





# 1 HUD HMI Handling - CGEA1.3+

## 1.1 Functional Description

The purpose of this document is to provide the information regarding HMI arbitration/priority handling, and timeouts in the HUD.

## 1.2 Operation: Performance and Functional

### 1.2.1 Precedence

#### 1.2.1.1 HMI-REQ-302190/D- Order of precedence

Following is the order of precedence for the information displayed in the same display area in HUD:

- FCW, ACC Brake Capacity
- Settings/HUD Adjustments (Vertical, Rotation, Brightness)
- CTA
- DAT Features/ Warnings (ACC, iACC, CC, Distance Alert, LKS, LCA (Highway Assist Limited)/Highway Assist Extended, ASLD, TSR, **ALC (Assisted Lane Change)**)
- DAT Prompts/Messages (ACC, iACC, CC, Distance Alert, LKS, LCA (Highway Assist Limited)/Highway Assist Extended, ASLD, TSR, **ALC (Assisted Lane Change)**)
- Notification (Phone)\*
- Trailer Brake Output
- Navigation Repeater
- V2I**
- Control Mirror (Drive Mode, Gear, Volume, Radio, Media QuickAction button, etc.)
- Tachometer
- PSI (Performance Shift Indicator)**
- Info Display (Status bar)

**Note:** If program doesn't support any of the above feature then simply ignore that feature. HUD HMI wallpapers are designed in a way that it already covers all features precedence. So always follow the program specific wallpapers.

#### 1.2.1.2 HMI-REQ-302191/B-Background

The overlaying graphics will apply the precedence when other information is shown in background. (For e.g. in any program where Navigation and active Setting menu is shown on same place, then Navigation will not be shown when Settings menu is active, but the other information that are non-overlapping will be shown)

**Note:** In all latest programs, HMI wallpapers already handling overlaying graphics.

### 1.2.2 HMI-REQ-406608/B-DTE (Distance to Empty)

#### 1.2.2.1 HMI-REQ-400468/B-DTE Timeout and Near Navigation

DTE will timeout temporarily when there is Turn By Turn or Near Navigation appear on HUD.

#### 1.2.2.2 HMI-REQ-406594/A-DTE Display when its Low DTE

DTE only displays on HUD when it's Low DTE.



### 1.2.2.3 HMI-REQ-407044/B-Low DTE Display Criteria with IPC Signal "FuelLvWarn\_D\_Actl"

Low DTE value will appear on HUD when HUD receive this signal "FuelLvWarn\_D\_Actl" from cluster with FuelLvWarn = 0x1 (Low) or FuelLvWarn = 0x2 (Very Low) values.

**Note:**

For Low DTE please follow the STSS "HUD\_Distance to Empty Function - CGEA1.3+\_v1.4".

### 1.2.2.4 HMI-REQ-435937/A-Low DTE Display Criteria with PCM Signal "FuelLvWarn\_D\_ActlEng"

Low DTE value will appear on HUD when HUD receive this signal "FuelLvWarn\_D\_ActlEng" from PCM with following values:

State Encoded	Trigger on Low DTE Range
DteLevel3 (0x5)	25 mi/ 40 km
DteLevel4 (0x6)	10 mi/ 20 km
DteLevel5Lowest (0x7)	0 mi/ 0 km

**Note:**

For Low DTE please follow the STSS "HUD\_Distance to Empty Function - CGEA1.3+\_v1.5".

### 1.2.2.5 HMI-REQ-407043/B-DTE Display all the time

Vehicle DTE will display on HUD all the time.

### 1.2.2.6 HMI-REQ-406595/A-Low DTE color to amber

Low DTE (Fuel icon & value) will always appear in amber color.

### 1.2.2.7 HMI-REQ-406593/B-DTE and Layouts

DTE (Distance to Empty) is only available on "Normal" layout. **All other layouts/views do not show DTE.**

### 1.2.2.8 HMI-REQ-406596/B-Low DTE and Priority with Other elements

Low DTE has higher priority than Outside Air Temperature **or Time.**

### 1.2.3 HMI-REQ-406601/A-Digital Speedometer

#### 1.2.3.1 HMI-REQ-406604/B-Digital Speedometer and Layouts

Digital Speedometer will display on different locations, depending on the selection of layouts/views and DAT features.

### 1.2.4 HMI-REQ-406609/B-Time and Temperature On Status Bar

#### 1.2.4.1 HMI-REQ-400469/B-Time and Temperature for ROW

Time and Temperature on Status Bar will not be displayed for ROW.

#### 1.2.4.2 HMI-REQ-406610/B-Time and Temperature and Layouts

"Time" and "Temperature" will only be available in "Normal" layout/view.  
All other layouts/views will not display "Time" and "Temperature".

#### 1.2.4.3 HMI-REQ-406611/A-Time and Far Navigation

Time in "Normal" layout/view may arbitrate with Far Navigation. If a spill over occurs in translatable space then in that case, the Navigation asset will take priority and time will remove entirely until the conflict resolves.

#### 1.2.4.4 HMI-REQ-464397/A-Temperature on Status Bar

**HUD will show Temperature on Status Bar.**



#### 1.2.4.5 HMI-REQ-406612/A-Temperature and Low DTE

Temperature has Low priority then Low DTE event.

#### 1.2.4.6 HMI-REQ-400941/B-Temperature color to Amber

For all MY22 and onwards programs; NA Temperature color would change to amber if Temp is below 32°F/0°C

#### 1.2.5 HMI-REQ-406613/A-Gear Display

##### 1.2.5.1 HMI-REQ-302204/B-Gear Selection

The Gear Selection and Select Shift Indication have no timeout, except when Gear show “D” or SSI show “—”.

##### 1.2.5.2 HMI-REQ-406614/B-Gear Selection and Layouts

“Gear” state will show in all layouts/views except “Normal” layout/view.

##### 1.2.5.3 HMI-REQ-406615/A-Gear State Display

Gear State will only display “D” and “M” states. “P”, “R” and “N” states will not show on HUD.

#### 1.2.6 HMI-REQ-406623/A-Vehicle Pitch

##### 1.2.6.1 HMI-REQ-406626/B-Pitch and Layouts

Pitch graphics are only available in Off Road view.

##### 1.2.6.2 HMI-REQ-406629/A-Pitch and Display values

Pitch graphics never display negative values.

##### 1.2.6.3 HMI-REQ-406633/A-Pitch and HUD Settings

Vehicle Pitch is configurable and appear on HUD when Pitch is enabled in HUD Settings and disappear on HUD when Pitch is disabled in HUD Settings.

##### 1.2.6.4 HMI-REQ-406635/B-Vehicle Pitch and Tachometer

If Vehicle Pitch is disabled, then full size Tachometer will display. If vehicle Pitch is enabled, then small size Tachometer will display.

##### 1.2.6.5 HMI-REQ-406861/C-Pitch Color and Drive Modes

Following Drive Modes colors will appear for Pitch:

HUD_Selectable_Drive_Mode	Pitch Color
Normal	Blue*
Tow Haul	Red or Grey*
Rock Crawl	Amber*
Trail / Rough Road, Deep Snow / Sand, Mud / Rut	Green or Light Brown*
Low Mu / Slippery	Light Blue*
Economy	Light Green*
Sport	Copper*
Baja	Amber*
All Other Cases	Blue*

**Note:**

\*Program wallpapers determine for applicable Drive Modes for that program and corresponding colors



## 1.2.7 HMI-REQ-406624/A-Vehicle Roll

### 1.2.7.1 HMI-REQ-406627/B-Roll and Layouts

Roll graphics are only available in Off Road view.

### 1.2.7.2 HMI-REQ-406631/A-Roll and Display values

Roll graphics never display negative values.

### 1.2.7.3 HMI-REQ-406634/A-Roll and HUD Settings

Vehicle Roll is configurable and appear on HUD when Roll is enabled in HUD Settings and disappear on HUD when Pitch is disabled in HUD Settings.

### 1.2.7.4 HMI-REQ-406636/B-Vehicle Roll and Tachometer

If Vehicle Roll is disabled, then full size Tachometer will. If vehicle Roll is enabled, then small size Tachometer will display.

### 1.2.7.5 HMI-REQ-406862/C-Roll Color and Drive Modes

Following Drive Modes colors will appear for Roll:

HUD_Selectable_Drive_Mode	Roll Color
Normal	Blue*
Tow Haul	Red or Grey*
Rock Crawl	Amber*
Trail / Rough Road, Deep Snow / Sand, Mud / Rut	Green or Light Brown*
Low Mu / Slippery	Light Blue*
Economy	Light Green*
Sport	Copper*
Baja	Amber*
All Other Cases	Blue*

#### Note:

\*Program wallpapers determine for applicable Drive Modes for that program and corresponding colors.

## 1.2.8 HMI-REQ-406638/A-Driveline

### 1.2.8.1 HMI-REQ-406640/B-Driveline and Layouts

Driveline and related RTTs (Turn Assist, eLocker, StabBar, TPMS, Steering Wheel Angle, Pitch, Roll, Trail Control) are only shown on Off Road layout/view. "Normal" and Tow Haul" layouts/views will not show these RTTs.

1-Pedal drive RTT will show on "Off Road" and "Baja" layout/view.

**Note:** All RTTs appear on HUD according to the configurations of particular vehicle program. If any RTT related config is disabled then that RTT will not show on HUD for that program.

## 1.2.9 HMI-REQ-406650/A-Tachometer

### 1.2.9.1 HMI-REQ-406651/B-Tachometer and Layout

Tachometer is shown in "Tow Haul" and "Off Road" views/layouts only. All other layouts do not show Tachometer.

### 1.2.9.2 HMI-REQ-406652/A-Tachometer and sizes

Tachometer consists of two forms: "Full Size" and "Small Size".



“Full Size” is shown 100% of the time for “Tow Haul” view.

“Small Size” is the default size for “Off Road” view, however, if the customer turns off the pitch/roll assets for “Off Road”, then “Full Size” Tachometer is shown in “Off Road” view.

#### 1.2.9.3 HMI-REQ-406653/A-Tachometer and "RPMx1000" Label timeout

The “RPMx1000” label is displayed on Tachometer and when TACHOMETER\_RPM\_TIMEOUT expires, then “RPMx1000” label will disappear.

#### 1.2.9.4 HMI-REQ-406812/C-Tachometer color and Drive Modes

Tachometer colors will appear according to the below Drive Modes:

HUD_Selectable_Drive_Mode	Tachometer Color
Normal	Blue*
Tow Haul	White or Grey*
Rock Crawl	Amber*
Trail / Rough Road, Deep Snow / Sand, Mud / Rut	Green or Light Brown*
Low Mu / Slippery	Light Blue*
Economy	Light Green*
Sport	Copper*
Baja	Amber*
All Other Cases	Blue*

#### Note:

\*Program wallpapers determine for applicable Drive Modes for that program and corresponding colors.

#### 1.2.10 HMI-REQ-464277/A-PSI (Performance Shift Indicator)

##### 1.2.10.1 HMI-REQ-464297/A-PSI and Layout

PSI (Performance Shift Indicator) is shown in “Baja” layout/view. All other layouts/views do not show PSI feature.

#### 1.2.11 HMI-REQ-406642/A-DAT Features

##### 1.2.11.1 HMI-REQ-302187/C-ACC text warning is in the same graphic location

If ACC text warning is in the same graphic location as ACC prompts/messages (ACC Stop & Go text fields), LKS/LCA (Limited Mode)/Highway Assist (Extended Mode) Lanes, ACC Lead Car, ACC Gaps, then only ACC Text Warnings will be shown.

##### 1.2.11.2 HMI-REQ-406644/A-NCC, ACC, iACC and display color

NCC (Normal Cruise Control) displays in Green color.

ACC (Adaptive Cruise Control) and iACC (Intelligent Adaptive Cruise Control) display in blue color.

##### 1.2.11.3 HMI-REQ-408173/A-ACC Warnings/prompts Text color and Triangle color (If Any)

Features	Warning/Message Text	Warning or Message(Prompt)	Warning/Message Text Color	Triangle
<b>ACC</b>				
	Stopped	Message(Prompt)	White	No
	Press X/P to resume	Message(Prompt)	White	No
	CANCELED	Warning	Amber	No
	Auto-Resume	Message(Prompt)	White	No
	Speed too low to activate	Warning	White	No



	Resume Control	Warning	White	Red Triangle
	ACC Brake capacity (Image)	FCW Red flashing image	N/A	N/A

**\*Note:** Above warnings and messages (prompts) are only applicable to any program if that particular feature is enabled for that program.

#### 1.2.11.4 HMI-REQ-406645/A-iACC and Blue highlighted Speed limit

Speed limit signs are highlighted in blue when in iACC (i.e., when the vehicle automatically adjusts the set speed to the target speed limit sign). They are not highlighted in blue when in ACC.

#### 1.2.11.5 HMI-REQ-406646/A-iACC 2.0 and RTTs

All programs, which are having iACC 2.0 will display iACC RTTs/symbols. iACC RTTs appear when the vehicle intentionally slows for roundabouts, exit ramps or road curves. When the vehicle actively slowing down for this event, the iACC RTTs/symbols appear.

#### 1.2.11.6 HMI-REQ-302188/C-LCA (Limited Mode) Warning

If showing **LCA (Limited Mode)** Warning – “Vehicle Slowing Down”/“Resume Control” then graphics for LKS/**LCA (Limited Mode)/Highway Assist (Extended Mode)** Lanes, ACC Lead Car, and ACC Gaps shall not be shown.

Note: In latest HUD programs “Vehicle Slowing Down” warning is replaced with “Resume Control”. Follow wallpapers for graphic/placement.

#### 1.2.11.7 HMI-REQ-343157/D-LCA (Limited Mode) Canceled

**LCA (Limited Mode)** “Canceled” text has lower priority than the ACC warnings and higher priority than ACC prompts if displaying on common space.

#### 1.2.11.8 HMI-REQ-343156/D-LCA-Lane Centering Assist (Limited Mode)

The LCA (Limited Mode) Icon shall always appear in the center **unless the Tachometer is shown**.

**Note:** Follow the program specific wallpapers and layouts for showing LCA icon.

#### 1.2.11.9 HMI-REQ-408172/A-Highway Assist/LCA warnings/prompts Text color and Triangle color (If Any)

Features	Warning/Message Text	Warning or Message(Prompt)	Warning/Message Text Color	Triangle
<b>Highway Assist/Extended Mode</b>				
	Watch The Road	Level 1 warning	White	No
	Watch The Road	Level 2 warning	Amber	Amber Triangle
<b>LCA</b>				
	Keep Hands on Steering Wheel	Level 1 warning	White	No
	Keep Hands on Steering Wheel	Level 2 warning	Amber	Amber Triangle
	Resume Control	Warning	White	Red Triangle
	Press Accelerator Pedal to Resume	Warning	White	No
	CANCELED	Warning	Amber	No

**\*Note:** Above warnings and messages (prompts) are only applicable to any program if that particular feature is enabled for that program.

1.2.11.10 HMI-REQ-406643/B-ADAS Features and Layouts

All ADAS contents are only available in “Normal” and “Tow Haul” layout/view. Off Road and Baja layout/view do not show ADAS contents.

1.2.11.11 HMI-REQ-407289/A-ALC (Assisted Lane Change)1.2.11.11.1 HMI-REQ-407290/A-ALC (Assisted Lane Change) Prompts/Messages

ALC (Assisted Lane Change) prompts/messages have low priority than other ADA (Active Drive Assist) = Highway Assist (Extended Mode)/ LCA (Highway Assist-Limited Mode) and ACC feature warnings/prompts/messages.

1.2.11.11.2 HMI-REQ-408174/B-ALC warnings/prompts Text color and Triangle color (If Any)

Features	Warning/Message Text	Warning or Message(Prompt)	Warning/Message Text Color	Triangle
<b>ALC</b>				
	Assisted Lane Change available	Message(Prompt)	White	No
	Lane Change Suggested	Message(Prompt)	White	No
	CANCELED	Warning	Amber	No

**\*Note:** Above warnings and messages (prompts) are only applicable to any program if that particular feature is enabled for that program.

1.2.12 REQ-406816/B-Drive Modes1.2.12.1 HMI-REQ-412683/B-Selectable Drive Modes and HUD Layouts

HUD Drive Mode Layout	HUD_Selectable_Drive_Mode	HUD HMI Layouts
Automatic	Normal	Normal
Automatic	Sport	Normal
Automatic	Tow Haul	Tow Haul
Automatic	Rock Crawl	Off-Road
Automatic	Trail / Rough Road	Off-Road
Automatic	Deep Snow / Sand	Off-Road
Automatic	Mud / Rut	Off-Road
Automatic	Baja*	Baja*
Automatic	X	Normal
Tow Haul	X	Tow Haul
Off-Road	X	Off-Road
Baja	X	Baja*
All Other Cases	X	Normal

Note: “HUD Drive Mode Layout” are defined in HUD Settings and available in “STSS: HUD\_Memory\_Save\_and\_Recall - CGEA1.3+\_v1.16”

“HUD\_Selectable\_Drive\_Mode” is defined in “STSS: HUD\_Selectable\_Drive\_Mode\_Control\_Function\_FNV3\_v1.0”

\*P702 Base program doesn't have “Baja” layout, but P702 Raptor would have “Baja” layout.

For program specific drive modes always follow the program specific graphics.

1.2.12.2 HMI-REQ-406815/C-Drive Modes and colors for (Navigation, Tachometer, Pitch, Roll & HUD Settings)

HUD will show different colors according to the Drive Mode selection.

Following Drive Modes colors appear for below features:

HUD_Selectable_Drive_Mode	HUD Features	HUD Features Color
Normal	Navigation, Pitch, Roll,	Blue*





	Tachometer, Trailer Brake Output, HUD Adjustment Settings	
Tow Haul	Navigation, Pitch, Roll	Red or Grey*
Tow Haul	Tachometer, Trailer Brake Output, HUD Adjustment Settings	White or Grey*
Rock Crawl	Navigation, Pitch, Roll, Tachometer, Trailer Brake Output, HUD Adjustment Settings	Amber*
Trail / Rough Road, Deep Snow / Sand, Mud / Rut	Navigation, Pitch, Roll, Tachometer, Trailer Brake Output, HUD Adjustment Settings	Green or Light Brown*
Low Mu / Slippery	Navigation, Pitch, Roll, Tachometer, Trailer Brake Output, HUD Adjustment Settings	Light Blue*
Economy	Navigation, Pitch, Roll, Tachometer, Trailer Brake Output, HUD Adjustment Settings	Light Green*
Sport	Navigation, Pitch, Roll, Tachometer, Trailer Brake Output, HUD Adjustment Settings	Copper*
Baja	Navigation, Pitch, Roll, Tachometer, Trailer Brake Output, HUD Adjustment Settings	Amber*
All Other Cases	Navigation, Pitch, Roll, Tachometer, Trailer Brake Output, HUD Adjustment Settings	Blue*

**Note:** \*Program wallpapers determine for applicable Drive Modes for that program and corresponding colors.

#### 1.2.13 REQ-406858/A-Trailer Brake Output

##### 1.2.13.1 HMI-REQ-406859/B-Trailer Brake Output and Layouts

Trailer Brake Output only show on “Tow Haul” layout. All other layouts will not display Trailer Brake Output.

##### 1.2.13.2 HMI-REQ-406860/A-Trailer Brake Output and Priority with ADAS warnings and Near Nav

Trailer Brake Output will display on top where HUD display all ADAS warnings.

If any ADAS warning appear on HUD along with Trailer Brake Output then Trailer Brake Output will display below ADAS warning. So any warning appear on HUD has high priority then Trailer Brake Output.

If ADAS Warning, Trailer Brake Output and Near Navigation appear on HUD at same time then ADAS warning will appear on top then below ADAS warning Trailer Brake Output will appear and Near Navigation will disappear for time being until ADAS warning and Trailer Brake Output is there on HUD.

##### 1.2.13.3 HMI-REQ-407042/C-Trailer Brake Output color and Drive Modes

Trailer Brake Output colors will appear according to the below Drive Modes:

HUD_Selectable_Drive_Mode	Trailer Brake Output Colors
Normal	Blue*



Tow Haul	White or Grey*
Rock Crawl	Amber*
Trail / Rough Road, Deep Snow / Sand, Mud / Rut	Green or Light Brown*
Low Mu / Slippery	Light Blue*
Economy	Light Green*
Sport	Copper*
Baja	Amber*
All Other Cases	Blue*

**Note:**

\*Program wallpapers determine for applicable Drive Modes for that program and corresponding colors.

**1.2.14 Control Mirrors****1.2.14.1 HMI-REQ-302192/A-Time Out**

-Control Mirrors shall timeout on CM\_Timer. Retriggerring shall restart this timer.

**1.2.14.2 HMI-REQ-302199/A-Priority**

-The Control Mirrors do not have any priority. Every new trigger for the control mirror will override the existing one displayed.

**1.2.14.3 HMI-REQ-302200/A- Minimum display time**

-A control mirrors shall be displayed for a minimum display time of MIN\_CM\_DISP\_TIME, before triggering another control mirror.

**1.2.14.4 HMI-REQ-302201/A-No Gap**

-There shall be no gap between 2 control mirrors, if a new one is triggered within the timeout of the previous.

**1.2.14.5 HMI-REQ-302202/A-Control mirror data display**

-If a data is displayed in the Control mirror, the value shall be updated in display, if data changes within timeout. (Need to ensure each value is displayed for MIN\_CM\_DISP\_TIME)

**1.2.14.6 HMI-REQ-302203/A-More than one control mirror**

-If more than one control mirror occurs within MIN\_CM\_DISP\_TIME, consider only the latest occurrence and ignore all the intermediate triggers.

**1.2.14.7 HMI-REQ-406814/B-Control Mirror (Phone/audio) and Layouts**

Phone and audio will display in Normal and Tow Haul layouts. All other layouts will not display phone/audio.

**1.2.15 Display Off Handling****1.2.15.1 HMI-REQ-302205/A-HUD shall switch on/off**



-The HUD shall switch on/off the image depending on the value of HUD\_On\_Off. Only image is switched off during this time, but core logic in HUD shall be running in the background to show critical features such as FCW warning immediately. During Image off, HUD illumination shall be set to zero, to make sure no image is visible in windshield.

#### 1.2.15.2 HMI-REQ-302206/A-FCW Image position

-The FCW Image position shall be automatically centered (default position) unless memory is recalled or image adjusted in the current ignition cycle (This is applicable only if display is off)

### 1.2.16 Navigation

#### 1.2.16.1 HMI-REQ-302207/A-Arrived at waypoint

The arrived at waypoint and arrived at destination display shall timeout after NAV\_DEST\_TIMEOUT

#### 1.2.16.2 HMI-REQ-302208/A-Loading

"Loading.." shall be displayed during Startup animation only when RouteActive\_St is Active prior to the start of Startup animation. If Route transitions to Active during the course of Startup animation, then "Loading.." shall not be shown even after Startup animation is completed. Also, if Route transitions to Inactive during the course of Startup animation, then "Loading.." shall continue to be shown until the completion of Startup animation.

"Loading.." shall continue to be shown after Startup animation completion at key ON until one of the following conditions become TRUE:





NAV\_LOADING\_TIMEOUT timer expires

SYNC transmits information to show the NAV sign, which also includes Off Route, Calc. Route and No Route.









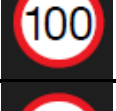

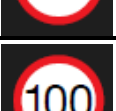


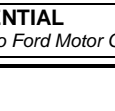

Route becomes Inactive

Note: REQ-302208 is applicable only for the programs whose wallpaper defines "Loading.." and is part of the startup animation

#### 1.2.16.3 HMI-REQ-302209/B- Navigation Speed Limit

Market Code	Country Code	Speed Limit Sign
USA	US	
GUAM	GUM	
PUERTO RICO	PRI	
CANADA	CAN	



MEXICO	MX	
PANAMA	PAN	
DOMINICAN REPUBLIC	DOM	
ARUBA	ABW	
JORDAN	JOR	
SAUDI ARABIA	SAU	
OMAN	OMN	
YEMEN	YEM	
LEBANON	LBN	
BAHRAIN	BHR	
KUWAIT	KWT	
QATAR	QAT	
UNITED ARAB EMIRATES	ARE	
SOUTH KOREA	KOR	
CHINA	CHN	



\*Other regions to be considered in the future

#### 1.2.16.4 HMI-REQ-406649/B-Navigation and Layouts

Navigation is only available in Normal and Tow Haul layouts/views. All other layout/view doesn't show Navigation.

#### 1.2.16.5 HMI-REQ-406813/C-Navigation color and Drive Modes

Navigation colors will appear according to the below Drive Modes:

HUD_Selectable_Drive_Mode	Navigation Color
Normal	Blue*
Tow Haul	Red or Grey*
Rock Crawl	Amber*
Trail / Rough Road, Deep Snow / Sand, Mud / Rut	Green or Light Brown*
Low Mu /Slippery	Light Blue*
Economy	Light Green*
Sport	Copper*
Baja	Amber*
All Other Cases	Blue*

**Note:**

\*Program wallpapers determine for applicable Drive Modes for that program and corresponding colors.

#### 1.2.16.6 HMI-REQ-407068/A-Far Navigation and Tachometer in Tow Haul view

In Tow Haul view, when Tachometer is displayed on HUD then Far Navigation will appear above Gear display.

### 1.2.17 SLIF/TSR

#### 1.2.17.1 HMI-REQ-302210/A-SLIF/TSR is disabled

If SLIF/TSR is disabled, then ISA-Intelligent Speed Assistance and IACC- Intelligent Adaptive Cruise Control shall not be shown

#### 1.2.17.2 HMI-REQ-302211/B-SLIF/TSR has a faulty condition

If SLIF/TSR has a faulty condition, ISA- Intelligent Speed Assistance and IACC- Intelligent Adaptive Cruise Control shall be shown with a “connector between iACC and TSR- refer to the HMI wallpaper

#### 1.2.17.3 HMI-REQ-302217/B-Traffic Sign Recognition (TSR)

If TSR is enabled, then PHEV state of charge and DTE shall not be shown on the right side of HUD. \*This only applies to U611.



## 1.2.18 HMI-REQ-302218/B-Bluetooth Phone

Incoming call icon display shall timeout after BT\_PHONE\_TIMEOUT.

### 1.2.18.1 HMI-REQ-302189/B-Phone notification

Phone notification should cause the Distance & Street name not to be displayed. The Near\_NAV sign will continue to be displayed. When BT\_PHONE\_TIMEOUT expires, the Distance & Street name will be displayed again.

## 1.2.19 Image Density Setting

### 1.2.19.1 HMI-REQ-302212/B- HUD Image Density is set to Low

- If the HUD Image Density is set to Low (Feat Num: 0xC03 = 0x0 in Memory recall STSS), following data will be removed from the Status bar:
  - o DTE/Fuel Icon
  - o Time
  - o Outside Air Temperature
  - o Compass (if available for the program)

### 1.2.19.2 HMI-REQ-302213/A-HUD Image Density is set to High

- If the HUD Image Density is set to High (Feat Num: 0xC03 = 0x1 in Memory recall STSS) the above data will be reverted back to status bar.

## 1.2.20 ADAS Display Settings

### 1.2.20.1 HMI-REQ-302214/C-HUD ADAS = 0

HUD_ADAS = 0	Do not display graphics related to the following: <ul style="list-style-type: none"><li>:NCC- Normal Cruise Control</li><li>:ACC/iACC- Adaptive Cruise Control/Intelligent Adaptive Cruise Control</li><li>:LCA- Lane Centering Assist (Limited Mode)/Highway Assist (Extended Mode), ALC (Assisted Lane Change)</li><li>: LKS – Lane Keeping System</li><li>:ASLD/ISA- Adjustable Speed Limiter Device/ Intelligent Speed Assistance</li></ul>
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### 1.2.20.2 HMI-REQ-302215/C-HUD ADAS = 1(CC+LKS)

HUD_ADAS = 1 (CC+LKS)	Display Graphics for the following features: <ul style="list-style-type: none"><li>:NCC- Normal Cruise Control</li><li>:ACC/iACC- Adaptive Cruise Control/Intelligent Adaptive Cruise Control</li><li>:LCA- Lane Centering Assist (Limited Mode)/ Highway Assist (Extended Mode), ALC (Assisted Lane Change)</li><li>:LKS – Lane Keeping System</li><li>:ASLD/ISA- Adjustable Speed Limiter Device/ Intelligent Speed Assistance</li></ul>
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### 1.2.21 HMI-REQ-408309/B-BLIS

#### 1.2.21.1 HMI-REQ-408310/C-BLIS and Drive Mode Layout

BLIS will not appear in Off Road and Baja layout.

#### 1.2.21.2 HMI-REQ-408311/A-BLIS and Turn Signal Telltale

On HUD display, BLIS and Turn Signal will not share the common place if config "Turn\_Signal\_Shared\_Location\_Cfg = 0".

#### 1.2.21.3 HMI-REQ-410772/A-BLIS and Hazard ON

HUD will not display BLIS when Hazard mode is ON.

### 1.2.22 HMI-REQ-401062/A-HUD-Cluster Redundancy for HUD Contents

IF "Hud\_Cluster\_Rdndnt\_Cfg" = "0" Then

HUD will send Signal "HudRdndntCfg\_B\_Stat" = (0x0) to IPC So that there is no redundancy between HUD and cluster for all HUD contents.

IF "Hud\_Cluster\_Rdndnt\_Cfg" = "1" Then

HUD will send Signal "HudRdndntCfg\_B\_Stat" = (0x1) to IPC So that there is redundancy between HUD and cluster for all HUD contents.

**Note:** This configuration and signal is added to support those HUD programs, which doesn't have IRR coating or WCF (Windshield Combiner Film) on windshield and for those programs, HUD will lose brightness due to non IRR coating or WCF.

### 1.2.23 HMI-REQ-410797/A-HUD Adjustments/Settings

#### 1.2.23.1 HMI-REQ-409325/A-HUD User Vertical Adjustment

##### 1.2.23.1.1 HMI-REQ-409326/A-HUD Vertical Adjustment with 13 steps

For HUD Vertical Adjustment; If HUD mirror motor support 13 steps then HUD will allow user to adjust only 13 steps (0 to 12). Default value for (HUD\_Vertical\_Pos) is (0x6) which is step 7.  
Max Vertical position (VERT\_POS\_MAX) value is 12; (0x0C) which is step 13.

##### 1.2.23.1.2 HMI-REQ-409327/C-HUD Vertical Adjustment with 24 steps

For HUD Vertical Adjustment; If HUD mirror motor support 24 steps then HUD will allow user to adjust only 24 steps (0 to 23). Default value for (HUD\_Vertical\_Pos) is 14; (0x0E).  
Max Vertical position (VERT\_POS\_MAX) value is 23; (0x17) which is step 24.

#### 1.2.23.2 HMI-REQ-410798/A-HUD Adjustment/Setting Prompt and ADAS prompt/warning

When HUD adjustment/setting is active and any ADAS prompt/warning occurs then HUD adjustment prompt "Press OK to Exit" will display on second line and would have high priority then whatever is displaying on second line.

### 1.2.24 HMI-REQ-464317/A-V2I

#### 1.2.24.1 HMI-REQ-464337/A-V2I and China Region

HUD V2I feature will show for China Region only.

**Note:** Follow the program specific wallpapers for HUD V2I feature.



### 1.2.25 FS-REQ-302184/B- Function Safety Classification (EMC)

B

### 1.2.26 NVM-REQ-302185/A- Memory Storage

Parameter Name	Description	Value at Battery Connect	Value at Module Wake-up
Operational_Mode	4 state indicator for HUD operational mode	Limited	Limited, Normal or Crank

### 1.2.27 NVM-REQ-302219/B-Timer Definitions

Timers shall be programmable within the following range : *					
Timer Name	Duration	Description	Min	Max	Resolution
CM_Timer	4 s	Minimum duration that a New Control mirror must be displayed.	0 s	10 s	1 s
MIN_CM_DISP_TIME	0 s	Duration that first control mirror is displayed when a second control mirror gets active at the same time. (No minimum display time for D544 HUD to match cluster control mirrors)	0 s	5 s	1 s
NAV_DEST_TIMEOUT	3 s	Duration which Navigation arrived at destination or waypoint is displayed	1 s	10 s	1 s
NAV_LOADING_TIMEOUT	25 s	Duration "Loading.." shall continue to be shown after Startup animation completion at key ON	0 s	255 s	1 s
BT_PHONE_TIMEOUT	4 s	Duration which Incoming Call is displayed	1 s	10 s	1 s
PHEV_DTE_TIMEOUT	4s	Duration which PHEV DTE is displayed when PHEV DTE IS missing/invalid or value of '0'	1 s	10 s	1 s
TACHOMETER_RPM_TIMEOUT	10s	Duration which "RPMx1000" label display on Tachometer.	0 s	255s	1 s
* Note: Timers must be programmable to at least the Max value listed. Higher Max values and finer resolutions are acceptable. These values are expected to be programmable through a Ford/Supplier DID during development, but not expected to be field programmable					

## 1.3 Error Handling

### 1.3.1 Missing Message Strategy

#### 1.3.1.1 Missing signal reference

The signals will be declared missing as per the Diagnostics section of this SPSS.

#### 1.3.1.2 States & History

DTCs states and history will be determined as per the Diagnostics section of this SPSS.





## 1.4 Diagnostics

### 1.4.1 Self Test

None

### 1.4.2 Engineering Test Mode

Reference section "Dealer / Engineering Test Mode (ETM)"

### 1.4.3 Part II Performance

#### Supported Diagnostic Trouble Codes (DTCs)

None

#### 1.4.3.1 DID-REQ-403674/A-Supported Diagnostic DIDs (Service \$22 and \$2E)

Number	DID / CommonID Name	DID Type	Comments
\$603B	Head Up Display PHEV Distance To Empty Timeout	State Encoded	This DID; defines the duration which PHEV DTE is displayed when PHEV DTE is missing/invalid or value of '0'.Note: Timers must be programmable to at least the Max value listed. Higher Max values and finer resolutions are acceptable. This DID is used for Timer 'PHEV_DTE_TIMEOUT'.
\$603C	Head Up Display Control Mirror Timer	Packeted	<b>Head Up Display Control Mirror Timer:</b> The first "State Encoded" parameter of this DID defines the duration that first control mirror displays when a second control mirror gets active at the same time. The First parameter of this DID is used for "CM_Timer"  <b>Head Up Display Minimum Control Mirror Display Time:</b> The second "State Encoded" parameter of this DID defines Minimum duration that a new control mirror must display. Second parameter of this DID s used for "MIN_CM_DISP_TIME".  Note: Timers must be programmable to at least the Max value listed. Higher Max values and finer resolutions are acceptable.
\$603D	Head Up Display Navigation Timeout	Packeted	<b>Navigation Destination Timeout:</b> The first "State Encoded" parameter of this DID defines the duration "Loading..." shall continue to be shown after Startup animation completion at key ON. Note: Timers must be programmable to at least the Max value listed. Higher Max values and finer resolutions are acceptable. The first parameter of this DID is used for "NAV_DEST_TIMEOUT".



			<b>Navigation Loading Timeout:</b> The second "Unsigned Numeric" parameter of this DID defines duration, which navigation arrived at destination, or waypoint display. Note: Timers must be programmable to at least the Max value listed. Higher Max values and finer resolutions are acceptable. The second parameter of this DID is used for "NAV_LOADING_TIMEOUT".
\$603E	Head Up Display BlueTooth Phone Timeout	State Encoded	This DID defines the duration, which Incoming Call displays. Note: Timers must be programmable to at least the Max value listed. Higher Max values and finer resolutions are acceptable. This DID is used for "BT_PHONE_TIMEOUT".
\$6070	Head Up Display Tachometer RPM DisplayTimeout	Unsigned	This DID defines the duration, which display "RPMx1000" label on Tachometer. Note: Timers must be programmable to at least the Max value listed. Higher Max values and finer resolutions are acceptable. This DID is used for "TACHOMETER_RPM_TIMEOUT".

#### 1.4.3.2 DID-REQ-408130/A-DID DExx:

Block Num	Block Description	Size (bits)	Byte(s)	Bits	State: Description	"0"	"1"	Default	Comments/ Information
PACKETED BLOCKS									
01	Option Content (B&A)	1	7	0	HUD_IPC_Data_R edundancy_Cfg	Disabled	Enabled	Disabled	This config bit should be set to Disabled (0) on HUD If vehicle program windshield has IRR Coating / WCF (Windshield Combiner Film). This config bit should be set to Enabled (1) on HUD if vehicle program windshield doesn't have IRR Coating / WCF (Windshield Combiner Film).

## 1.5 Revision History

### SPSS Module Revision History

Revision Level	Name	Change Description	Date
1.0	A. Mathai	Initial Release	7/29/2014
1.1	A. Mathai	Added Phone notification inhibition and clarified control mirrors	8/28/14
1.2	A. Mathai	Removed Phone notification suppression and added FCW centering during display off	10/28/14
1.3	A. Mathai	Changed MIN_CM_DISP_TIME value to 0s. Added CTA in precedence table.	2/13/14



		Moved the Image adjustment and Control mirror priority up to just below FCW warning.	
1.4	A. Mathai	Removed timeout for Gear shift control mirrors except when showing "D" or "—"	4/16/15
1.5	A. Mathai	Moved the Control mirror priority below Navigation	5/29/15
1.6	A. Mathai	Included timeout for Navigation destination display	6/25/15
1.7	A. Mathai	Clarified to turn illumination to zero during Image off.	1/28/16
1.8	A. Mathai	Included Navigation "Loading Data" requirement and Low density clarification	5/20/16
1.9	A.Salameh	Added Bluetooth Phone timeout for incoming call	6/9/2017
1.10	A. Salameh	Updated Section 1.2.1 Table 1.0 - added PHEV DTE timeout Added section 1.2.7 ADAS display settings Added section 1.2.4.4 & 1.2.4.5	10/6/2017
1.11	A.Salameh	Added notes to section 1.2.1, updated table 1.2.4.3, modified section 1.2.4.5 and added section 1.2.7	11/03/2017
1.12	A. Salameh	Updated section title 1.2.7. Updated 1.2.4.4 and 1.2.4.5	11/14/2017
1.13	A. Salameh	Updated note in section 1.2.1	02/05/2017
1.14	P.Denduku	Initial VSEM RM Release	03/19/2018
1.15	ilopezla	Added REQ-34156 - "Lane Centering Assist (Traffic Jam Assist)"	2/3/2019
1.16	ilopezla	Removed REQ- 302186 "Acc Text Warnings" which indicated that ACC text warnings shall take precedence over TJA Cancelled warning.	2/3/2019
1.17	ilopezla	Added REQ-343157 "TJA Cancelled text has lower priority than the ACC warnings"	2/3/2019
1.18	F. Sethi	<p>Modified "HMI-REQ-302190/B-Order of precedence" while replacing "TJA" with "LCA/Highway Assist". Replaced "ADAS" with "DAT". Added note <b>Note:</b> If program doesn't support any of the above feature then simply ignore that feature. HUD HMI wallpapers are designed in a way that it already covers all features precedence. So always follow the program specific wallpapers."</p> <p>Modified "HMI-REQ-302191/A-Background" while replacing "The overlaying graphics will apply the precedence when other information is shown in background. (For e.g. Navigation will not be shown when Settings menu is active, but the other information that are non-overlapping will be shown)" with "The overlaying graphics will apply the precedence when other information is shown in background. (For e.g. in any program where Navigation and active Setting menu is shown on same place, then Navigation will not be shown when Settings menu is active, but the other information that are non-overlapping will be shown)"</p> <p>Note: In all latest programs, HMI wallpapers already handling overlaying graphics"</p> <p>Modified "HMI-REQ-302188/B-LCA Warning" while modifying "TJA" with "LCA" and adding new warning note; If showing LCA Warning – "Vehicle Slowing Down", graphics for LKS/LCA/Highway Assist Lanes, ACC Lead Car, and ACC Gaps shall not be shown. Note: In latest HUD programs "Vehicle Slowing Down" warning is replaced with "Resume Control". Follow wallpapers for graphic/placement."</p> <p>"Added new requirement "HMI-REQ-400468/A-DTE Timeout": "DTE will timeout temporarily when there is Turn By Turn or Near Navigation appear on HUD"</p> <p>Added new requirement "HMI-REQ-400469/A-Time and Temperature": Time and Temperature on Status Bar will not be displayed for ROW.</p>	10/6/2020



		<p>Added new requirement “HMI-REQ-400941/A-Temperature color to Amber”; For all MY22 and onwards programs; NA Temperature color would change to amber if Temp is below 32°F/0°C”</p> <p>Updated “HMI-REQ-302187/B-ACC text warning is in the same graphic location”; replaced “TJA” with “LCA/Highway Assist”</p> <p>Updated “HMI-REQ-302188/A-TJA Warning” with “HMI-REQ-302188/B-LCA/Highway Assist Warning” and updated “If showing LCA/Highway Assist Warning – Vehicle Slowing Down, graphics for LKS/LCA/Highway Assist Lanes, ACC Lead Car, ACC Gaps shall not be shown.”</p> <p>Updated requirement name to “HMI-REQ-343156/B-Lane Centering Assist (Limited Mode)”</p> <p>Updated “HMI-REQ-343156/B-Lane Centering Assist (Limited Mode)” while removing this requirement “The LCA Icon will appear to the left of the digital speed whenever any ACC Text Warning is being shown or the Stop &amp; Go text is being displayed in the center. Otherwise, the LCA Icon shall appear in the center.” And added “The LCA Icon shall always appear in the center.”</p> <p>Updated “HMI-REQ-343157/A-TJA Cancelled” with “HMI-REQ-343157/B-LCA Cancelled” and updated requirement “TJA” with “LCA”.</p> <p>Updated “HMI-REQ-302214/A-HUD ADAS = 0” while adding LCA/Highway Assist in list</p> <p>Updated “HMI-REQ-302215/B-HUD ADAS =1(CC+LKS) while adding Highway Assist in list.</p> <p>Removed “HMI-REQ-302216/A-HUD ADAD = 2(CC Only)” because all new programs would have HUD ADAS= “0” &amp; “1”</p> <table><tr><td>HUD_ADAS = 2 (CC Only)</td><td>Display Graphics for the following features: :NCC- Normal Cruise Control :ACC/iACC- <del>Adapative</del> Cruise Control/Intelligent Adaptive Cruise Control :LCA- Lane Centering Assist :ASLD/ISA- Adjustable Speed Limiter Device/ <del>Intellegent</del> Speed <del>Assitance</del></td></tr></table>	HUD_ADAS = 2 (CC Only)	Display Graphics for the following features: :NCC- Normal Cruise Control :ACC/iACC- <del>Adapative</del> Cruise Control/Intelligent Adaptive Cruise Control :LCA- Lane Centering Assist :ASLD/ISA- Adjustable Speed Limiter Device/ <del>Intellegent</del> Speed <del>Assitance</del>	
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1.19	F. Sethi	<p>Added new requirement “DID-REQ-403674/A-Supported Diagnostic DIDs (Service \$22 and \$2E) and added below DIDs:</p> <ul style="list-style-type: none"><li>• \$603B</li><li>• \$603C</li><li>• \$603D</li><li>• \$603E</li></ul>	11/19/2020		



1.20	F. Sethi	<p>Clean the whole Spec and rearrange all requirements.</p> <p>Updated REQ-302190, while updating DAT Features/Warnings and DAT Prompts/Messages. Added Trailer Brake output, Deleted Horizontal from Settings/HUD Adjustments</p> <p>Updated REQ-406642, while replacing LCA/Highway Assist with “LCA (Limited Mode)/Highway Assist (Extended Mode)” under all sub requirements.</p> <p>Updated REQ-302214, while updating “LCA- Lane Centering Assist (Limited Mode)/Highway Assist (Extended Mode), ALC (Assisted Lane Change)”</p> <p>Updated REQ-302215, while updating “LCA- Lane Centering Assist (Limited Mode)/ Highway Assist (Extended Mode), ALC (Assisted Lane Change)”</p> <p>Updated REQ-302219, while adding Timer Name “TACHOMETER_RPM_TIMEOUT”</p> <p>Updated DID-REQ-403674, while adding new DID with Name “Head Up Display Tachometer RPM Display Timeout”</p> <p>Added Below new and modified Requirements:</p> <table><tr><td>406594</td><td>DTE Display when its Low DTE</td></tr><tr><td>407044</td><td>Low DTE Display Criteria</td></tr><tr><td>407043</td><td>DTE Display all the time</td></tr><tr><td>406595</td><td>Low DTE color to amber</td></tr><tr><td>406593</td><td>DTE and Layouts (Normal, Off Road and Tow Haul)</td></tr><tr><td>406596</td><td>Low DTE and Priority with Temperature</td></tr><tr><td>406601</td><td>Digital Speedometer</td></tr><tr><td>406604</td><td>Digital Speedometer and Layouts (Normal, Off Road and Tow Haul)</td></tr><tr><td>406610</td><td>Time and Temperature and Layouts (Normal, Off Road and Tow Haul)</td></tr><tr><td>406611</td><td>Time and Far Navigation</td></tr><tr><td>406612</td><td>Temperature and Low DTE</td></tr><tr><td>400941</td><td>Temperature color to Amber</td></tr><tr><td>406614</td><td>Gear Selection and Layouts (Normal, Off Road and Tow Haul)</td></tr><tr><td>406615</td><td>Gear State Display</td></tr><tr><td>406623</td><td>Vehicle Pitch</td></tr><tr><td>406626</td><td>Pitch and Layouts (Normal, Off Road and Tow Haul)</td></tr><tr><td>406629</td><td>Pitch and Display values</td></tr><tr><td>406633</td><td>Pitch and HUD Settings</td></tr><tr><td>406635</td><td>Vehicle Pitch and Tachometer</td></tr><tr><td>406861</td><td>Pitch Color and Drive Modes</td></tr><tr><td>406624</td><td>Vehicle Roll</td></tr><tr><td>406627</td><td>Roll and Layouts (Normal, Off Road and Tow Haul)</td></tr><tr><td>406631</td><td>Roll and Display values</td></tr><tr><td>406634</td><td>Roll and HUD Settings</td></tr><tr><td>406636</td><td>Vehicle Roll and Tachometer</td></tr><tr><td>406862</td><td>Roll Color and Drive Modes</td></tr><tr><td>406638</td><td>Driveline</td></tr><tr><td>406640</td><td>Driveline and Layouts (Normal, Off Road and Tow Haul)</td></tr></table>	406594	DTE Display when its Low DTE	407044	Low DTE Display Criteria	407043	DTE Display all the time	406595	Low DTE color to amber	406593	DTE and Layouts (Normal, Off Road and Tow Haul)	406596	Low DTE and Priority with Temperature	406601	Digital Speedometer	406604	Digital Speedometer and Layouts (Normal, Off Road and Tow Haul)	406610	Time and Temperature and Layouts (Normal, Off Road and Tow Haul)	406611	Time and Far Navigation	406612	Temperature and Low DTE	400941	Temperature color to Amber	406614	Gear Selection and Layouts (Normal, Off Road and Tow Haul)	406615	Gear State Display	406623	Vehicle Pitch	406626	Pitch and Layouts (Normal, Off Road and Tow Haul)	406629	Pitch and Display values	406633	Pitch and HUD Settings	406635	Vehicle Pitch and Tachometer	406861	Pitch Color and Drive Modes	406624	Vehicle Roll	406627	Roll and Layouts (Normal, Off Road and Tow Haul)	406631	Roll and Display values	406634	Roll and HUD Settings	406636	Vehicle Roll and Tachometer	406862	Roll Color and Drive Modes	406638	Driveline	406640	Driveline and Layouts (Normal, Off Road and Tow Haul)	1/25/2021
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		<table><tr><td>406650</td><td>Tachometer</td></tr><tr><td>406651</td><td>Tachometer and Layout (Normal, Off Road, Tow haul)</td></tr><tr><td>406652</td><td>Tachometer and sizes</td></tr><tr><td>406653</td><td>Tachometer and "RPMx1000" Label timeout</td></tr><tr><td>406812</td><td>Tachometer color and Drive Modes</td></tr><tr><td>302187</td><td>ACC text warning is in the same graphic location</td></tr><tr><td>406643</td><td>ADAS Features and Layouts (Normal, Off Road, Tow Haul)</td></tr><tr><td>406644</td><td>NCC, ACC, iACC and display color</td></tr><tr><td>406645</td><td>iACC and Blue highlighted Speed limit</td></tr><tr><td>406646</td><td>iACC 2.0 and RTTs</td></tr><tr><td>302188</td><td>LCA (Limited Mode) Warning</td></tr><tr><td>343157</td><td>LCA (Limited Mode) Canceled</td></tr><tr><td>343156</td><td>LCA-Lane Centering Assist (Limited Mode)</td></tr><tr><td>406816</td><td>Drive Modes</td></tr><tr><td>406815</td><td>Drive Modes and colors for (Navigation, Tachometer, Pitch, Roll &amp; HUD Settings)</td></tr><tr><td>406858</td><td>Trailer Brake Output</td></tr><tr><td>406859</td><td>Trailer Brake Output and Layouts (Normal, Off Road, Tow Haul)</td></tr><tr><td>406860</td><td>Trailer Brake Output and Priority with ADAS warnings and Near Nav</td></tr><tr><td>407042</td><td>Trailer Brake Output color and Drive Modes</td></tr><tr><td>406814</td><td>Control Mirror (Phone/audio) and Layouts (Normal, Off Road, Tow Haul)</td></tr><tr><td>406649</td><td>Navigation and Layouts (Normal, Off Road, Tow Haul)</td></tr><tr><td>406813</td><td>Navigation color and Drive Modes</td></tr><tr><td>407068</td><td>Far Navigation and Tachometer in Tow Haul view</td></tr><tr><td>401062</td><td>HUD-Cluster Redundancy for HUD Contents</td></tr></table>	406650	Tachometer	406651	Tachometer and Layout (Normal, Off Road, Tow haul)	406652	Tachometer and sizes	406653	Tachometer and "RPMx1000" Label timeout	406812	Tachometer color and Drive Modes	302187	ACC text warning is in the same graphic location	406643	ADAS Features and Layouts (Normal, Off Road, Tow Haul)	406644	NCC, ACC, iACC and display color	406645	iACC and Blue highlighted Speed limit	406646	iACC 2.0 and RTTs	302188	LCA (Limited Mode) Warning	343157	LCA (Limited Mode) Canceled	343156	LCA-Lane Centering Assist (Limited Mode)	406816	Drive Modes	406815	Drive Modes and colors for (Navigation, Tachometer, Pitch, Roll & HUD Settings)	406858	Trailer Brake Output	406859	Trailer Brake Output and Layouts (Normal, Off Road, Tow Haul)	406860	Trailer Brake Output and Priority with ADAS warnings and Near Nav	407042	Trailer Brake Output color and Drive Modes	406814	Control Mirror (Phone/audio) and Layouts (Normal, Off Road, Tow Haul)	406649	Navigation and Layouts (Normal, Off Road, Tow Haul)	406813	Navigation color and Drive Modes	407068	Far Navigation and Tachometer in Tow Haul view	401062	HUD-Cluster Redundancy for HUD Contents	
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406813	Navigation color and Drive Modes																																																		
407068	Far Navigation and Tachometer in Tow Haul view																																																		
401062	HUD-Cluster Redundancy for HUD Contents																																																		
1.20	F.Sethi	Added new REQ-407289 ALC (Assisted Lane Change) and REQ-407290 ALC (Assisted Lane Change) Prompts/Messages  Added new requirement "DID-REQ-408130/A-DID DExx:" while adding new config "HUD_IPC_Data_Redundancy_Cfg".	2/2/2021																																																
1.20	F. Sethi	Added new requirements REQ-408173-ACC Warnings/prompts Text color and Triangle color (If Any) , REQ-408172-Highway Assist/LCA warnings/prompts Text color and Triangle color (If Any) and REQ-408174-ALC warnings/prompts Text color and Triangle color (If Any) under REQ-406642-DAT Features.  Added new requirements HMI-REQ-408309/A-BLIS, HMI-REQ-408310/A-BLIS and Drive Mode and HMI-REQ-408311/A-BLIS and Turn Signal Telltale.	2/4/2021																																																



1.20	F. Sethi	<p>Added new requirement "HMI-REQ-409325/A-HUD User Vertical Adjustment" which includes the following: HMI-REQ-409326/A-HUD Vertical Adjustment with 13 steps HMI-REQ-409327/A-HUD Vertical Adjustment with 24 steps</p> <p>Updated DID-REQ-403674, while adding new DID ID \$6070 for DID with Name "Head Up Display Tachometer RPM Display Timeout"</p>	2/17/2021
1.21	F.Sethi	<p>Updated requirement "HMI-REQ-343157/D-LCA (Limited Mode) Canceled" while updating "LCA (Limited Mode) Canceled text has lower priority than the ACC warnings/prompts." to "LCA (Limited Mode) "Canceled" text has lower priority than the ACC warnings and higher priority than ACC prompts if displaying on common space."</p> <p>Updated requirement "HMI-REQ-408310/B-BLIS and Drive Mode" while updating "BLIS will not appear in Tow Haul drive mode." To "BLIS will not appear in Off Road layout." Also updated requirement name from "BLIS and Drive Mode" to "BLIS and Drive Mode Layout"</p> <p>Added new requirement "HMI-REQ-410772/A-BLIS and Hazard ON".</p> <p>Added new requirement "HMI-REQ-410797/A-HUD Adjustments/Settings" and moved requirement "HMI-REQ-409325/A-HUD User Vertical Adjustment" under it.</p> <p>Added new requirement "HMI-REQ-410798/A-HUD Adjustment/Setting Prompt and ADAS prompt/warning".</p>	3/8/2021
1.22	F. Sethi	<p>Updated requirement "HMI-REQ-406861/B-Pitch Color and Drive Modes" while updating the columns heading to "HUD_Selectable_Drive_Mode" and "Pitch Color". Also update table with drive modes and added "All Other Cases" condition.</p> <p>Updated requirement "HMI-REQ-406862/B-Roll Color and Drive Modes" while updating the columns heading to "HUD_Selectable_Drive_Mode" and "Roll Color". Also update table with drive modes and added "All Other Cases" condition.</p> <p>Updated requirement "HMI-REQ-406812/B-Tachometer color and Drive Modes" while updating the columns heading to "HUD_Selectable_Drive_Mode" and "Tachometer Color". Also update table with drive modes and added "All Other Cases" condition.</p> <p>Added new requirement "HMI-REQ-412683/A-Selectable Drive Modes and HUD Layouts</p> <p>Updated requirement "HMI-REQ-406815/B-Drive Modes and colors for (Navigation, Tachometer, Pitch, Roll &amp; HUD Settings) while updating input columns heading to "HUD_Selectable_Drive_Mode" and "HUD Features" and output column heading to "HUD Features Color". Also update table with drive modes and added "All Other Cases" condition.</p> <p>Updated requirement "HMI-REQ-407042/B-Trailer Brake Output color and Drive Modes" while updating the columns heading to "HUD_Selectable_Drive_Mode" and "Trailer Brake Output Color". Also update table with drive modes and added "All Other Cases" condition.</p>	3/31/2021





		Updated requirement "HMI-REQ-406813/B-Navigation color and Drive Modes" while updating the columns heading to "HUD_Selectable_Drive_Mode" and "Navigation Color". Also update table with drive modes and added "All Other Cases" condition.	
1.23	F. Sethi	Updated requirement "HMI-REQ-409327/B-HUD Vertical Adjustment with 24 steps" while updating "Default value for (HUD_Vertical_Pos) is 10; (0x0A) which is step 11." to "Default value for (HUD_Vertical_Pos) is 13; (0x0D) which is step 14."	4/20/2021
1.24	F. Sethi	<p>Rename requirement name "HMI-REQ-407044/B-Low DTE Display Criteria" to "HMI-REQ-407044/B-Low DTE Display Criteria with IPC Signal "FuelLvlWarn_D_Actl""</p> <p>Updated requirement "HMI-REQ-407044" while updating the Note "For Low DTE please follow the STSS "HUD_Distance to Empty Function - CGEA1.3+_v1.4".</p> <p>Added new requirement "HMI-REQ-435937/A-Low DTE Display Criteria with PCM Signal "FuelLvlWarn_D_ActlEng"</p> <p>Updated requirement "HMI-REQ-409327/C-HUD Vertical Adjustment with 24 steps" while changing default vertical position to 14 (0x0E) from 13 (0x0D).</p>	8/12/2021
1.25	F. Sethi	<p>Update requirement in <b>Orange</b> for P702, Cx483 and U611 programs.</p> <p>Updated requirement name "HMI-REQ-406593/B-DTE and Layouts (Normal, Off Road and Tow Haul)" to "HMI-REQ-406593/B-DTE and Layouts" while modifying requirement to "DTE (Distance to Empty) is only available on "Normal" layout. All other layouts/views do not show DTE. "</p> <p>Update requirement name "HMI-REQ-406596/B-Low DTE and Priority with Temperature" to "HMI-REQ-406596/B-Low DTE and Priority with Other elements" and updated requirement to "Low DTE has higher priority than Outside Air Temperature or Time. "</p> <p>Updated requirement name "HMI-REQ-406604/B-Digital Speedometer and Layouts (Normal, Off Road and Tow Haul)" to "HMI-REQ-406604/B-Digital Speedometer and Layouts" and updated requirement to "Digital Speedometer will display on different locations, depending on the selection of layouts/views and DAT features. "</p> <p>Updated requirement name "HMI-REQ-406610/B-Time and Temperature and Layouts (Normal, Off Road and Tow Haul)" to "HMI-REQ-406610/B-Time and Temperature and Layouts" and updated requirement to "Time" and "Temperature" will only be available in "Normal" layout/view. All other layouts/views will not display "Time" and "Temperature".</p> <p>Updated requirement name to "HMI-REQ-406614/B-Gear Selection and Layouts" and updated requirement to "Gear" state will show in all layouts/views except "Normal" layout/view."</p> <p>Updated requirement name from "HMI-REQ-406626/B-Pitch and Layouts (Normal, Off Road and Tow Haul)" to "HMI-REQ-406626/B-Pitch and Layouts"</p> <p>Updated requirement "HMI-REQ-406635/B-Vehicle Pitch and Tachometer" while make it more generic to "If Vehicle Pitch is disabled, then full size Tachometer will display. If vehicle Pitch is enabled, then small size Tachometer will display. "</p> <p>Update requirement "HMI-REQ-406861/C-Pitch Color and Drive Modes" while adding "Baja" and "Sport" in "HUD_Selectable_Drive_Mode". Updated</p>	11/1/2021





“HUD\_Selectable\_Drive\_Mode” “Tow Haul” while adding “Pitch Color” as “Grey” color. Updated “HUD\_Selectable\_Drive\_Mode”, “Trail / Rough Road, Deep Snow / Sand, Mud / Rut” while adding “Pitch Color” as “Light Brown” color. Added “\*” with “Pitch color” to follow the wallpapers.

Updated requirement name from “HMI-REQ-406627/B-Roll and Layouts (Normal, Off Road and Tow Haul)” to “HMI-REQ-406627/B-Roll and Layouts”.

Updated requirement “HMI-REQ-406636/A-Vehicle Roll and Tachometer” while make it more generic to” If Vehicle Roll is disabled, then full size Tachometer will. If vehicle Roll is enabled, then small size Tachometer will display. “

Updated requirement “HMI-REQ-406862/C-Roll Color and Drive Modes” while adding “Baja” and “Sport” in “HUD\_Selectable\_Drive\_Mode”. Updated “HUD\_Selectable\_Drive\_Mode” “Tow Haul” while adding “Roll Color” as “Grey” color. Updated “HUD\_Selectable\_Drive\_Mode”, “Trail / Rough Road, Deep Snow / Sand, Mud / Rut” while adding “Roll Color” as “Light Brown” color. Added “\*” with “Roll color” to follow the wallpapers.

Updated requirement name from “HMI-REQ-406640/B-Driveline and Layouts (Normal, Off Road, Tow Haul)” to “HMI-REQ-406640/B-Driveline and Layouts” and updated requirement while adding “1-Pedal drive RTT will show on “Off Road” and “Baja” layout/view”.

Updated requirement name from “HMI-REQ-406651/B-Tachometer and Layout (Normal, Off Road, Tow Haul)” to “HMI-REQ-406651/B-Tachometer and Layout” and updated requirement while modifying to “Tachometer is shown in “Tow Haul” and “Off Road” views/layouts only. All other layouts do not show Tachometer. “

Update requirement “HMI-REQ-406812/C-Tachometer color and Drive Modes” while adding “Baja” and “Sport” in “HUD\_Selectable\_Drive\_Mode”. Updated “HUD\_Selectable\_Drive\_Mode” “Tow Haul” while adding “Tachometer Color” as “Grey” color. Updated “HUD\_Selectable\_Drive\_Mode”, “Trail / Rough Road, Deep Snow / Sand, Mud / Rut” while adding “Tachometer Color” as “Light Brown” color. Added “\*” with “Tachometer color” to follow the wallpapers.

Updated requirement “HMI-REQ-343156/D-LCA-Lane Centering Assist (Limited Mode)” while updating to “The LCA (Limited Mode) Icon shall always appear in the center unless the Tachometer is shown.  
Note: Follow the program specific wallpapers and layouts for showing LCA icon.”

Updated requirement name “HMI-REQ-406643/A-ADAS Features and Layouts (Normal, Off Road, Tow Haul)” to “HMI-REQ-406643/A-ADAS Features and Layouts” and updated requirement to “All ADAS contents are only available in “Normal” and “Tow Haul” layout/view. Off Road and Baja layout/view do not show ADAS contents.”

Updated requirement” HMI-REQ-412683/B-Selectable Drive Modes and HUD Layouts” while adding “Baja” layout for P708 Raptor program. Added note below the table “\*P702 Base program doesn’t have “Baja” layout but P702 Raptor would have “Baja” layout”. Added Sport “HUD\_Selectable\_Drive\_Mode” to show “Normal” HUD layout. Added note “For program specific drive modes always follow the program specific graphics.”

Updated requirement “HMI-REQ-406815/C-Drive Modes and colors for (Navigation, Tachometer, Pitch, Roll & HUD Settings)”, while adding “Sport” and



"Baja" HUD\_Selectable\_Drive\_Mode in table. Renamed "P708 HUD Features Color" to "HUD Features Color". Updated "HUD\_Selectable\_Drive\_Mode" "Tow Haul" while adding "HUD Features Color" as "Grey" color. Updated "HUD\_Selectable\_Drive\_Mode", "Trail / Rough Road, Deep Snow / Sand, Mud / Rut" while adding "HUD Features Color" as "Light Brown" color. Added "\*" with "HUD Features Color" to follow the wallpapers.

Updated requirement name from "HMI-REQ-406859/B-Trailer Brake Output and Layouts (Normal, Off Road, Tow Haul)" to "HMI-REQ-406859/B-Trailer Brake Output and Layouts". Update requirement to "Trailer Brake Output only appear on "Tow Haul" layout. All other layouts will not show Trailer Brake Output."

Updated requirement "HMI-REQ-407042/C-Trailer Brake Output color and Drive Modes" while adding "Sport" and "Baja" "HUD\_Selectable\_Drive\_Mode". Updated "HUD\_Selectable\_Drive\_Mode" "Tow Haul" while adding "Trailer Brake Output Colors" as "Grey" color. Updated "HUD\_Selectable\_Drive\_Mode", "Trail / Rough Road, Deep Snow / Sand, Mud / Rut" while adding "Trailer Brake Output Colors" as "Light Brown" color. Added "\*" with "Trailer Brake Output Colors" to follow the wallpapers.

Updated requirement name from "HMI-REQ-406814/B-Control Mirror (Phone/audio) and Layouts (Normal, Off Road, Tow Haul)" to "HMI-REQ-406814/B-Control Mirror (Phone/audio) and Layouts". Updated requirement to "Phone and audio will display in Normal and Tow Haul layouts. All other layouts will not display phone/audio."

Updated requirement name from "HMI-REQ-406649/A-Navigation and Layouts (Normal, Off Road, Tow Haul)" to "HMI-REQ-406649/A-Navigation and Layouts". Updated requirement to "Navigation is only available in Normal and Tow Haul layouts/views. All other layout/view doesn't show Navigation."

Updated requirement "HMI-REQ-406813/B-Navigation color and Drive Modes", while adding "Sport" and "Baja" "HUD\_Selectable\_Drive\_Mode". Updated "HUD\_Selectable\_Drive\_Mode" "Tow Haul" while adding "Navigation Color" as "Grey" color. Updated "HUD\_Selectable\_Drive\_Mode", "Trail / Rough Road, Deep Snow / Sand, Mud / Rut" while adding "Navigation Color" as "Light Brown" color. Added "\*" with "Navigation Color" to follow the wallpapers.

Updated requirement "HMI-REQ-408310/C-BLIS and Drive Mode Layout" while updating "BLIS will not appear in Off Road and Baja layout."  
Added new requirement "HMI-REQ-464277/A-PSI (Performance Shift Indicator)" and HMI-REQ-464297/A-PSI and Layout for MY24 P702 Raptor program.

Added new requirement "HMI-REQ-464317/A-V2I" and "HMI-REQ-464337/A-V2I and China Region" for MY23 Cx483 and MY24 U611 vehicle programs.

Added new requirement "HMI-REQ-464397/A-Temperature on Status Bar".