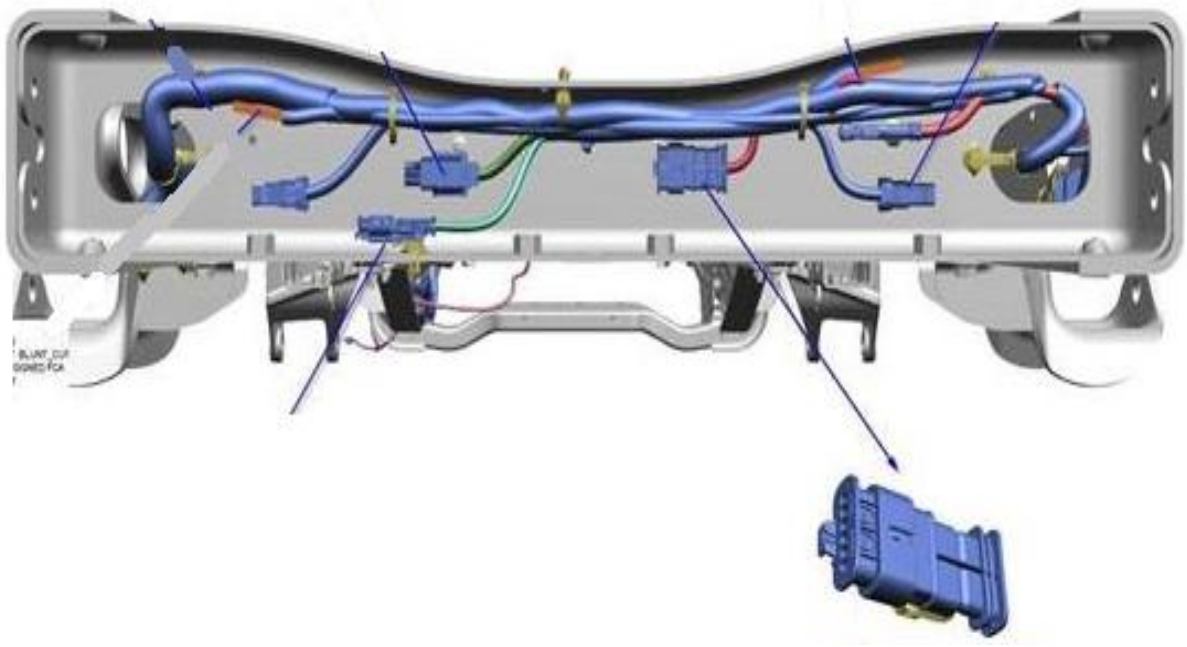
Overview

The analog backup camera (Sales Code is XAC) is available as an option on all chassis cabs with a GVWR of greater than 10,000 lbs. (DD 3500 and DP 4500/5500) It is standard on pickups (DJ 2500 and D2 3500) with box delete. (Sales code XBC) and chassis cabs with a GVWR of 10,000 lbs. and less. (DF 3500) This system use a single analog camera. If the vehicle has surround view (Sales Code XAK) it will have a digital loose ship back up camera. If your vehicle has the digital system, please see the SURROUND VIEW document.

Depending upon radio option, the camera display will either be in the in screen located in the IP center stack or in the rear view mirror. If the vehicle has the Uconnect® 3 with 3 inch non-touch display, (Sales Code UA1) the camera display will be in the rear view mirror. On all other radio/screen combinations, (Sales codes UAA, UAM, UAV or UAX) the camera display will be in the in center stack screen. On vehicles equipped with sales code XAC, the vehicle electronics will be configured to operate properly once the camera is connected. Prior to connection, all monitors will display a blue screen when the vehicle is in reverse. The table below outlines the radio, display and camera options available on chassis cabs and pickups with box delete.

Sales Code	Radio System	Screen Size/Type	Nav/Connectivity	Camera Display
UA1	Uconnect® 3	3” Non-Touch	None	Mirror
UAA	Uconnect® 3	5” Touch Screen	None	Center Stack Screen
UAM	Uconnect® 4	8.4” Touch Screen	None	Center Stack Screen
UAV	Uconnect® 4C	8.4” Touch Screen	Nav and Cellular	Center Stack Screen
UAX	Uconnect® 12.0	12” Touch Screen	Nav and Cellular	Center Stack Screen

There are a number of electrical/wiring features at the rear of the Ram chassis and box delete pickups. These features include the connector for the analog backup camera. The figure below shows the analog back up camera connection.



Analog Camera Connector

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Camera Connection

Chassis cabs and box delete pickups equipped with back up camera XAC will have a camera kit shipped in cab of the vehicle. The kit consists of a user mountable camera and a 10 foot cable. The kit P/N is 68399008AD.



Camera Kit - P/N 68399008AD

One end of the cable plugs into the camera, the other end plugs into the camera connector at the rear of the vehicle. The connector on the vehicle is a female socket located just to the right of center on the rear frame cross member. The connector is secured in such a manner that they may be hidden by the harness bundle and may be difficult to see. Depending on the up fit being installed it may be easier to make this connection prior to installation of the up fit.

Vehicles Built Without Factory Back Up Camera

It MAY be possible to add the factory backup camera to a vehicle that was not equipped with XAC. If the truck has a UA1 (3" screen) it is not possible. In this case, your only option is to install a MOPAR system or go to the aftermarket.

If the chassis cab has either a 5, 8.4 or 12 inch screens AND the analog camera connector is at the back of the chassis, the analog camera may be able to be added. The potential issue is with the wiring. The rear chassis harness may have the connector and associated wiring. The question becomes, is the wiring there in the other harnesses between the chassis harness and the radio. There is a risk that it is not. There is no way to tell without trying it.

To add the camera you can purchase the camera kit (P/N 68399008AD) from any FCA US LLC dealer. Connect the camera and cable to the vehicle. The dealer will need to reconfigure the vehicle electronics to activate the backup camera feature. To do this, the dealer will add sales code XAC to the vehicle VIN in DealerConnect under Vehicle Option Updates. After the sales code is added, the dealer will run the Restore Vehicle Configurations routine with WiTech. Once the electronics are reconfigured, the camera view should be displayed in the screen when the vehicle is in reverse. If that is the case, the camera can be mounted per the instructions below. If the screen display is blue when the vehicle is in reverse, the wiring is missing somewhere in one or more of the harnesses. In this case, the dealer can remove the XAC sales code from the VIN and re-run the Restore Vehicle Configurations routine to turn the camera feature back off. Please note that any associated fees will not be covered under warranty and will be the responsibility of the vehicle owner or upfitter.

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Pickup With Factory Box Delete

On 2500/3500 pick-up trucks with factory box delete, (sales code XBC) the analog backup camera system is standard and consists of the same hardware and electrical/electronic connections and configurations as the chassis cab. The digital surround view (XAK) system is not available with box delete.

FMVSS111

FMVSS111 requires a backup camera on all vehicles with a GVWR of 10,000 lbs. or less. Starting May 1st 2018, up fitters must insure that vehicles model year 2018 and newer and have a GVWR of 10,000 lbs. or less meet FMVSS111.

FMVSS111 has certain system function requirements as well as image size and field of view requirements. If you are up fitting a vehicle with a GVWR of 10,000 lbs. or less you will need to familiarize yourself with those requirements. The camera system as shipped will meet the system function requirements. However, filed of view and image size are effected by camera location. You will need to select a camera location that allows the system to meet these requirements.

The NTEA has developed a test method and provided educational resources to help members understand FMVSS111 and verify that the system meets image size and field of view requirements. We recommend that you use the NTEA method to determine an appropriate camera location and angles.



NTEA members can purchase the kit through the NTEA web site.

http://www.ntea.com/StoreCategory?Cat=PUBSGUIDES

See items titled FMVSS 111 FIELD OF VIEW (REARVIEW CAMERA) CONFORMITY MANUAL (# 2296) or FMVSS 111 FIELD OF VIEW CONFORMITY MANUAL AND KIT. (# 2297)

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Camera Mounting

General

Unless the up fit has been designed with a feature to mount the camera, a bracket or a mounting feature on the up fit will need to be developed. If practical, it is desirable to mount the camera in a location where the connector on the rear of the camera can be inside the up fit and shielded from the outside environment. If fabricating a bracket, it should be designed to offer as much protection to the camera and connector as possible. A mechanical layout of the camera is in **Appendix A**.

Placement

ATTENTION: *The camera placement zone shown below is intended to assist the upfitter in meeting the requirements of FMVSS111. Compliance to FMVSS111 will be the responsibility of the final stage manufacturer who certifies the vehicle.*

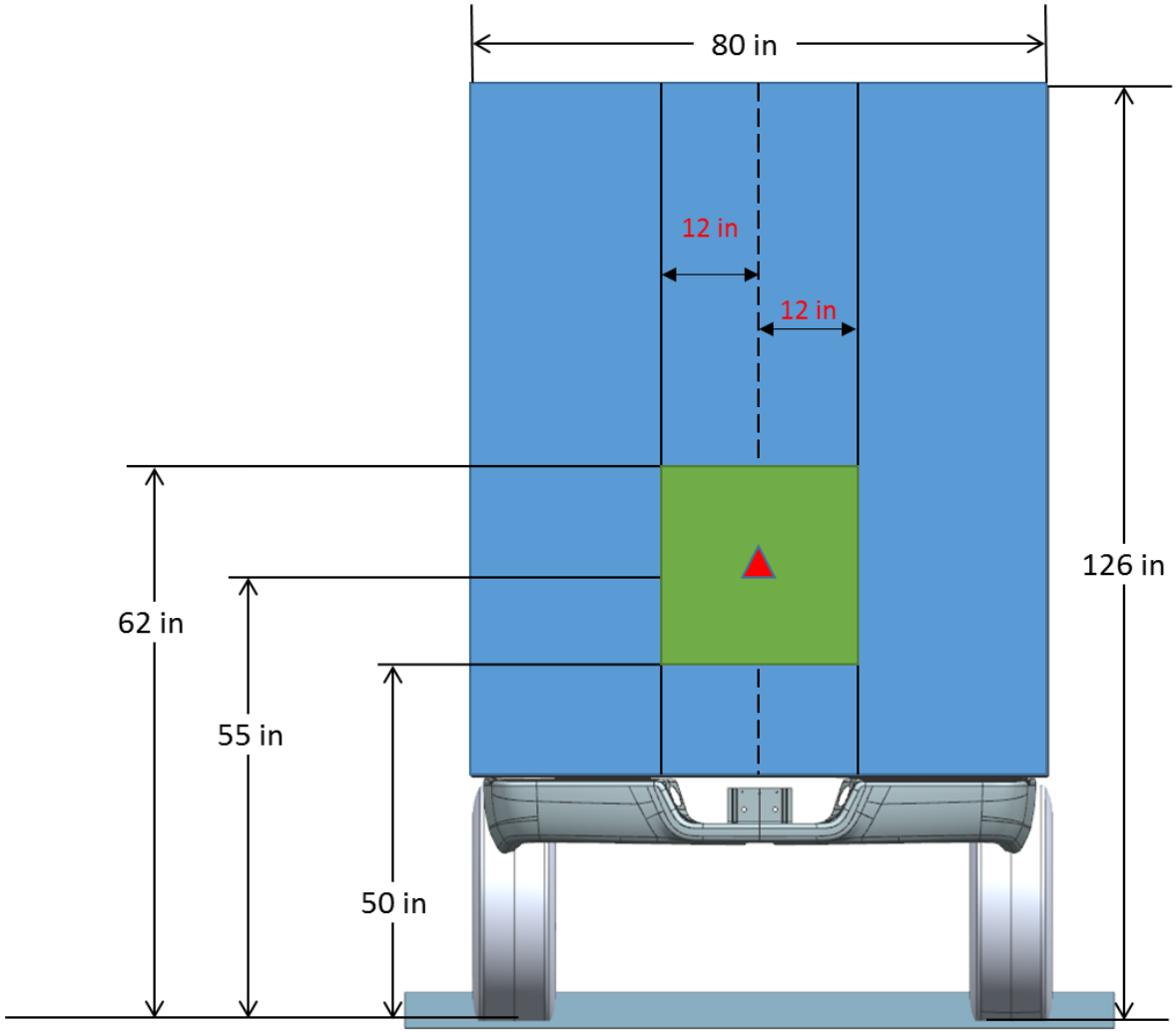
NOTE: This information is provided for directional purposes only, based on testing performed by FCA US LLC.

The recommended camera placement zones are defined in Figures 1 and 2. The diamond in the center of the green zone is the optimum placement location. Lateral dimensions are from the centerline of the vehicle and vertical dimensions are from the ground plain. **Figure 1** is the recommended camera mounting location for the rear view mirror display and **Figure 2** is the recommended camera mounting location for the 5, 8.4 and 12 inch screens.

If the camera is mounted somewhere within the specified zone, the system is capable of meeting FMVSS111. Depending upon the up fit, it may be possible to meet FMVSS111 with the camera mounted in areas outside of the recommended zone. However gaining compliance may be difficult and may require more development work.

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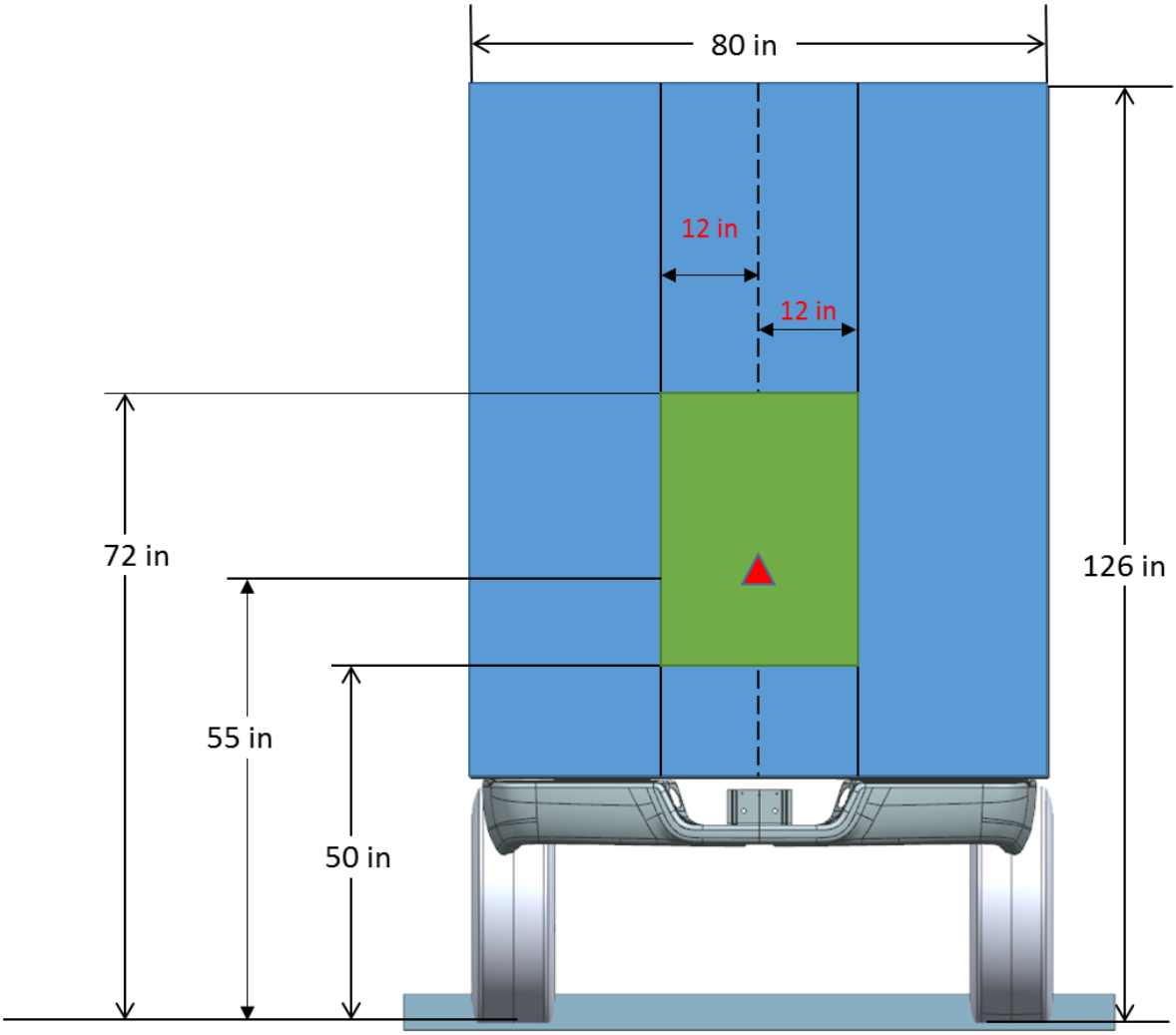
Figure 1



CAMERA MOUNTING LOCATION WITH REAR VIEW MIRROR DISPLAY

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Figure 2



CAMERA MOUNTING LOCATION WITH 5, 8.4 or 12 INCH RADIO DISPLAY

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Aim

The camera should be mounted so the lateral (cross vehicle) centerline of the camera is parallel to the lateral (cross vehicle) centerline of the vehicle. In other words, the camera aimed straight rearward, not left or right.

The vertical aim or "look down angle" will be selected to achieve FMVSS111 compliance.

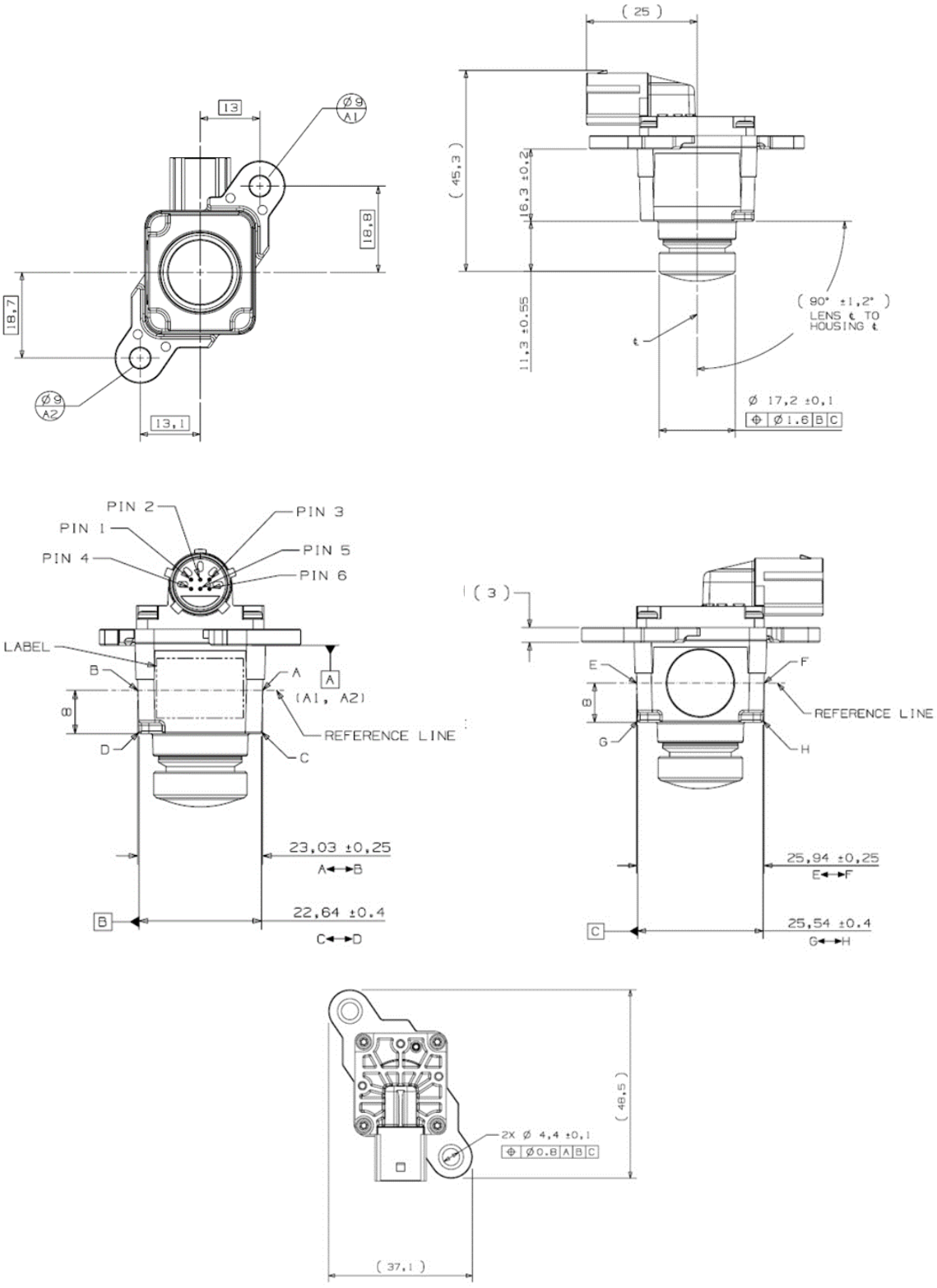
Look Down Angle Determination

The NTEA FMVSS111 field of view conformity manual and kit (NTEA # 2297) should be used to determine the appropriate look down angle to meet FMVSS111 field of view and image size requirements.

ATTENTION: When the vehicle is first placed in reverse, there will be a warning message at the top of the screen for the first 5 seconds. **THAT WARNING MESSAGE CANNOT INTERFERE WITH THE TEST OBJECTS.** If it does, you may need to adjust the look down angle upward slightly to compensate. Examples of images to demonstrating message interference are in **Appendix B** Please note these are SIMULATED images.

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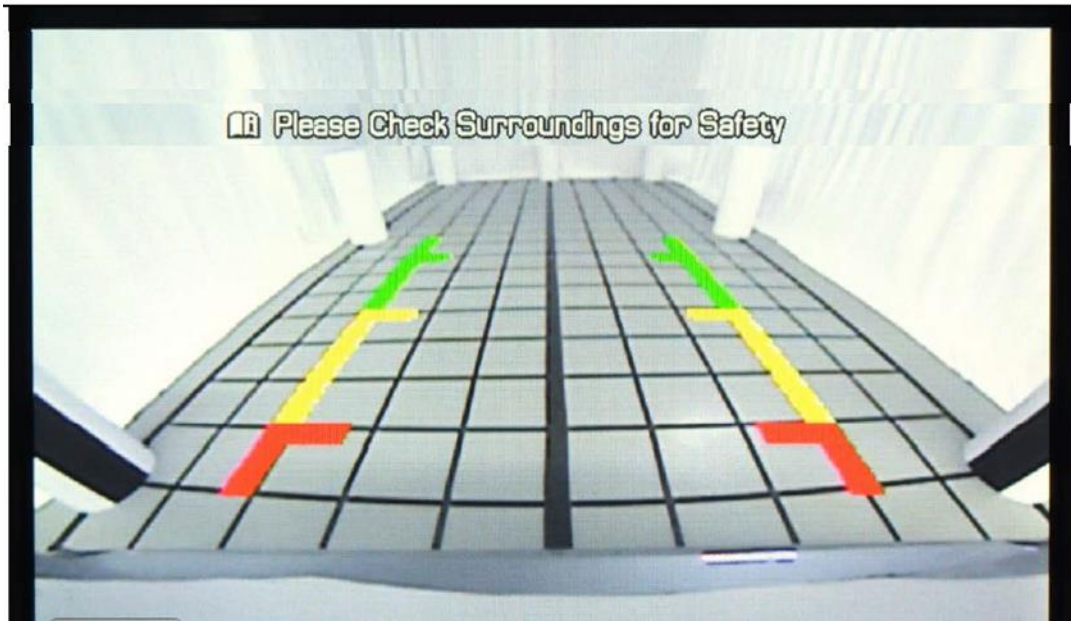
Appendix A



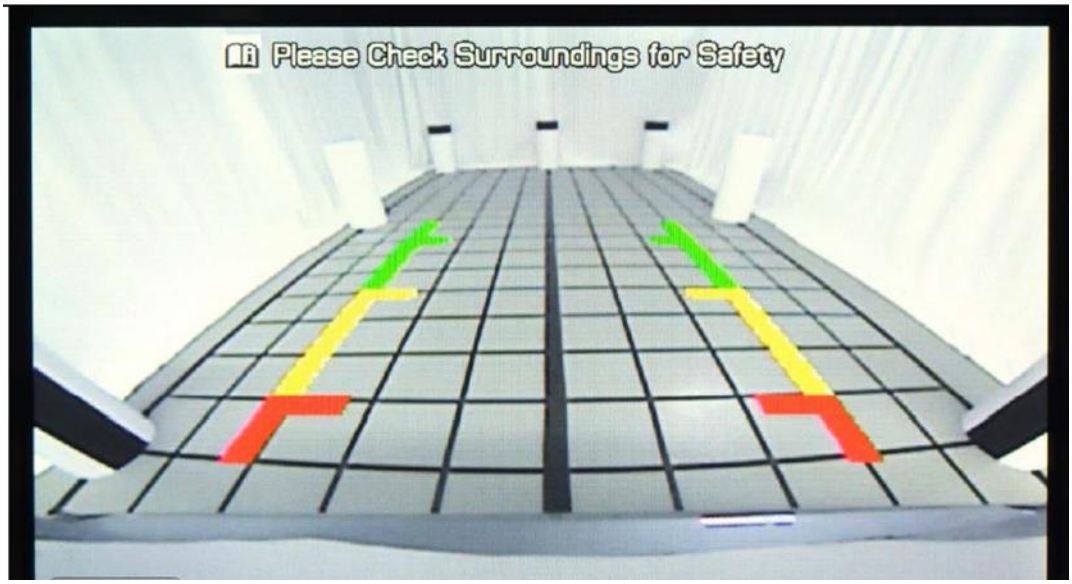
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Appendix B

In the following image, the system does not meet FMVSS11 requirements with the warning message displayed. The message covers the top of the rear cones and the black stripes are obscured.



In the following image, the **system meets FMVSS11** requirements with the warning message displayed. The message is well above the top of the rear cones and the black stripes are completely visible.



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