

**Research & Vehicle Technology**

**“Infotainment Systems Product Development”**

**Feature – Rear Camera On Demand**

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

Version 1.1

**UNCONTROLLED COPY IF PRINTED**

**Version Date: June 21, 2019**

**FORD CONFIDENTIALF**

**Revision History**

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| --- | --- | --- | --- |
| **Date** | **Ver** | **Notes** | |
| **September 5, 2017** | **1.0** | **Initial Release** |  |
|  |  |  |  |
| **June 21, 2019** | **1.1** |  | |
|  | RVCOD-FRD-REQ-273364/B-Rear Camera On Demand SPSS | | tmertiri: changes related to FNV2 , new signal, new seq diagram etc |
| 473439/B-Overview | | tmertiri: update overview. Removed Reverse gear |
| RVCOD-CLD-REQ-273348/B-RC On Demand Client | | tmertiri: structure reorg |
| RVCOD-CLD-REQ-273349/B-RC On Demand Server | | tmertiri: structure reorg |
| FUR-REQ-273357/B-RC on Demand Logical Signal Mapping | | tmertiri:added new signal |
| RVCOD-IIR-REQ-273360/B-RCOD Client\_Rx | | tmertiri: added new signal |
| MD-REQ-273361/B-RcodSt | | tmertiri: formatting |
| MD-REQ-353826/A-LCmrSt | | tmertiriL new signal |
| 473436/B-General Requirements | | tmertiri: new requirement due to new signal |
| RVCOD-REQ-273352/B-RC on Demand Availibility | | tmertiri: structure update |
| RVCOD-REQ-273353/B-Error Conditions | | tmertiri: structure update |
| RVCOD-REQ-273354/B-Missing Signals | | tmertiri: structure update |
| RVCOD-REQ-274273/B-Button Press | | tmertiri: structure update |
| RVCOD-REQ-274274/B-Shifting in Reverse Gear | | tmertiri: updated requirement |
| RVCOD-REQ-353976/A-Feature Signals | | tmertiri: new requirement |
| RVCOD-UC-REQ-273350/B-Turn On Rear Camera On Demand | | tmertiri: update usecase verbiage |
| RVCOD-UC-REQ-273351/B-Turn Off Rear Camera On Demand | | tmertiri: update usecase verbiage |
| RVCOD-ACT-REQ-273365/B-Activity Diagram | | tmertiri: structure update |
| 473447/B-Sequence Diagram | | tmertiri: Added new Seq diagram , due to LCmrSt signal |
| RVCOD-SD-REQ-273366/B-Sequence Diagram RcodSt | | tmertiri: Update diagram. |
| RVCOD-SD-REQ-353975/A-Sequence Diagram LCmrSt | | tmertiri: new requirement |
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# Architectural Design

## Overview

The Rear Camera On Demand Feature will use current capabilities of the Rear View Camera and vehicle display to present rear view camera image while gear is in Neutral, Park and Drive while vehicle is moving with speeds up to 10kph.The rest of the requirements should be reviewed to learn if other restrictions are applicable.

## RVCOD-CLD-REQ-273348/B-RC On Demand Client

Responsibility: Rear Camera On Demand Client among its other duties that it may have is also responsible for displaying or not displaying the Rear View Camera image stream whenever the appropriate conditions are satisfied.

## RVCOD-CLD-REQ-273349/B-RC On Demand Server

Responsibility: Rear Camera On Demand Server will acquire user requests to turn the feature On or Off and will provide this request to the Client which will proceed as deemed appropriate.

## FUR-REQ-273357/B-RC on Demand 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. The InfoCAN database file is the master file for the actual CAN signal names. Note: There may be cases where the actual CAN signal name is used in this documentation.

|  |  |
| --- | --- |
| **Logical Name** | **CAN Signal Name** |
| RcodSt | **CamraRearBttn\_D\_Stat** |
| LCmrSt | **CamraFrntStat\_D\_Stat** |

Table: Logical name/CAN signal mapping

## RVCOD-IIR-REQ-273360/B-RCOD Client\_Rx

### MD-REQ-273361/B-RcodSt

RcodSt is used to send users request to the Client RCOD.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| RcodtSt |  |  |  |
|  | Not\_Pressed | 0x0 | Camera button is currently not being pressed. |
|  | Pressed | 0x1 | Camera button is being pressed. |

### MD-REQ-353826/A-LCmrSt

LCmrSt: This signal is sent by the server to the client to indicate that Camera button states as below.

|  |  |  |
| --- | --- | --- |
| Literals | Value | Description |
| Off | 0x0 | Button is not pressed |
| On | 0x1 | Button is Pressed |
| NotUsed | 0x2 | Not Used |
| NoDataPresent | 0x3 | Server not present. |

Client should not receive the values 0x2 and 0x3. These signal values mean that server is sending some incompatible data.

# General Requirements

## RVCOD-REQ-273352/B-RC on Demand Availibility

RC On Demand shall not be available when **Ignition\_Status = OFF/ACC/Start/Unknown.**

RC On demand shall not be available if **Transmission Status (**GearLvrPos\_D\_Actl**) = Unknown.**

## RVCOD-REQ-273353/B-Error Conditions

Client shall display “**For your safety.....”** (Front camera overspeed pop up) when button is pressed and vehicle is in D with speed above 10kph.

## RVCOD-REQ-273354/B-Missing Signals

Camera shall display “Camera not available” if there is no valid video signal from Rear Camera for more than 10 seconds.

## RVCOD-REQ-274273/B-Button Press

Since CAN signal from button press only indicates its state of pressed and not pressed, the client shall toggle the state of RCOD whenever a new button press is detected.

## RVCOD-REQ-274274/B-Shifting in Reverse Gear

If the user has RCOD active while gear is not in reverse and then shifts in reverse, the RCOD shall get replaced with standard RVC video feed. The client shall ignore and RCOD button presses while gear is in reverse and instead it should maintain displaying RVC video feed.

## RVCOD-REQ-353976/A-Feature Signals

This feature can be controlled by the two signals mentioned in Logical Signal Mapping Table.

The signals should not coexist in the same vehicle, so Client should be receiving a single signal at a time.

# Functional Definition

## Use Cases

### RVCOD-UC-REQ-273350/B-Turn On Rear Camera On Demand

|  |  |
| --- | --- |
| **Actors** | Vehicle Occupant |
| **Pre-conditions** | The infotainment system is powered on.  The ignition status is Run/Start.  Vehicle is in Park, Neutral or Drive below 10kph.  Vehicle is equipped with Rear Camera On Demand.  RC on demand is OFF. |
| **Scenario Description** | Customer presses Rear Camera on demand button. |
| **Post-conditions** | Client displays Rear Camera On Demand. |
| **List of Exception Use Cases** |  |
| **Interfaces** | G-HMI  Vehicle System Interface |

### RVCOD-UC-REQ-273351/B-Turn Off Rear Camera On Demand

|  |  |
| --- | --- |
| **Actors** | Vehicle Occupant |
| **Pre-conditions** | The infotainment system is powered on.  The ignition status is Run/Start.  Vehicle is in any valid gear position.  Vehicle is equipped with Rear Camera on Demand.  Rear Camera on Demand is On. |
| **Scenario Description** | Customer presses Rear Camera on Demand button or customer drives above 10kph or customer shifts to Reverse. |
| **Post-conditions** | Client turns Rear Camera on Demand Off |
| **List of Exception Use Cases** |  |
| **Interfaces** | G-HMI  Vehicle System Interface |

## White Box Views

### Activity Diagram

#### RVCOD-ACT-REQ-273365/B-Activity Diagram



### Sequence Diagram

#### RVCOD-SD-REQ-273366/B-Sequence Diagram RcodSt



#### RVCOD-SD-REQ-353975/A-Sequence Diagram LCmrSt



# Appendix: Reference Documents