Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature: Auto EPB (Global)

Subsystem Part Specific Specification (SPSS)

Version 1.0

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Version Date: October 11, 2018

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
October 11, 2018	1.0	Initial Release	

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1 Architectural Design

1.1 Overview

Auto EPB feature should help the user in Vehicle to Trailer hitching process. Its idea is to keep the vehicle in a standstill (if the conditions apply) so the user can inspect the vehicle to Hitch distance.

1.2 PKHD-CLD-REQ-329625/A-Auto EPB Client

Auto EPB Client among other duties it may have, in this documentation, it has the responsibility for displaying the feature state, any messages that me provided, and as a user interface gate with the feature server. Auto EPB Client also send to the server the current status of image state, as provided by Image Server.

1.3 PKHD-CLD-REQ-329626/A-Auto EPB Server

Auto EPB Server is responsible for enabling/disabling the feature, providing any applicable error messages or feature status to the users.

1.4 PKHD-CLD-REQ-330763/A-Image Server

Image Server provides what image type is currently being displayed to Auto EPB Client.

1.5 PKHD-IIR-REQ-329627/A-Auto EPB Client Tx

1.5.1 PKHD-MD-REQ-329632/A-LBtnSt

LBtnSt: This signal indicates provides the button press status for feature activation on the Client.

State	Encoding
0x0	Not Pressed
0x1	Pressed

1.5.2 PKHD-MD-REQ-329633/A-LZoomSt

LZoomSt: This signal indicates if the zoom view of the camera display is active or not on client.

State	Encoding
0x0	Inactive
0x1	Active

1.6 PKHD-IIR-REQ-329628/A-Auto EPB Client Rx

1.6.1 PKHD-MD-REQ-329629/A-LBtnDspl

LBtnDspl: This signal indicates the status of the Auto EPB Feature.

State	Encoding Description
0x0	Not Available
0x1	Available
0x2	Greyed Out
0x3	NotUsed

1.6.2 PKHD-MD-REQ-329630/A-LFtSt

LFtSt: This signal provides the feature status to the client. It tells to the client whether the feature is activated or not.

State	Encoding
0x0	Off
0x1	On

1.6.3 PKHD-MD-REQ-329631/A-LMsg

LMsg: This signal provides messages to be displayed in Client HMI to the user.

State	Message description
0x0	No Message
0x1	Generic text. Refer to HMI for proper message content.
0x2	NotUsed
0x3	NotUsed
0x4	NotUsed
0x5	NotUsed
0x6	NotUsed
0x7	NotUsed

1.6.4 PKHD-MD-REQ-330415/A-IgnSt

IgnSt: This signal is sent by the server to the client to provide ignition status of the vehicle.

Signal Parameters	Description
0x0	Unknown
0x1	Off
0x2	Accessory
0x4	Run
0x8	Start
0xF	Invalid

2 General Requirements

2.1 PKHD-REQ-329656/A-Invalid Signals

2.2 If client receives any data where a Not Used has been marked as signal parameter, the client shall "Greyed Out" (LBtnDspl = 0x2) the feature.

2.3 PKHD-REQ-329657/A-Button Press

The client shall determine the signal LBtnSt based on the following logic for normal operation:

- Transmit state "Not Pressed" all the time if there was no valid click event
- Transmit state "Pressed" as an impulse after a valid click event has been identified

Note: A valid click event is a valid user input via soft button to change the feature status – an example for an invalid click event can be the use case that the user presses the soft button, slides away and then releases the fingertip from the touchscreen. The touchscreen shall consider its general / generic rules like used for other soft buttons.

2.4 PKHD-REQ-330413/A-Missing Signals

If signal is not received for more than 5 signal periods, than the signal is marked as missed. The feature should be considered as "Greyed Out" (LBtnDspl = 0x2) in case of missing signal states.

2.5 PKHD-REQ-330414/A-Feature Availability

Client shall process this feature's signals while IgnSt is in RUN or Start.

2.6 PKHD-REQ-330738/A-Zoom State

Client should send screen Zoom status to the server through the signal LZoomSt.
The screen zoom status is determined based on FBMP Feature ID 0x081B, config number 0x0A (Rear Zoom) and Feature ID 0x081B config number 0x0B (CHMSL Zoom).

Refer to Feature Based Massaging Protocol SPSS.
Refer to Multicamera SPSS for any further details.

2.7 PKHD-REQ-330766/A-State processing after Ign state change

The client shall be able to process and provide information to the user about feature state, for up to 5 seconds after Ignition state changes from Run/Start to any other value.

3 Functional Definition

3.1 FUN-REQ-330737/A-Auto EPB

3.1.1 Usecases

3.1.1.1 PKHD-UC-REQ-329709/A-Soft Button Activation

Actors	User
Pre-conditions	Ignition is run/start Vehicle is at standstill. Client HMI screen is in one of the applicable camera views for Auto EPB with an available Auto EPB button.
Scenario Description	Driver enables Auto EPB Feature via soft button.
Post-conditions	Driver gets Auto EPB status indication "enabled" via soft switch indication.
List of Exception Use Cases	
Interfaces	

3.1.1.2 UC-REQ-331393/A-Soft Button Deactivation

Actors	User
Pre-conditions	Ignition is run/start Auto EPB button is being displayed in one of the applicable HMI screens. Auto EPB is active and the user is being notified about it.
Scenario Description	Driver disables Auto EPB Feature via soft button.
Post-conditions	Driver gets Auto EPB status indication "disabled" via soft switch indication.
List of Exception Use Cases	
Interfaces	

3.1.1.3 PKHD-UC-REQ-329710/A-Zoom Button activation

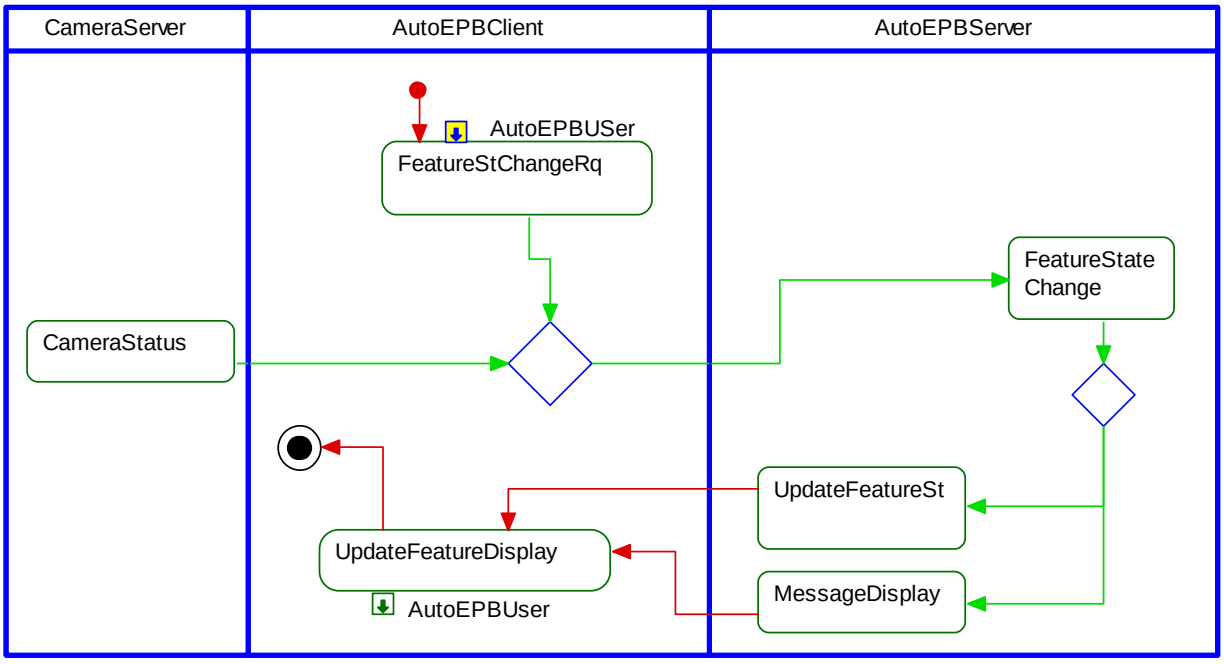
Actors	User.
Pre-conditions	Ignition is run/start Vehicle is at standstill. HMI screen is one of the views that supports a zoom view.
Scenario Description	Driver selects zoom view
Post-conditions	Auto EPB gets activated from the server side when other feature conditions apply. Client does not update view to show Auto EPB button or feature status.
List of Exception Use Cases	
Interfaces	

3.1.1.4 PKHD-UC-REQ-329711/A-Feature not available

Actors	User
Pre-conditions	Ignition is On Vehicle is at standstill. Client HMI screen is in one of the applicable camera views for Auto EPB with a “Grayed Out” Auto EPB button.
Scenario Description	User presses Auto EPB soft button
Post-conditions	Client does not send any signal to server.
List of Exception Use Cases	
Interfaces	

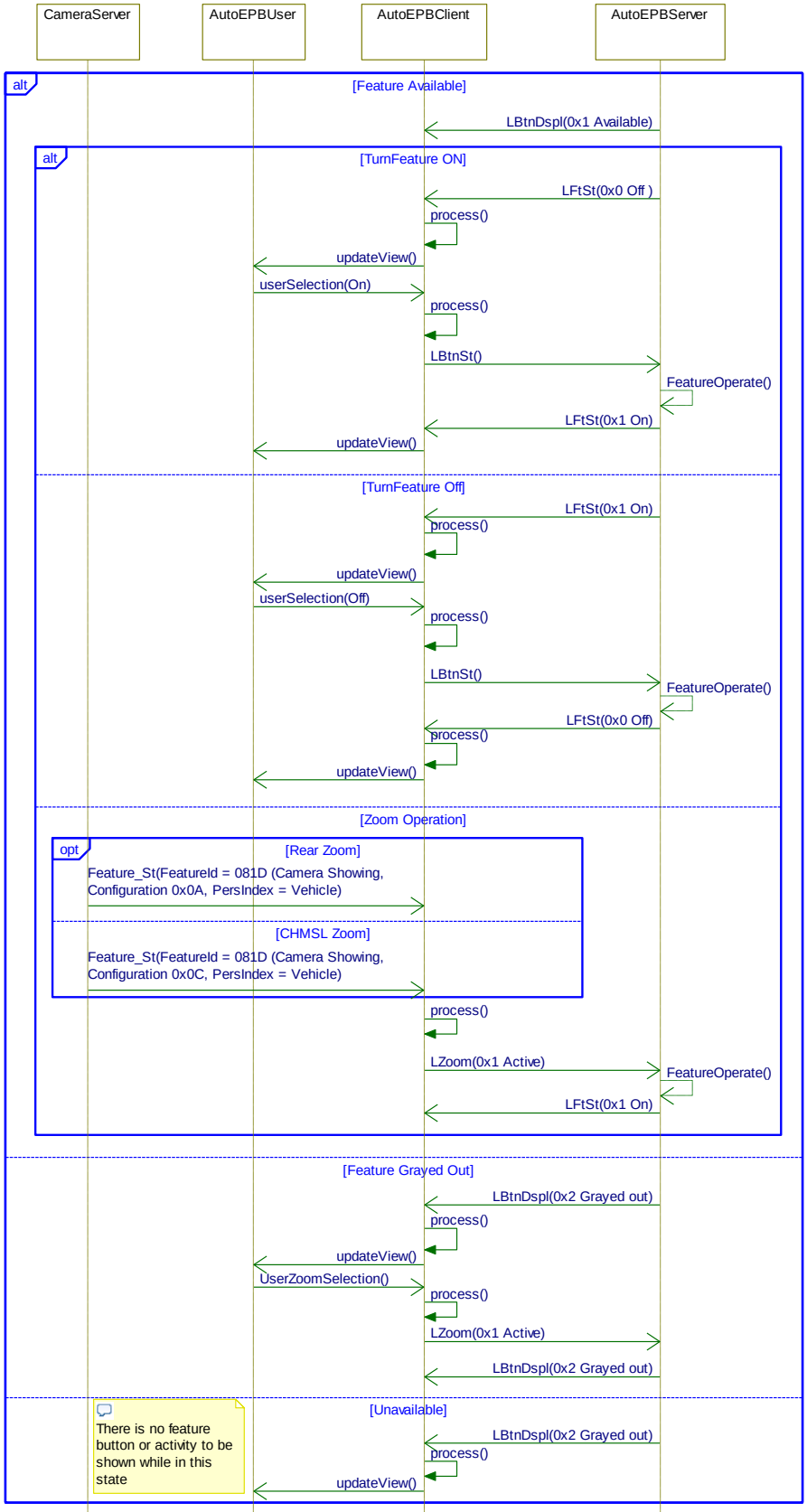
3.1.2 Activity Diagrams

3.1.2.1 REQ-330758/A-Auto EPB AD

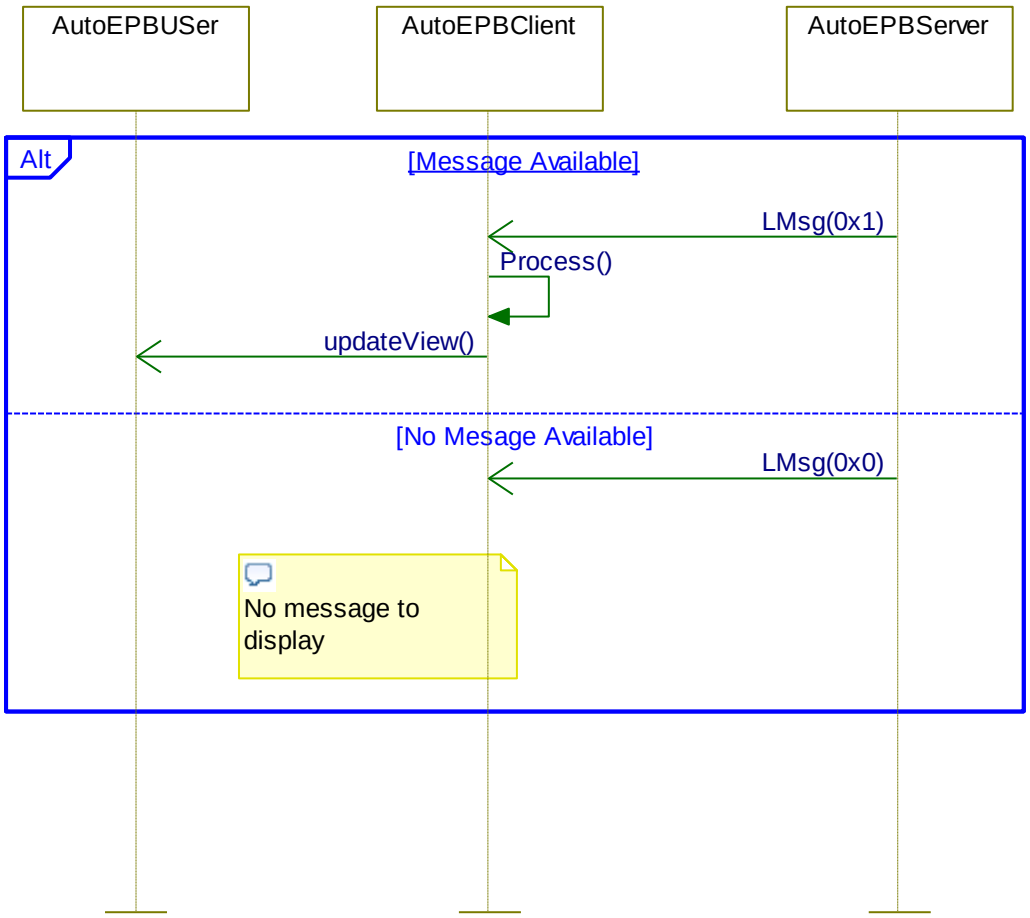


3.1.3 Sequence Diagrams

3.1.3.1 PKHD-SD-REQ-329954/A-Auto EPB Activation



3.1.3.2 PKHD-SD-REQ-329955/A-Auto EPB Messages



4 Appendix: Reference Documents

Feature Based Messaging Protocol SPSS
Multicamera SPSS