constraints****Pre-Condition**

Powermode Conditions are met
LGSSInterfaceClient is ON
"LiftGate + TailGate" Softswitch is Enabled
Manual LiftGate and TailGate are Closed

Scenarios**Normal Usage**

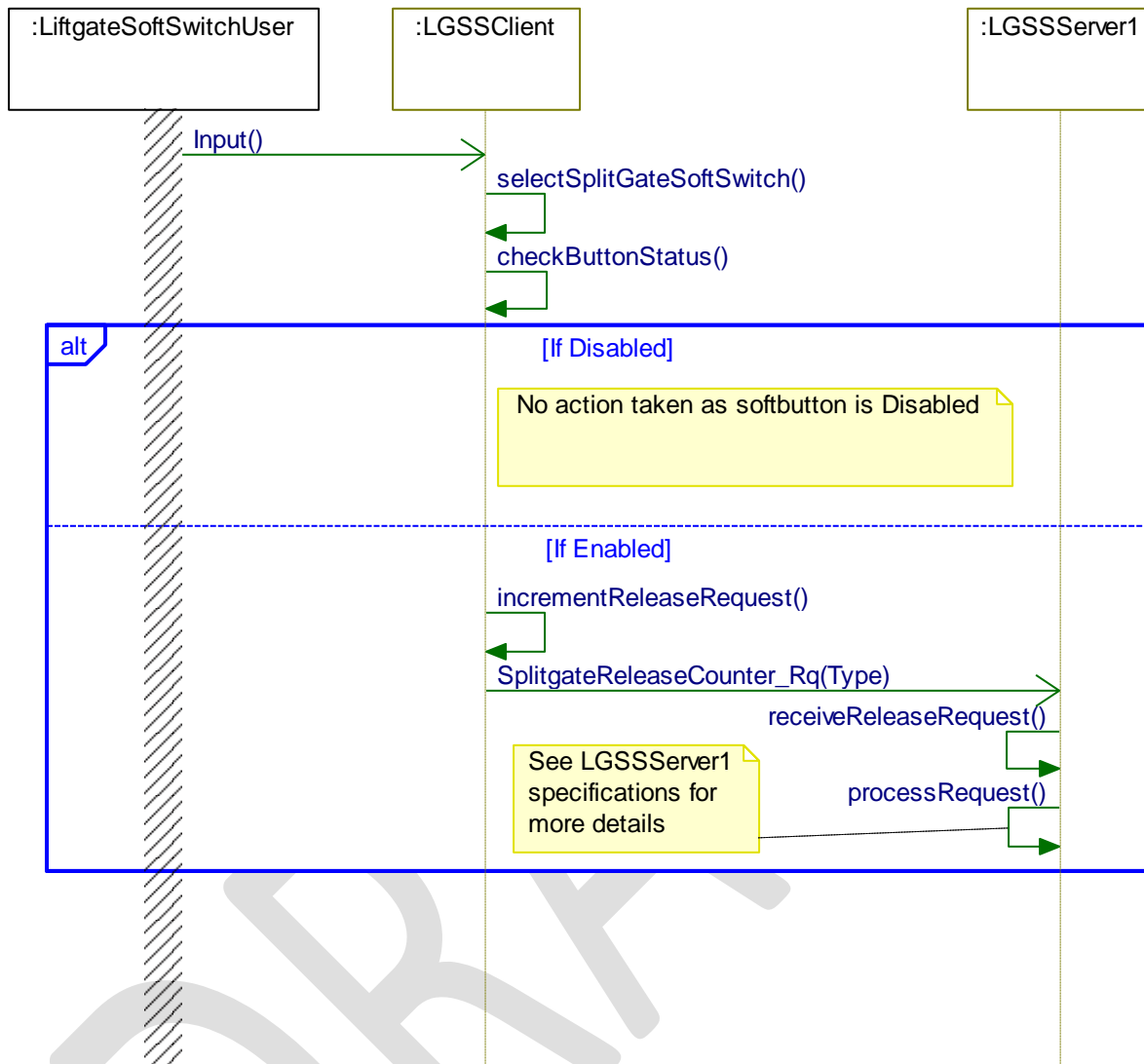
The user selects the "LiftGate + TailGate" softswitch on the LGSSInterfaceClient

Post-Condition

The LGSSServer1 releases the Manual LiftGate



Sequence Diagram



3.2.3.2.2 LGSS-SD-REQ-474661/B-User Selects Power LiftGate + TailGate Softswitch On LGSSInterfaceClient

Constraints

Pre-Condition

Powermode Conditions are met
LGSSInterfaceClient is ON
“LiftGate + TailGate” Softswitch is Enabled
Power LiftGate and TailGate are Closed

Scenarios

Normal Usage

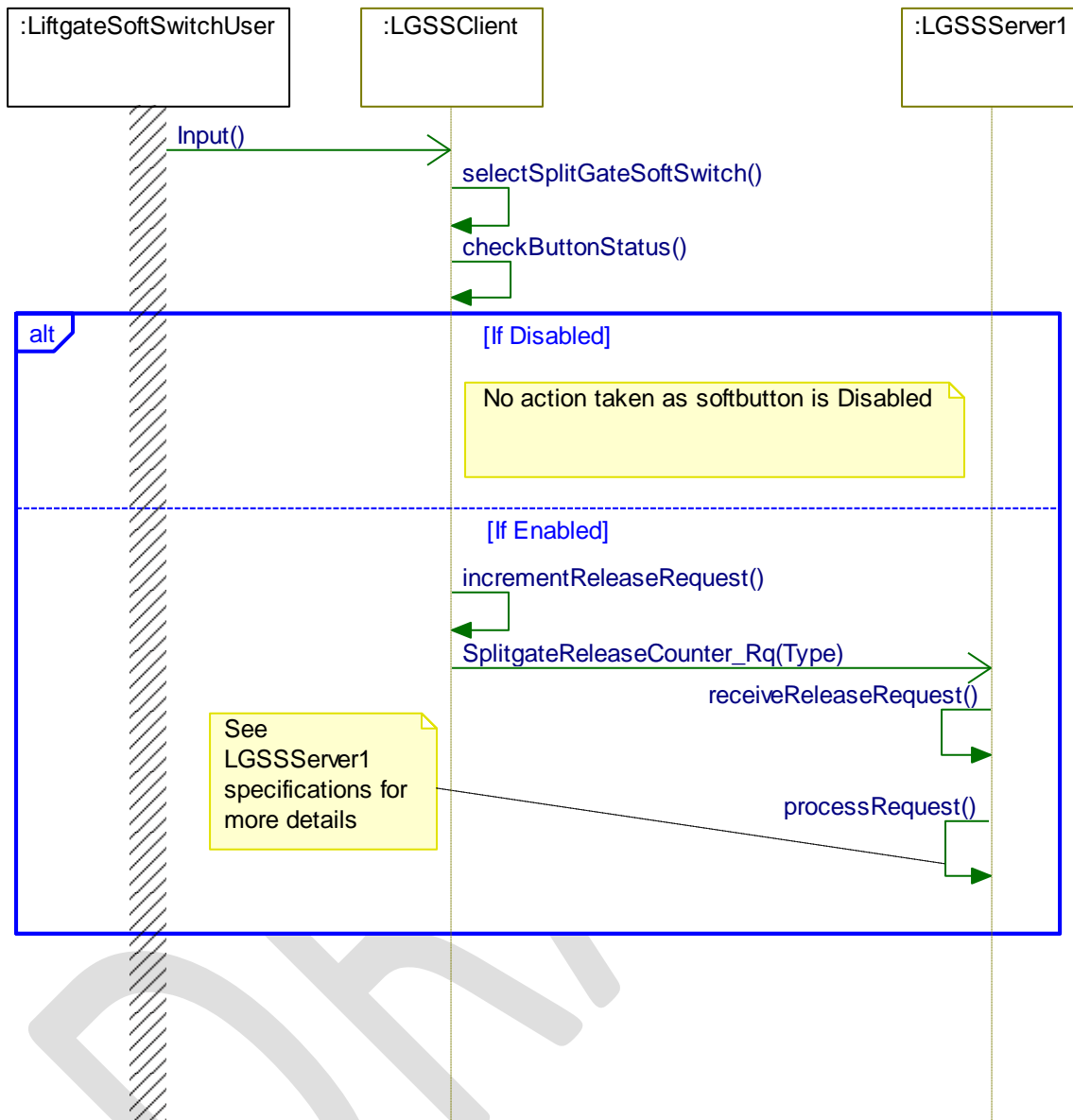
The user selects the “LiftGate + TailGate” softswitch on the LGSSInterfaceClient

Post-Condition

The LGSSServer2 begins to open the Power LiftGate and TailGate



Sequence Diagram





3.3 LGSS-FUN-REQ-474722/A-SplitGate Remote Operation Configuration Setting

3.3.1 Requirements

3.3.1.1 LGSS-REQ-474747/A-SplitGate Remote Operation Configuration Setting - User Input

The LGSSInterfaceClient shall provide a user interface (button/graphic) to toggle Remote Operation Configuration setting between LiftGate Only vs LiftGate + TailGate.

3.3.1.2 LGSS-REQ-479297/A-SplitGate Remote Operation Configuration Setting - User Input Enable/Disable

The LGSSInterfaceClient shall enable/disable (show/hide, grey-out, etc.) the SplitGate Remote Operation Configuration setting user interface (button/graphic) based on the following:

- If IgnitionStatus_St = (0x4) Run, (0x8) Start, or (0x2) Accessory, the above shall be enabled
- If IgnitionStatus_St != (0x4) Run, (0x8) Start, or (0x2) Accessory, the above shall be disabled (greyed-out, hidden, etc.)
- IgnitionStatus_St = (0x0) Off and Delay_Accy = (0x1) On, the above shall be enabled
- IgnitionStatus_St = (0x0) Off and Delay_Accy = (0x0) Off, the above shall be disabled (greyed-out, hidden, etc.)
- If the DTC defined by REQ-479237 is active, the above shall be disabled (greyed-out, hidden, etc.)

For the Vehicle Settings HMI location, there may be additional restrictions that prevent its usage even further (ex. restricting access to IgnitionStatus_St = (0x4) Run). However, all other interfaces (ex. the notification/popup) shall remain accessible.

3.3.1.3 LGSS-REQ-474723/B-SplitGate Remote Operation Configuration Setting - Interface Client Request

The LGSSInterfaceClient shall set and send Splitgate_Remote_Oper_Rq to the LGSSServer2 with the following values:

- Splitgate_Remote_Oper_Rq = 0x0 (Disabled); when the user selects the RKE/hands free to control "LiftGate only"
- Splitgate_Remote_Oper_Rq = 0x1 (Enabled); when the user selects the RKE/hands free to control "LiftGate + TailGate"

To ensure the Remote Operation is set to operate LiftGate and TailGate for the customer upon vehicle delivery, the LGSSInterfaceClient shall set and send Splitgate_Remote_Oper_Rq = "(0x1) Enabled" to the LGSSServer2 by default (upon every battery connect, Master Reset, and local reset (Factory Mode -> Transport Mode -> Normal Mode/Customer Mode)).

3.3.1.4 LGSS-REQ-474746/A-SplitGate Remote Operation Configuration Setting - Server Response

The LGSSInterfaceClient shall monitor Splitgate_Remote_Oper_St from the LGSSServer2 for the active RKE/hands free configuration setting status.

- When Splitgate_Remote_Oper_St = 0x0 (Disabled) is received, the LGSSInterfaceClient shall reflect that "LiftGate Only" is selected to the user
- When Splitgate_Remote_Oper_St = 0x1 (Enabled) is received, the LGSSInterfaceClient shall reflect that "LiftGate + TailGate" is selected to the user

3.3.1.5 LGSS-REQ-479357/A-SplitGate Remote Operation Configuration Setting - Startup/Shutdown

Upon system shutdown, the LGSSInterfaceClient shall store the last received value of Splitgate_Remote_Oper_St from the LGSSServer2 and shall display the stored value at system startup until Splitgate_Remote_Oper_St is received from the LGSSServer2.

Upon system shutdown, the LGSSInterfaceClient shall store the last transmitted value of Splitgate_Remote_Oper_Rq and shall continue to transmit the stored value again at system startup.



3.3.2 Use Cases

3.3.2.1 LGSS-UC-REQ-474716/A-User Enable SplitGate Remote Operation Configuration Setting On LGSSInterfaceClient

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as High Trim or High Trim w/o Hands Free SplitGate Remote Operation Configuration setting is set to "LiftGate Only" (Disable) |
| Scenario Description | The user accesses the SplitGate Remote Operation Configuration setting menu on the LGSSInterfaceClient and selects "LiftGate + TailGate" (Enable) |
| Post-conditions | <ul style="list-style-type: none">The LGSSServer2 updates the SplitGate Remote Operation Configuration setting to "LiftGate + TailGate" (Enable)The LGSSInterfaceClient updates its HMI to reflect "LiftGate + TailGate" (Enable) is active |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.3.2.2 LGSS-UC-REQ-479317/A-User Disable SplitGate Remote Operation Configuration Setting On LGSSInterfaceClient

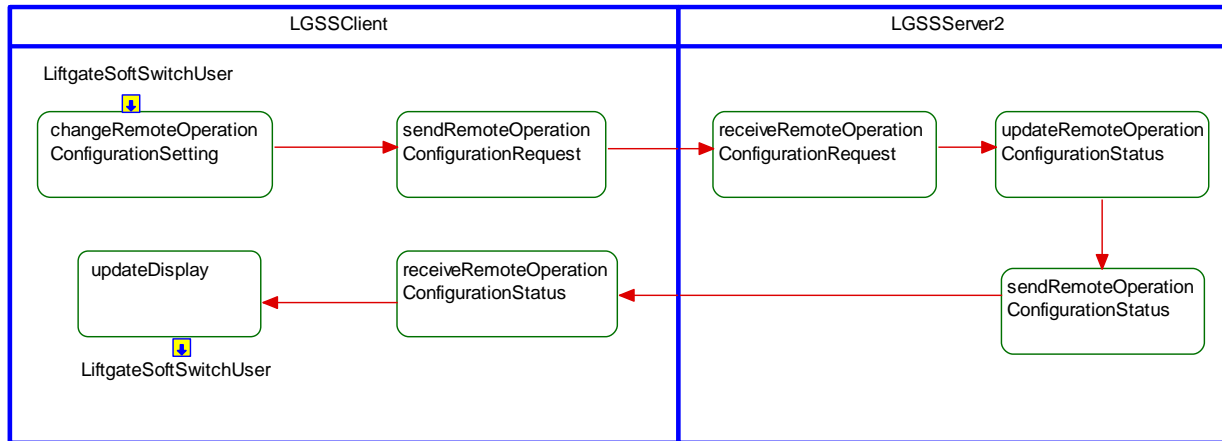
| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Vehicle configured for SplitGate as High Trim or High Trim w/o Hands Free SplitGate Remote Operation Configuration setting is set to "LiftGate + TailGate" (Enable) |
| Scenario Description | The user accesses the SplitGate Remote Operation Configuration setting menu on the LGSSInterfaceClient and selects "LiftGate Only" (Disable) |
| Post-conditions | <ul style="list-style-type: none">The LGSSServer2 updates the SplitGate Remote Operation Configuration setting to "LiftGate Only" (Disable)The LGSSInterfaceClient updates its HMI to reflect "LiftGate Only" (Disable) is active |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |



3.3.3 White Box Views

3.3.3.1 Activity Diagrams

3.3.3.1.1 LGSS-ACT-REQ-474662/A-User Selects Remote Operation Configuration Setting On LGSSInterfaceClient



3.3.3.2 Sequence Diagrams

3.3.3.2.1 LGSS-SD-REQ-474663/A-User Selects Remote Operation Configuration Setting On LGSSInterfaceClient

Constraints

Pre-Condition

Powermode Conditions are met
LGSSInterfaceClient is ON

Scenarios

Normal Usage

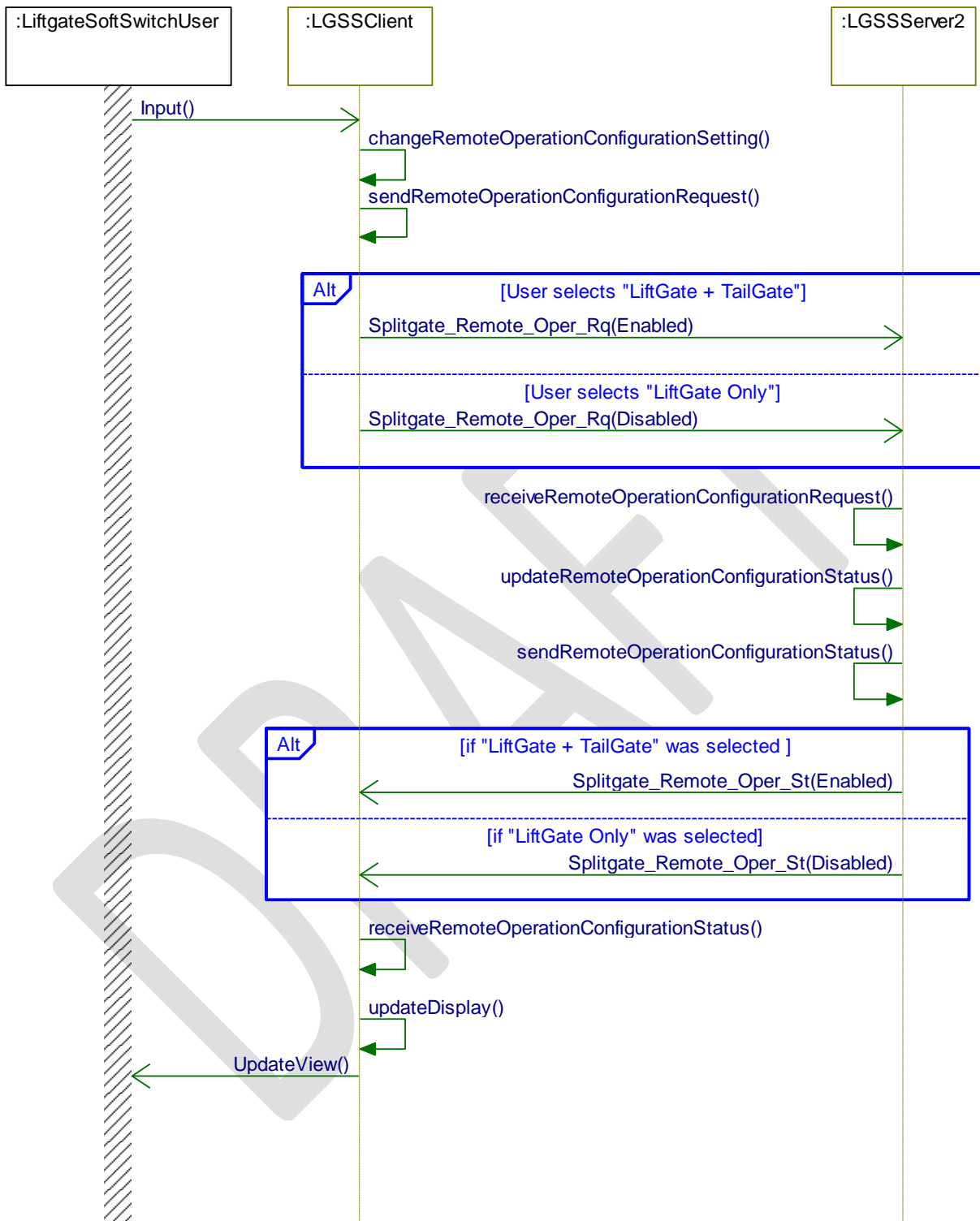
The user accesses the SplitGate Remote Operation Configuration Setting menu on the LGSSInterfaceClient and selects LiftGate+TailGate/LiftGate Only (Enabled/Disabled).

Post-Condition

The LGSSServer2 updates the SplitGate Remote Operation Configuration Setting accordingly
The LGSSInterfaceClient updates its HMI to reflect active state



Sequence Diagram





3.4 LGSS-FUN-REQ-479337/A-Enable/Disable Power SplitGate Feature

3.4.1 Requirements

3.4.1.1 LGSS-REQ-479338/A-Power SplitGate Setting - User Input

The LGSSInterfaceClient shall provide a user interface (button/graphic) to toggle SplitGate setting between power vs manual operation.

3.4.1.2 LGSS-REQ-479339/A-Power SplitGate Setting - User Input Enable/Disable

The LGSSInterfaceClient shall enable/disable (show/hide, grey-out, etc.) the Power SplitGate feature setting user interface (button/graphic) based on the following:

- If IgnitionStatus_St = (0x4) Run, (0x8) Start, or (0x2) Accessory, the above shall be enabled
- If IgnitionStatus_St != (0x4) Run, (0x8) Start, or (0x2) Accessory, the above shall be disabled (greyed-out, hidden, etc.)
- IgnitionStatus_St = (0x0) Off and Delay_Accy = (0x1) On, the above shall be enabled
- IgnitionStatus_St = (0x0) Off and Delay_Accy = (0x0) Off, the above shall be disabled (greyed-out, hidden, etc.)
- If the DTC defined by REQ-479237 is active, the above shall be disabled (greyed-out, hidden, etc.)

For the Vehicle Settings HMI location, there may be additional restrictions that prevent its usage even further (ex. restricting access to IgnitionStatus_St = (0x4) Run). However, all other interfaces (ex. the notification/popup) shall remain accessible.

3.4.1.3 LGSS-REQ-479340/A-Power SplitGate Setting - Interface Client Request

The LGSSInterfaceClient shall set and send SplitGateEnable_Rq to the LGSSServer2 with the following values:

- SplitGateEnable_Rq = "(0x0) Disabled" when Off (Disabled, Manual, etc.) is selected by the user
- SplitGateEnable_Rq = "(0x1) Enabled" when On (Enabled, Power, etc.) is selected by the user

To ensure the feature is enabled and available to the customer upon vehicle delivery, the LGSSInterfaceClient shall set and send SplitGateEnable_Rq = "(0x1) Enabled" to the LGSSServer2 by default (upon every battery connect, Master Reset, and local reset (Factory Mode -> Transport Mode -> Normal Mode/Customer Mode)).

3.4.1.4 LGSS-REQ-479341/A-Power SplitGate Setting - Server Response

The LGSSInterfaceClient shall monitor SplitGateEnable_St from the LGSSServer2 for the active Power SplitGate status.

- When SplitGateEnable_St = "(0x0) Disabled" is received, the LGSSInterfaceClient shall reflect that Off (Disabled, Manual, etc.) is selected to the user
- When SplitGateEnable_St = "(0x1) Enabled" is received, the LGSSInterfaceClient shall reflect that On (Enabled, Power, etc.) is selected to the user

3.4.1.5 LGSS-REQ-479358/A-Power SplitGate Setting - Startup/Shutdown

Upon system shutdown, the LGSSInterfaceClient shall store the last received value of SplitGateEnable_St from the LGSSServer2 and shall display the stored value at system startup until SplitGateEnable_St is received from the LGSSServer2.

Upon system shutdown, the LGSSInterfaceClient shall store the last transmitted value of SplitGateEnable_Rq and shall continue to transmit the stored value again at system startup.

3.4.2 Use Cases

3.4.2.1 LGSS-UC-REQ-479342/B-User Enable Power SplitGate Setting On LGSSInterfaceClient

| | |
|-----------------------|------------------------------|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met |



| | |
|------------------------------------|--|
| | LGSSInterfaceClient is ON Power SplitGate feature is set to "Manual Mode" |
| Scenario Description | The user accesses the Power SplitGate settings menu on the LGSSInterfaceClient and selects "Power Mode" |
| Post-conditions | <ul style="list-style-type: none">The LGSSServer2 updates the Power SplitGate feature to "On" (Enabled, Power, etc.)The LGSSInterfaceClient updates its HMI to reflect "Power Mode" |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

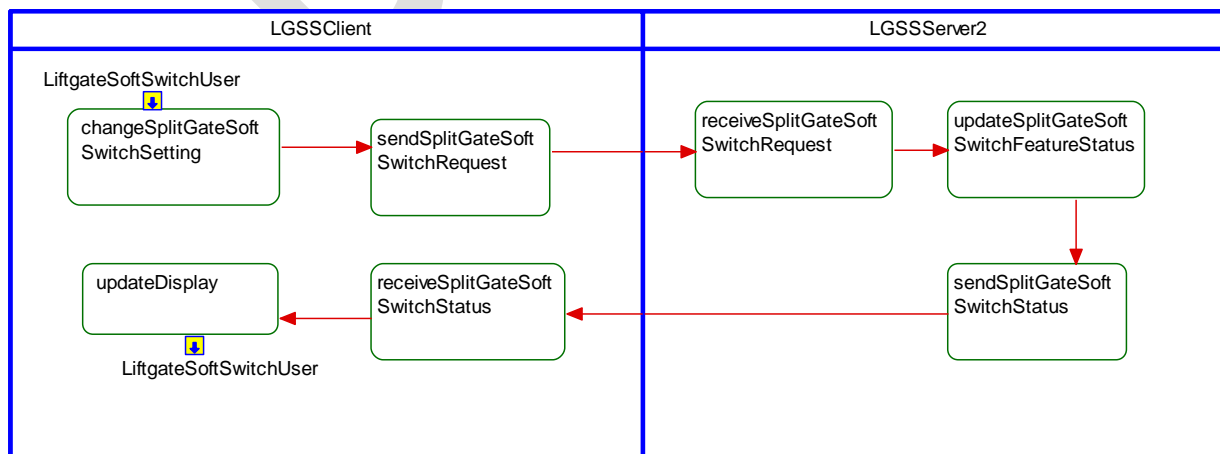
3.4.2.2 LGSS-UC-REQ-479343/B-User Disable Power SplitGate Setting On LGSSInterfaceClient

| | |
|------------------------------------|--|
| Actors | Vehicle Occupant |
| Pre-conditions | Powermode Conditions are met LGSSInterfaceClient is ON Power SplitGate feature is set to "Power Mode" |
| Scenario Description | The user accesses the Power SplitGate settings menu on the LGSSInterfaceClient and selects "Manual Mode" |
| Post-conditions | <ul style="list-style-type: none">The LGSSServer2 updates the Power SplitGate feature to "Off" (Disabled, Manual, etc.)The LGSSInterfaceClient updates its HMI to reflect "Manual Mode" |
| List of Exception Use Cases | |
| Interfaces | LGSSInterfaceClient CAN, G-HMI |

3.4.3 White Box Views

3.4.3.1 Activity Diagrams

3.4.3.1.1 LGSS-ACT-REQ-479344/A-User Enables/Disables Power SplitGate Setting On LGSSInterfaceClient





3.4.3.2 Sequence Diagrams

3.4.3.2.1 LGSS-SD-REQ-479346/A-User Enables/Disables Power SplitGate Setting On LGSSInterfaceClient

Constraints

Pre-Condition

Powermode Conditions are met
LGSSInterfaceClient is ON

Scenarios

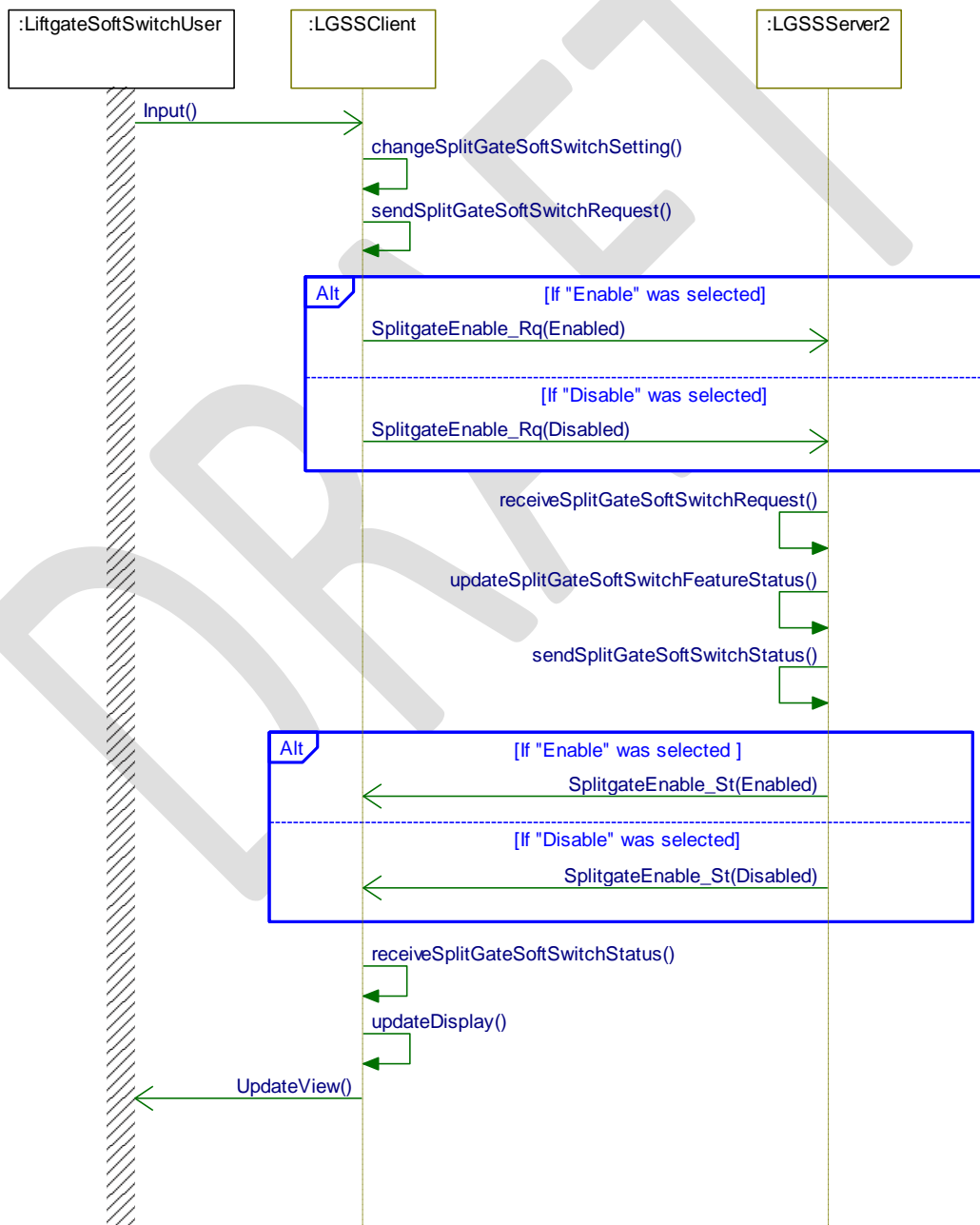
Normal Usage

The user accesses the Power SplitGate menu on the LGSSInterfaceClient and selects On or Off (Enabled/Disabled, Power/Manual, etc.).

Post-Condition

The LGSSServer2 updates the Power SplitGate feature accordingly
The LGSSInterfaceClient updates its HMI to reflect active state

Sequence Diagram





4 Appendix: Reference Documents

| Reference # | Document Title |
|-------------|---|
| 1 | Infotainment Diagnostics Specification APIM Gen 4 |
| 2 | Ford Next Generation Infotainment Engineering Spec_VerX_SYNC4 |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
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