



Technical Service Bulletin

91 Rearview backup camera image quality complaints (distorted image)

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Model(s)	Year	VIN Range	Vehicle-Specific Equipment
A6	2011 – 2014	All	Not Applicable
A8	2010 – 2014		
Audi Q7	2009 – 2014		
A5/A5 Cabriolet	2009 – 2014		
A4	2009 – 2014		
Audi Q5	2009 – 2014		
A5/S5	2008 – 2014		

Condition

The customer complains about the picture quality of rearview backup camera image in the MMI screen. The complaints can be one or all of the following:

- The picture is fuzzy or distorted.
- The picture looks too bright, too dark, or opaque in certain areas of the image.
- The colors of the objects in the image are incorrect or slightly off.
- The guide lines used for parking are fuzzy, distorted, or pixelated when compared with another vehicle.

Technical Background

Complaint 1: The picture is fuzzy or distorted.

Explanation: The wide angle backup camera lens (about 140°) provides a round or curved image (fish-eye). The software inside the MMI must straighten out this “curved” image to fit the rectangular area of the MMI screen. As a result, the picture from the camera shown in the MMI screen is less sharp or focused in the corners of the image than compared to the center of the image. This is more noticeable in vehicles with a larger MMI screen because the image is expanded or “blown up”.



Figure 1. Distorted or fuzzy corners of backup camera image in MMI.

Complaint 2: The picture looks too bright, too dark, or opaque in certain areas of the image.

AND

Complaint 3: The colors of the objects in the image are incorrect or slightly off.

Explanation: The backup camera adjusts the image in the MMI screen dynamically in response to the ambient light and tries to find the optimal representation of brightness, contrast, and color (comparable to the exposure control of a camera). As a result the overall brightness, contrast, and colors of the backup camera image in the MMI may appear to be different than the actual color seen by the human eye.

The camera is not equipped with an infrared filter for night time viewing. This also leads to differences in color. The brightness of the image can be adjusted in the MMI menu for the whole screen for all MMI menus, but color and contrast cannot be changed.



Figure 2: Camera image in MMI screen (left) and actual color of objects as seen by human eye (right).

Complaint 4: The guide lines used for parking are fuzzy, distorted, or pixelated when compared with another vehicle.

Explanation: For vehicles *without* the Peripheral View Camera (No Top View and No Corner View), the guide lines are pre-stored images in the MMI memory which are overlaid on top of the rearview camera image at the different steering angles (the guide line images are masked over the camera image). Due to the large size of some of the MMI screens, the lines appear to be pixelated because they are “blown up” (Figure 3). For vehicles with the Peripheral View Camera (with Top View and Corner View), the lines are dynamically generated as vector graphics (scaled) and as a result the lines are sharper or more focused.



Figure 3. Guide lines of a vehicle without Peripheral View Camera (left) and guide lines of a vehicle with Peripheral View Camera (right).

Technical Service Bulletin



Production Solution

Not applicable.

Service

These are normal conditions and no replacements of the backup camera, MMI Screen, MMI Main unit, and the Camera Control unit should be performed.

Warranty

This TSB is informational only and not applicable to any Audi warranty.

Additional Information

All parts and service references provided in this TSB are subject to change and/or removal. Always check with your Parts Department and service manuals for the latest information.