

Radio/Audio System Description and Operation

The entertainment system on this vehicle may have several different configurations available to it. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to [RPO Code List](#).

Each item in the list below represents topics covered in detail below.

- Radio Circuit Operation
- Information Display and Controls
- Antenna System
- Radio Reception
- Speaker Operation
- Audio Amplifier (If equipped)
- Theft Deterrent
- Bluetooth® (UP9) (if equipped)
- Applications (if equipped)
- Auxiliary Audio Input Jack (If equipped)
- USB Port (If equipped)
- Navigation System Components and Features (if equipped)
- Steering Wheel Controls (If equipped)
- Auto Volume Control

[Radio Circuit Operation](#)

Radio Power

The radio does not use a discrete ignition feed circuit for power moding. The power mode master provides the system power mode to the radio via serial data messages. The power mode master determines the system power mode by processing power mode information from ignition switch inputs. Serial data power modes supported by the radio are OFF, ACCESSORY, RUN, and CRANK REQUEST.

Radio Grounds

The vehicle harness provides a ground for the radio circuits. The radio may also be case grounded.

Radio Data Link Communication

The radio communicates with other modules via serial data.

Radio Audio Outputs

Each of the audio output channel circuits (+) and (-), at the radio have a DC bias voltage that is approximately one half of battery voltage. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. The frequency (Hz) of the AC voltage signal is directly related to the frequency of the input (audio source playing) to the audio system. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

Remote Enable Output

The remote enable circuit is a discrete 12 V signal supplied to infotainment system components when the radio is producing audio, needs the front display on, needs video entertainment system components on, or needs to produce chimes. This signal is used to control the power state of the components. There is no output on radio the remote enable circuit when the vehicle is in the CRANK powermode, this is to minimize current consumption from the attached modules and also to avoid audio pops during crank events.

Information Display and Controls

The radio/HVAC control assembly is a separate component from the radio. The radio/HVAC control assembly contain the radio control knobs and buttons, HVAC control knobs and buttons, and an integrated display. The assembly is supplied battery voltage and ground . The radio uses a wake up circuit to control the power state of the assembly.

The info display receives digital video data from the radio for on-screen display information through the video signal circuits. The radio communicates with the info display module over the touch screen serial data circuits for touch screen inputs and backlighting dimming level.

The radio controls communicate radio control inputs directly to the radio through the CAN Graphical Interface (CGI) data circuits. After receiving the message the radio will perform the requested function. Messages communicated between the radio and the radio controls include the following:

- Button presses/knob rotations
- Commands for the state of indicators
- Radio control back-lighting

The HVAC controls are a separate component within the radio/HVAC control assembly . The HVAC control receives it's own battery voltage and ground circuits. HVAC data for controls and status indicators is communicated between the HVAC controls and the HVAC control module with a separate LIN serial data circuit. HVAC status screen information from the HVAC control module is transmitted to the radio on the GMLAN serial data circuit. The radio then displays the desired screen information on the info display using the video data circuits.

Antenna System

Multi-Band Antenna

The multi-band antenna is located on the roof of the vehicle. This type of antenna is used for AM/FM radio signals, and also for GPS signals if the vehicle has these features. Keep this antenna clear of snow and ice build up for clear reception. If the vehicle has a sunroof, the performance of the system may be affected if the sunroof is open. Loading items onto the roof of the vehicle can interfere with the performance of the system, ensure the multi-band antenna is not obstructed.

Radio Reception

AM/FM Radio Signal

The radio signal is sent from a broadcast station and is then received by an antenna. The strength of the signal received depends on the following:

- The power output (wattage) of the broadcasting station
- The location of the vehicle (receiver) relative to the broadcast tower.
- Height of the broadcast antenna
- Height of the receiving antenna
- Obstacles between the tower and the receiver
- Atmospheric conditions
- What band (AM or FM) the station is broadcasting
- Type of antenna and the ground plane

Radio Data System (RDS)

The RDS feature is available only on FM stations that broadcast RDS information. This system relies upon receiving specific information from these stations and only works when the information is available. While the radio is tuned to an FM-RDS station, the station name or call letters display. RDS data is carried in what is known as a "subcarrier". A subcarrier is a frequency that the FM broadcaster is authorized to use to send data that is not audible in the main audio program.

RDS functions will only work with FM broadcast stations that are broadcasting RDS data. Not all FM Broadcast stations broadcast RDS data or offer all of the RDS services.

The information displayed is dependent upon the information broadcast by the particular station. The information may vary greatly between stations. RDS functions may not work properly when reception is weak, reception is of poor quality, or RDS is not implemented properly by the FM Broadcaster. In some cases, a radio station broadcasting incorrect information may cause the RDS features of the radio to appear to work improperly.

With RDS, the radio can do the following:

- Display text information such as: station identification, type of programming, and general information (artist and song title, station messages, call in phone numbers, etc.).
- Seek to stations broadcasting the selected type of programming
- Receive announcements concerning local and national emergencies
- Receive alert warnings of local or national emergencies. When an alert announcement comes on the current radio station, ALERT! displays. You will hear the announcement, even if the volume is low or a CD is playing. If a CD is playing, play stops during the announcement. Alert announcements cannot be turned off. ALERT! is not affected by tests of the emergency broadcast system. This feature is not supported by all RDS stations.

Speaker Operation

Speakers turn electrical energy into mechanical energy to move air, using a permanent magnet and an electromagnet. The electromagnet is energized when the radio or amplifier (if equipped) delivers current to the voice coil on the speaker. The voice coil will form a north and south pole that will cause the voice coil and the speaker cone to move in relation to the permanent magnet. The current delivered to the speaker is rapidly changing alternating current (A/C). This causes the speaker cone to move in two directions producing sound.

Speaker Systems

With the standard speaker system, the radio has four audio output channels supplying four or six speakers, dependent on body style. The enhanced speaker system adds two subwoofer speakers with a dedicated subwoofer amplifier. The subwoofer amplifier inputs are received from either the front or rear speaker circuits, dependent on body style. The amplifier can not set DTCs.

With the premium speaker system, the radio supplies four channels of input to the amplifier, and the amplifier supplies all audio signals to the speakers. The radio or amplifier does not set DTCs for the audio output circuits with this system.

Audio Amplifier (If equipped)

Two versions of amplified speaker systems are available. One version provides amplifier output to the subwoofer speakers only, all other speakers in this system receive audio inputs from the radio directly. With the premium version, the amplifier supplies the audio signals to all the speakers.

Amplifier Interface— UQA

A fused battery voltage circuit provides the main amplifier power. A switched battery voltage output from the radio is used to control the power - state of the amplifier. All audio outputs from the radio are sent to the amplifier.

Amplifier Interface— UQG

A fused battery voltage circuit provides the main amplifier power. The subwoofer amplifier inputs are received from either the front or rear speaker circuits, dependent on body style. The amplifier is enabled when it receives a signal from the radio on the remote enable circuit.

Amplifier Operation

The purpose of the amplifier is to increase the power of a voltage or current signal. The output signal of an amplifier may consist of the same frequencies as the input signal or it may consist of only a portion of the frequencies as in the case of a subwoofer or midrange speaker. The radio creates a low level stereo audio output signal, which is sent at the user-defined volume level to the audio amplifier. The audio amplifier amplifies the signal and sends it to the appropriate speakers. Each of the audio output channel circuits (+) and (-), from the amplifier have a DC bias voltage that is approximately one half of battery voltage. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. The frequency (Hz) of the AC voltage signal is directly related to the frequency of the input (audio source playing) to the audio system. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

Theft Deterrent

The radio theft deterrent system is intended to disable or limit radio functionality if incorrect vehicle information is received by the radio. The radio disables functionality if the VIN information received by the radio does not match the VIN information that has been learned by the radio. The radio receives this information via serial data. A possible cause of incorrect VIN info could be the radio was originally installed in another vehicle.

The radio has the following theft operating modes as part of the theft deterrent system:

- **Normal Mode:** The radio has learned a correct VIN sequence and the VIN information received via serial data matches the learned VIN sequence. In this mode the radio has full functionality.
- **No VIN Mode:** The radio has not received or learned a correct VIN sequence. In this mode the radio has limited functionality.
- **Theft Detected Mode:** The radio has learned a correct VIN sequence and the VIN information received via serial data does NOT match the learned VIN sequence. In this mode the radio may be disabled or have limited functionality. The radio display will indicate that theft protection is active.

Bluetooth® (UP9) (If equipped)

Bluetooth® wireless technology is a short-range communications technology intended to replace the cables connecting portable and/or fixed devices while maintaining high levels of security. The operating range of the signal is approximately 30 feet.

The available features and functions are determined by the type of device and the software within the devices being used. For a feature or function to operate, it must be supported in both devices.

The first connection between devices is established through a process called pairing. In order to pair two devices, a password (passkey) has to be exchanged between the two devices. One device will generate the password, the other device accepts the password to complete the process. Once the devices are paired, future connections between the devices will occur automatically when the devices are on and within range of each other.

The Bluetooth® hardware is internal to the radio. The radio supports streaming of data (music, voice, information) from cellular phones and other mobile devices that support those features. The radio may also be capable of interfacing with cellular phones for hands-free features.

- The device must be paired to the radio to use the available Bluetooth® feature(s). The pairing process must only be performed once for each device, unless that device's information is deleted.
- Up to five devices can be paired to the system, but only one can be connected at any given time.
- Streaming Audio allows playing music from the mobile device wirelessly. Music stored on the mobile device can be viewed and controlled from the display.
- To stream audio from a mobile device, the device must be unlocked, and any additional applications should be closed.

Refer to the vehicle owners manual, supplements, and the device manufacturers information for pairing instructions.

Applications (If equipped)

When the system is equipped with Bluetooth®, the system may be capable of using applications, commonly referred to as apps.

The term application refers to any piece of software that works on a system (hardware) that is being operated by it's own software. Applications are typically small software programs which uses the hardware to perform a specific task, as opposed to operating the entire system.

- For an application to be used, it must be installed on both the vehicle infotainment system and a compatible mobile device.
- The device must be connected to the system. this may be done wirelessly via Bluetooth®, or via the vehicle USB port. Refer to the device manufacturers information for the proper connection method.
- When the device is connected, the application on the radio is used to remotely access and control the application on the mobile device.
- The application must work correctly on the device to work with the vehicle infotainment system.
- The user may be required to log-in to the application on the mobile device before using the application from the vehicle controls.
- Using applications will use the device's data plan.
- The device must be unlocked, and any additional applications should be closed.

Refer to the owner's manual and supplements for information on mobile devices, control, and operation.

Auxiliary Audio Input Jack (If equipped)

The infotainment system may have a 3.5mm (1/8 in.) auxiliary audio input jack located in the center console. The auxiliary audio input jack interfaces directly with the radio. When a portable audio playback device is connected to the auxiliary jack, an internal switch detects the connection and the radio will switch to AUX as the audio source. Audio signals from the device are sent to the radio from the auxiliary jack via the left, right, and common audio signal circuits.

- When a device is first connected to the 3.5mm (1/8 in.) input jack the infotainment system automatically switches to that device. If an auxiliary device has already been connected, press the AUX or CD/AUX button to select the device.
- Playback of an audio device that is connected to the 3.5mm jack can only be controlled using the controls on the device.
- The volume control on the device may need to be adjusted to ensure sufficient playback volume through the infotainment system.

USB Port (If Equipped)

The infotainment system may have a USB connector located in the center console. The USB connector interfaces directly with the radio. The USB connector supports both USB standards 1.1 and 2.0.

USB Supported Devices:

- USB Flash Sticks (Thumb Drives)
- Portable USB Hard Drives
- Portable Digital Media Players (iPOD®, ZUNE®, etc)

Depending on the USB device, some devices may not be recognized, or some features/functions may not be able to be controlled with the radio controls. USB HUB devices are not supported.

Refer to the owner's manual for information on USB devices, control, and operation.

Navigation System Components and Features (if equipped)

The navigation system, if equipped, provides the following:

- Connection to the global positioning system (GPS) antenna, which provides the vehicle position information.
- Map data for navigation and map route guidance, stored on the internal hard drive.
- Route guidance with verbal prompts to the operator.
- Traffic and weather information for display on the navigation system map (with active subscription, where available).

Global Positioning System (GPS) Antenna

The global positioning system (GPS) antenna is part of the multi-band antenna located on the roof of the vehicle. The GPS antenna is used to collect the signals of the orbiting GPS satellites. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. The GPS antenna amplifier is powered through the coaxial cable.

Route Guidance

The map will display the route to the selected destination. Voice prompts alert the operator of upcoming events (turns) and arrivals at the destination. The navigation system will automatically recalculate if the route is not followed. The navigation radio uses data received from the global positioning system (GPS) satellites, the vehicle speed signal, and serial data information to accurately display the current position of the vehicle.

Points of Interest

The map database provides point of interest information. Points of interests are locations that are frequently visited. Points of interest can be displayed on the map or set as a destination. The following are some of the available Points of interests:

- Gas Station
- Restaurant
- College
- Police Station

Steering Wheel Controls (If equipped)

Some audio functions are available using the steering wheel controls. The steering wheel controls duplicate the function of the primary controls available on the radio.

For additional information on steering wheel controls, refer to [Steering Wheel Controls Description and Operation](#).

Auto Volume Control

With auto volume control, the audio system will adjust automatically to make up for road and wind noise as you drive, by increasing the volume as vehicle speed increases. To use auto volume control, set the volume at the desired level, and then select either Low, Medium, or High. To turn auto volume control off, select the Off screen button.

Video Entertainment System Description and Operation

Each item in the list below represents topics covered in detail below:

- Seatback Display Circuit Operation
- Seatback Display System Components
- Video Screens
- Remote Control
- Wireless Headphones
- Video Inputs Only

Seatback Display Circuit Operation

Seatback Display Power

The Seatback display uses the common radio power enable voltage feed circuit and direct feed for B+ power moding.

Seatback Display Grounds

The vehicle harness provides a ground for the Seatback display system.

Seatback Display Outputs

The Seatback display can only output video to each screen.

Seatback Display Electrical Interface with Radio DVD Player

The Seatback display module will receive a video signal from the radio head unit. The left side (driver) Seatback display will receive a video signal from the radio display 1 video output. The right side (passenger) Seatback display will receive a video signal from the radio display 2 video output.

The video source sent from the radio to the video screens will be controlled via the source button on the remote control or the radio.

The Radio DVD player/Rear Seat Audio System interfaces to the display through the following:

1. Composite Video Signals
NTSC and PAL video formats are supported.
2. Left and Right Audio Signals
3. PWM signal for Brightness Control.
 - The brightness control is used to provide the screen brightness signal to the seatback displays.
 - Each of the two seatback displays per vehicle share a common brightness control line from the radio
 - The pulse width modulated (PWM) brightness control is provided by the radio over a single wire, using ground as the return.
4. PWM signal for Mode Control.
 - The mode control is used to control video screen display options, in support of providing different screen sizes, zoom, picture inversion and backlighting.
 - Each of the two seatback displays per vehicle share a unique mode control signal from the radio.

- The PWM mode control is provided by the radio over a single wire, using ground as the return.

5. Power Enable Signal.

The power enable signal is used to activate the DVD displays.

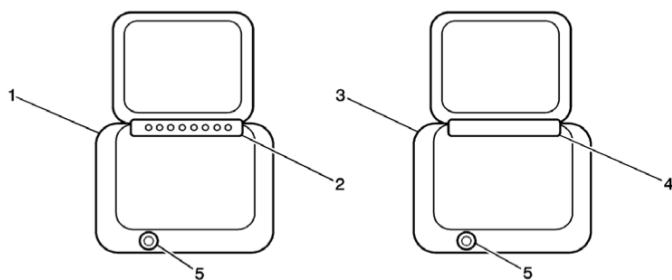
The 2 Seatback Displays interface to the Radio DVD player through the following:

IR remote data carried on a twisted wire pair. The IR remote data circuits from left and right seatback displays are spliced together within wiring harness.

Seatback Display System Components

The Seatback display system includes:

- Two video display screens
- Infrared Module (located only in the left screen)
 - Driver side transmits and receives
 - Passenger side only receives
- Two sets of wireless infrared headphones
- A remote control
- Local video input for each Seatback display for playing a video auxiliary device on the Seatback display.



- (1) Left Driver Seatback Display
- (2) Left IR—Dimly Illuminates 8 Leds, Transmits Audio And Recieves Remote Signal
- (3) Right Passenger Seatback Display
- (4) Right IR—LEDS Do Not Illuminate, Receives Remote Signal Only
- (5) Local video input

Video Screen

The video screens are located in the back of the driver and front passenger seats. The rear Seatback display screen shows video from the radio DVD player, or an AUX input device, such as a video game console or camera. Only the left display console contains the infrared transmitters for the wireless headphones, they may be visible as 8 illuminated LEDs. These 8 LEDs are not on visible on the right video screen. Both consoles contain an infrared receiver for the remote control. They are located in the middle of each of the Seatback display console.

IR Module

Eight infrared light emitting diode (LED) transmitters are used to send audio signals to the wireless headphones that are included in the system. These LEDs are located on the driver's side Seatback display, and aimed to provide signal to any rear seating position. During operation, the LEDs may be visible through the lens on the driver's side display, but not on the

passenger side. This is normal operation; the illuminated LEDs are located on the driver's side Seatback display only.

Remote Control

To use the remote control, aim it at the transmitter window at either the right or left seatback consoles and press the button. Direct sunlight or very bright light may affect the ability of the entertainment system to receive signals from the remote control. If the remote control does not seem to be working, the batteries may need to be replaced. Objects blocking the line of sight may affect the function of the remote control.

If a CD, DVD, or MP3 disc is in the radio DVD slot, the remote control button can be used to turn on the video screen display and start the disc. The radio can also turn on the video screen display.

If the remote control is to be stored for a long period of time, remove the batteries and keep them in a cool, dry place. Do not store the remote control in heat or direct sunlight. This could damage the remote control. Keep the remote control stored in a cool, dry place.

Wireless Headphones

Wireless headphones allow for rear seat passengers to use the display DVD without disturbing the listening of front seat passengers. The wireless headphones receive audio signals from the infrared (IR) transmitter on the left Seatback display. This transmission is line of sight only, so audio quality will be degraded if anything blocks the transmitter signal from reaching the headphones, or if the headphones are placed in the front of the vehicle. The infrared transmitter located on the left Seatback display will have red LEDs dimly illuminated when activated.

The wireless headphones include 2 channels. This allows rear seat passengers to utilize both screens individually without disturbing one another. On some wireless headphone models, you will see a red LED illuminated when the headphone is turned ON.

Each set of headphones has a rotary volume control. To adjust the volume, adjust this control. The headphones may automatically turn OFF if they lose the infrared signal from the system for approximately 4 minutes in order to preserve their battery power. The signal may be lost if the system is turned off or if the headphones are out of range of the infrared signal transmitters that are located near the video display screen.

Wireless Headphones without Rear Seat Audio (RSA)

The wireless headphones setup on the Seatback display system without Rear Seat Audio (RSA) is unique. If the RSA system is not included with vehicle, the audio that can be heard on the wireless headphone channel 2 will only be from a device (IPOD, MP3 player, game system, etc.) that is connected to the rear seat auxiliary audio jacks. Wireless headphone channel 1 will provide audio from any disc in the DVD player, including DVD audio, CD audio, and MP3 or WMA audio discs.

Video Inputs

The local video input is the standard yellow RCA color-coded jacks. The RCA jack is located on the front lower side of the Seatback display housing. Any composite video signal (from a video game, camera, stand-alone DVD player, etc.) attached to this input will override the video from the vehicle DVD or rear auxiliary jack. Power for auxiliary devices is not supplied by the radio system. To use the video input of the rear seat entertainment system, connect the auxiliary device cables to the video jacks and power ON both the auxiliary devices and the Seatback display screen. Any use of this input will have to access audio from the external device only.

Rear Seat Audio (RSA) (if equipped)

The RSA is integrated into the rear HVAC control module. Audio, video source are controlled by the radio through serial data communication. Some sources are; radio (AM/FM), XM™ (if equipped), CD, and if the vehicle has these features, DVD, front auxiliary, and rear auxiliary.

The rear speaker channels pass through the RSA. The rear seat audio can be muted by the RSA when in use.

DTC B0997

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor

DTC B0997 00

Info Display Module Malfunction

Circuit/System Description

The radio information display and controls are combined in an assembly. The radio communicates with the information display via serial data. This DTC indicates a fault in the information display. No external circuits are involved. The radio and display may continue to operate normally when this DTC is set.

Conditions for Running the DTC

- Ignition is ON or in the ACC position.
- The system voltage is at least 9.5 V and no more than 15.5 V.
- All the above conditions are present for greater than 10 seconds.

Conditions for Setting the DTC

The radio receives an improper status response indicating an internal ECU fault in the information display.

Action Taken when the DTC Sets

No action is taken.

Conditions for Clearing the DTC

- A current DTC clears when the radio receives a proper status response message back from the information display.
- A history DTC clears after 50 malfunction-free ignition cycles.

Diagnostic Aids

- This DTC may be stored as a history DTC without affecting the operation of the information display.
- If stored only as a history DTC and not retrieved as a current DTC, do not replace the information display.
- If this DTC is retrieved as both a current and history DTC, replace the information display.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

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[Component Connector End Views](#)**Description and Operation**[Radio/Audio System Description and Operation](#)**Electrical Information Reference**

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

[Circuit/System Verification](#)

1. Ignition ON
2. Verify DTC B0997 is not set
⇒ **If DTC B0997 is set**
Replace the info display module
⇓ **If DTC B0997 is not set**
3. All OK.

[Repair Instructions](#)

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Radio Control Assembly Replacement](#)

DTC B1020

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor

DTC B1020 00

Auxiliary Electronic Control Unit (ECU) Performance

Circuit/System Description

The radio communicates with the radio controls via serial data. This DTC indicates a fault in the radio controls. No external circuits are involved. The radio may continue to respond normally to faceplate functions when this DTC is set.

Conditions for Running the DTC

- Ignition is ON or in the ACC position.
- The system voltage is at least 9.5 V and no more than 15.5 V.
- All the above conditions are present for greater than 10 seconds.

Conditions for Setting the DTC

The radio receives an improper status response indicating an internal ECU fault in the radio controls.

Action Taken when the DTC Sets

No action is taken.

Conditions for Clearing the DTC

- A current DTC clears when the radio receives a proper status response message back from the radio control assembly.
- A history DTC clears after 50 malfunction-free ignition cycles.

Diagnostic Aids

- This DTC may be stored as a history DTC without affecting the operation of the radio controls.
- If stored only as a history DTC and not retrieved as a current DTC, do not replace the radio controls.
- If this DTC is retrieved as both a current and history DTC, replace the radio controls.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

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Description and Operation

[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

[Circuit/System Verification](#)

1. Ignition ON.
2. Verify DTC B1020 is not set.
⇒ **If DTC B1020 is set**
Replace the A20 Radio/HVAC Controls.
⇓ **If DTC B1020 is not set**
3. All OK.

[Repair Instructions](#)

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for radio controls replacement, programming, and setup

DTC B1025, B1035, B1045, or B1055

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC B1025

Left Front Audio Output Circuit

DTC B1035

Right Front Audio Output Circuit

DTC B1045

Left Rear Audio Output Circuit

DTC B1055

Right Rear Audio Output Circuit

For symptom byte information refer to [Symptom Byte List](#).

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Amplifier B+ (UQG only)	—	1	—	—
Entertainment Remote Enable Signal (UQG only)	B1265	1	—	—
Left Front Speaker Output Signal	B1025 02*	B1025 04*	B1025 01*	—
Right Front Speaker Output Signal	B1035 02*	B1035 04*	B1035 01*	—
Left Rear Speaker Output Signal	B1045 02*	B1045 04*	B1045 01*	—
Right Rear Speaker Output Signal	B1055 02*	B1055 04*	B1055 01*	—
Subwoofer Speaker Output Signal (UQG only)	2	2	2	—
Amplifier Ground (UQG only)	—	1	—	—

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
1. Amplifier inoperative/no sound from subwoofer speakers. 2. No or reduced sound from subwoofer. * Noticeable audio distortion possible.				

Circuit/System Description

Each of the audio output channel circuits (+) and (-), at the radio and audio amplifier have a DC bias voltage that is approximately one half of battery voltage. When using a DMM, each of the audio output channel circuits will measure approximately 6.5 V DC. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. The frequency (Hz) of the AC voltage signal is directly related to the frequency of the input (audio source playing) to the audio system. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

With the standard speaker system, the radio has four audio output channels supplying four or six speakers, dependent on body style. The enhanced speaker system adds two subwoofer speakers with a dedicated subwoofer amplifier. The subwoofer amplifier inputs are received from either the front or rear speaker circuits, dependent on body style. The amplifier can not set DTCs.

With the premium speaker system, the radio supplies four channels of input to the amplifier, and the amplifier supplies all audio signals to the speakers. The radio or amplifier does not set DTCs for the audio output circuits with this system.

Diagnostic Aids

- Improper speaker mounting or loose trim may cause an audible buzz or distortion. Inspect the appropriate speaker and the surrounding interior trim for proper and secure mounting.
The EL-50334-6 Audio System Diagnostic CD contains audio tracks that can be used to duplicate and isolate such concerns. Tracks 11 and 12 contain audio sweep tones for testing for speaker and grill rattles.
If the speaker or surrounding interior trim is found to be loose or improperly secured, correctly secure the item.
- The test tones on the CD may be copied to a USB drive or other device to use during testing.
- Some audio output circuits are connected to more than one speaker, dependant on vehicle equipment. It may be necessary to disconnect one or more speakers during testing of some circuits.

Conditions for Running the DTC

- Ignition is ON or in the ACC position
- The system voltage is 9-16 V
- The test is run once during radio wake up

Conditions for Setting the DTC

B1025 01, B1035 01, B1045 01, B1055 01

A short to voltage is detected on the specified (+) or (-) signal circuit.

B1025 02, B1035 02, B1045 02, B1055 02

A short to ground is detected on the specified (+) or (-) signal circuit.

B1025 04, B1035 04, B1045 04, B1055 04

An open/high resistance is detected on the specified (+) or (-) signal circuit.

Action Taken When the DTC Sets

- The radio shuts down the affected output circuit.
- No sound is present from one or more speakers.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Testing

Note: Some circuits supply audio signals to more than one speaker. It may be necessary to disconnect all speakers on the affected audio circuit when performing circuit tests.

With UQF

1. Ignition OFF, disconnect the harness connector at the appropriate P19 Speaker. Ignition ON, A11 Radio ON, mute OFF.
2. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.
 - ⇒ **If less than 5 V**
 - 2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.
 - 2.2. Test for infinite resistance between the signal circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇓ If infinite resistance
 - 2.3. Test for less than 2 Ω in the signal circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 Radio.
 - ⇒ **If greater than 7 V**
 - 2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.
 - 2.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 5–7 V**

3. Test or replace the P19 Speaker.

with UQG : Sedan/Wagon — Front Speakers

1. Ignition OFF, disconnect the harness connector at the appropriate P19 Speaker. Ignition ON, A11 Radio ON, mute OFF.

2. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.

⇒ **If less than 5 V**

2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

2.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

2.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

⇒ **If greater than 7 V**

2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

2.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 5–7 V**

3. Test or replace the P19 Speaker.

with UQG: Sedan/Wagon — Rear Speakers

1. Ignition OFF, disconnect the harness connector at the T3 Audio Amplifier.. Ignition ON, A11 Radio ON, mute OFF.

2. Disconnect the harness connector at the appropriate P19 Speaker

3. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.

⇒ **If less than 5 V**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

3.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

3.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

⇒ **If greater than 7 V**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

3.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 5–7 V**

4. Ignition OFF, connect the harness connector at the T3 Audio Amplifier. Ignition ON, A11 Radio ON, mute OFF.

5. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground at the disconnected P19 Speaker.

⇒ **If not between 5–7 V**

Replace the T3 Audio Amplifier.

⇓ **If between 5–7 V**

6. Test or replace the P19 Speaker.

With UQG – UTE

1. Ignition OFF, disconnect the harness connector at the T3 Audio Amplifier.

2. Disconnect the harness connector at the appropriate P19 Speaker. Ignition ON, A11 Radio ON, mute OFF.

3. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.

⇒ **If less than 5 V**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

3.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

⇓ If infinite resistance

3.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

⇒ **If greater than 7 V**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

3.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

⇓ **If between 5–7 V**

4. Ignition OFF, connect the harness connector at the T3 Audio Amplifier. Ignition ON, A11 Radio ON, mute OFF.

5. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground at the disconnected P19 Speaker.

⇒ **If not between 5–7 V**

Replace the T3 Audio Amplifier.

⇓ **If between 5–7 V**

6. Test or replace the P19 Speaker.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the diagnostic procedure.

- [Speaker Replacement Reference](#)
- [Control Module References](#) for audio amplifier or radio replacement, programming, and setup.

DTC B125A

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC B125A 02

Antenna Signal Circuit Short to Ground

DTC B125A 04

Antenna Signal Circuit Open Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Radio Antenna Coax	B125A 02	B125A 04	1	—
Ground	—	1	—	—
1. May exhibit possible AM/FM interference.				

Circuit/System Description

The multi-band antenna is located on the roof of the vehicle. The radio antenna is enabled when the radio is turned on. The radio provides battery voltage to the antenna using the center conductor of the antenna coaxial cable. When a 12 V signal is seen on the center conductor of the antenna coax, both AM and FM signals are amplified.

Conditions for Running the DTC

- Ignition ON.
- Battery voltage must be between 9–16 V.

Conditions for Setting the DTC

B125A 02

The radio detects a short to ground in the antenna signal circuit center conductor.

B125A 04

The radio detects an open in the antenna signal circuit center conductor.

Action Taken When the DTC Sets

Radio reception may be poor or not available.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.

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- A history DTC will clear after 50 consecutive malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition ON, A11 Radio ON.
2. Verify station reception is normal when tuned to several known good AM and FM stations.
⇒ **If AM or FM reception is poor.**
Refer to Circuit/System Testing
↓ **If reception is normal**
3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the radio antenna coax cable from the A11 Radio and from the T4M Radio Antenna.
2. Verify the antenna coax cable passes the coax cable component test. Refer to Component Testing.
⇒ **If the coax cable does not pass the test**
Replace the antenna coax cable
↓ **If the coax cable passes the test**
3. Connect the radio antenna coax cable to the A11 Radio.
4. Ignition ON, A11 Radio ON.
5. Verify a test lamp illuminates between the antenna coax cable center terminal at the T4M Radio Antenna and chassis ground.
⇒ **If the test lamp does not illuminate**
Replace the A11 Radio.
↓ **If the test lamp illuminates**
6. Test or replace the T4M Radio Antenna.

Component Testing

Caution: Refer to [Test Probe Caution](#).

Note: Before testing the coax cable, check the cable exterior for being pinched, cut, damaged, or having loose connections at the components, which can cause reception issues.

To prevent false reading when testing the center coax terminals, use care not to ground the test probe on the outer housing/shield.

Coax Cable Test

1. Ignition OFF, disconnect the coax cable at both components.
2. Test for less than $5\ \Omega$ between coax cable center terminal end to end.
 - ⇒ **If $5\ \Omega$ or greater**
Replace the coax cable
 - ⇓ **If less than $5\ \Omega$**
3. Test for less than $5\ \Omega$ between the coax cable outer shield end to end.
 - ⇒ **If $5\ \Omega$ or greater**
Replace the coax cable
 - ⇓ **If less than $5\ \Omega$**
4. Test for infinite resistance between the coax cable center terminal and the coax cable outer shield.
 - ⇒ **If less than infinite resistance**
Replace the coax cable
 - ⇓ **If infinite resistance**
5. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Radio Antenna Base Replacement](#)
- [Control Module References](#) for radio replacement, programming, and setup.

DTC B1265

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor

DTC B1265 02

Switched 14 Volt Performance Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Remote Enable	DTC B1265 02 *	**	***	—
* all components requiring remote enable inoperative ** fault may affect one or more components, dependant on fault location and vehicle equipment *** components will not power off with infotainment system				

Circuit/System Description

When the radio is on, a discrete 12 V signal is supplied on the entertainment remote enable circuit to the Audio Amplifier and the Seatback Video Displays (if equipped). This signal is used to control the power state of the components.

Conditions for Running the DTC

The following are conditions that must be present in order for the radio to enable diagnostics:

- The radio is ON.
- The system voltage is 9–16 V

Conditions for Setting the DTC

- The radio detects a short to ground on the entertainment remote enable circuit.
- The above condition is present for greater than 250 mS.

Action Taken When the DTC Sets

- The radio implements a current limiting mode and disables the output on the entertainment remote enable circuit .
- All components connected on the entertainment remote enable circuit will be inoperative.

Conditions for Clearing the DTC

- The condition for setting the DTC no longer exists.
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- After the ignition has been OFF for a sufficient amount of time to allow the radio to enter a low power/sleep state, the radio will re-enable the output on the following ignition cycle and the DTC will become history.
- A history DTC clears after 50 malfunction-free ignition cycles.

Diagnostic Aids

- This DTC may be stored as a history DTC without affecting the operation of the radio/infotainment systems.
- The radio's current limiting logic will not re-enable the output on the entertainment remote enable circuit until after the radio performs a full power-down. It may be necessary to wait 5 minutes between each test attempt with the key OFF and retained accessory power OFF.

Reference Information

Schematic Reference

- [Radio/Navigation System Schematics](#)
- [Video System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Testing

1. Ignition OFF, radio OFF, radio B+ fuse removed. Disconnect all of the harness connectors listed below:
 - T3 Audio Amplifier X1 (with UQG)
 - T3 Audio Amplifier X3 (with UQA)
 - P22E Video Display- Driver Seatback (if equipped)
 - P22F Video Display- Passenger Seatback (if equipped)
 2. Install the radio B+ fuse. Ignition ON, A11 Radio ON.
 3. Verify that a test lamp illuminates between the control circuit terminals listed below and ground:
 - T3 Audio Amplifier X1 terminal 7 (with UQG)
 - T3 Audio Amplifier X3 terminal 8 (with UQA)
 - P22E Video Display- Driver Seatback terminal 2 (if equipped)
 - P22F Video Display- Passenger Seatback terminal 2 (if equipped)
- ⇒ **If the test lamp does not illuminate.**
- 3.1. Ignition OFF, remove the test lamp. Disconnect the X1 harness at the A11 Radio.
 - 3.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

⇓ If infinite resistance.

3.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If greater than 2 Ω , repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

⇓ **If the test lamp illuminates.**

4. Verify that DTC B1265 does NOT set as each component is connected one at a time.

⇒ **If DTC B1265 sets.**

Replace the module/component that was just connected

⇓ **If DTC B1265 does not set.**

5. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Video Display Replacement](#)
- [Control Module References](#) for radio and amplifier replacement, programming, and setup.

[2014 Holden VF Sedan](#) | [VF/WN - Sedan, Ute, Sportwagon, Caprice, Lumina, HSV Service Manual 5617662](#) |
[Driver Information and Entertainment](#) | [Cellular, Entertainment, and Navigation](#) | [Diagnostic Information and Procedures](#) |

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DTC B1271

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptor

DTC B1271 00

Theft Protection Active

Circuit/System Description

When the radio is initially installed in the vehicle, the radio receives VIN information via serial data. The radio stores a portion of the VIN and compares this sequence to the VIN information received each time the radio powers on. The VIN in the radio is a single one-time learn.

The radio theft deterrent system is intended to disable or limit radio functionality if incorrect vehicle information is received by the radio. The radio disables functionality if the VIN information received by the radio does not match the VIN information that has been learned by the radio. This DTC is generated by the module when the Theft Protection is activated.

Conditions for Running the DTC

This DTC test runs when the radio changes from OFF to ON.

Conditions for Setting the DTC

The radio has learned a correct VIN sequence and the VIN information received via serial data does NOT match the learned VIN sequence.

Action Taken When the DTC Sets

- The radio may be disabled or have limited functionality.
- The radio display will indicate that theft protection is active.

Conditions for Clearing the DTC

The radio receives the correct VIN information via serial data.

Diagnostic Aids

A possible cause of incorrect VIN info could be the radio was originally installed in another vehicle.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

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Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

[Circuit/System Verification](#)

1. Ignition ON, A11 Radio ON.
2. Verify DTC B1271 is not set.
⇒ **If DTC B1271 is set**
Replace the A11 Radio.
⇓ **If DTC B1271 is not set**
3. All OK.

[Repair Instructions](#)

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for Radio replacement, programming, and setup

DTC B1287

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC B1287 01

Amplifier Control Signal Circuit Short to Battery

DTC B1287 02

Amplifier Control Signal Circuit Short to Ground

DTC B1287 04

Amplifier Control Signal Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Amplifier Control	B1287 02**	B1287 04**	B1287 01*	—
* No audio output. ** 4 Channel unmute, possible noise in speakers when radio muted or turned off				

Circuit/System Description

The radio amplifier control circuit provides varying pulse width modulated (PWM) signals to control overall muting of the amplifier. The PWM signals are varying duty cycle percentages ranging from 0–100 percent. A low duty cycle unmutes all amplifier channels and a high duty cycle mutes all amplifier channels. The amplifier control circuit will measure less than 1 V when the mute function is OFF, and approximately 8 V when at full mute. The radio monitors the amp control circuit for faults.

Conditions for Running the DTC

- The radio is on.
- The system voltage is 9–16 V.
- The radio performs the test once during wakeup.

Conditions for Setting the DTC

The radio detects a fault on the amplifier control circuit 400 ms after radio activates the remote enable circuit.

Action Taken When the DTC Sets

Radio sets the DTC and continues to output correct state.

Conditions for Clearing the DTC

- The condition must no longer be present.
- A history DTC clears after 50 malfunction-free ignition cycles.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

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[Component Connector End Views](#)

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- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Testing

Note: To prevent misdiagnosis, the door chime must be OFF during testing. Ensure the driver door latch is closed during testing.

1. Ignition OFF, disconnect the X3 harness connector at the T3 Amplifier. Ignition ON, A11 Radio ON, mute ON.

2. Test for 7.5–8.5 V between the control circuit terminal 11 and ground.

⇒ **If greater than 8.5 V**

- 2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

- 2.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

⇒ **If less than 7.5 V**

- 2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

- 2.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

- 2.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

↓ **If between 7.5–8.5 V**

3. A11 Radio ON, mute OFF.

4. Test for less than 1 V between the control circuit terminal 11 and ground.

⇒ **If 1 V or greater**

Replace the A11 Radio.

↓ **If less than 1 V**

5. Test or replace the T3 Amplifier.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for radio and amplifier replacement, programming, and setup.

DTC B2462

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC B2462 01

Global Positioning System Short to Battery

DTC B2462 02

Global Positioning System Short to Ground

DTC B2462 04

Global Positioning System Open

Circuit Description

The navigation antenna is connected to the navigation radio by a shielded coaxial cable. The radio supplies 5V through the coax cable to power the internal antenna amplifier.

Conditions for Running the DTC

- Radio On.
- System voltage is greater than 9V and less than 16V.
- The navigation radio tests the GPS antenna every 10 seconds.

Conditions for Setting the DTC

B2462 01

The navigation radio detects a short to B+ on the GPS antenna signal circuit.

B2462 02

The navigation radio detects a short to ground on the GPS antenna signal circuit.

B2462 04

The navigation radio detects an open/high resistance on the GPS antenna signal circuit.

Actions Taken When the DTC Sets

- The radio uses the last reported position and the vehicle speed signal to calculate the vehicle position.
- Route guidance may be inaccurate.
- Turn by turn navigation may be inaccurate or inoperative.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 50 consecutive malfunction-free ignition cycles have occurred.

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Diagnostic Aids

The navigation antenna requires a clear line of sight to the sky to operate properly. The GPS may have limited, intermittent, or no reception near tall buildings or inside structures.

Reference Information

Schematic Reference

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- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

EL-49903 GM OnStar Antenna Diagnostic Tool Kit

Circuit/System Testing

1. Ignition OFF, disconnect the navigation antenna coax cable connector at the A11 Radio. Connect the EL-49903 GM OnStar antenna diagnostic tool kit to the A11 Radio, place the test antenna on the roof of the vehicle.
2. Ignition ON, radio ON, navigation selected.
3. Verify DTC B2462 is not set.
 - ⇒ **If DTC B2462 is set**
Replace the A11 Radio.
 - ↓ **If DTC B2462 is not set**
4. Ignition OFF, disconnect the radio navigation coax cable at the T4P Navigation Antenna.
5. Verify the radio navigation coax cable passes the coax cable component test. Refer to Component Testing.
 - ⇒ **If the coax cable does not pass the test**
Replace the coax cable
 - ↓ **If the coax cable passes the test**
6. Test or replace the T4P Navigation Antenna.

Component Testing

Caution: Refer to [Test Probe Caution](#).

Note: Before testing the coax cable, check the cable exterior for being pinched, cut, damaged, or having loose connections at the components, which can cause reception issues.

To prevent false reading when testing the center coax terminals, use care not to ground the test probe on the outer housing/shield.

Coax Cable Test

1. Ignition OFF, disconnect the coax cable at both components.
2. Test for less than 5 Ω between coax cable center terminal end to end.
⇒ **If 5 Ω or greater**
Replace the coax cable
↓ **If less than 5 Ω**
3. Test for less than 5 Ω between the coax cable outer shield end to end.
⇒ **If 5 Ω or greater**
Replace the coax cable
↓ **If less than 5 Ω**
4. Test for infinite resistance between the coax cable center terminal and the coax cable outer shield.
⇒ **If less than infinite resistance**
Replace the coax cable
↓ **If infinite resistance**
5. All OK

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the diagnostic procedure.

- [Radio Antenna Base Replacement](#)
- [Control Module References](#) for radio replacement, programming, and setup.

DTC U0255-U0257

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC U0255

Lost Communication with Info Display Module

DTC U0256

Lost Communication with Infotainment Faceplate Control Module

DTC U0257

Lost Communication with Info Display Module/Infotainment Faceplate Control Module

Circuit/System Description

The radio information display and controls are separate components from the radio. One or more configurations may be possible, dependent upon the available content for the vehicle. The DTC(s) that can set when a malfunction occurs can vary due to calibration differences required for the vehicle content.

Diagnosis of these communication DTCs is based upon the symptom observed in the vehicle.

Monochrome Displays

When the vehicle is equipped with a monochrome display, the radio and the display communicate with each other via CGI serial data. The radio controls communicate with the display via LIN communications, and the control messages are passed through to the radio.

When the display and controls are combined in an assembly, the communication between the two components occurs within the assembly. If the two components are separate, the communication between the display and the controls is external, via the wiring harness.

Color Displays

When the vehicle is equipped with a color display, the display and controls communicate individually with the radio. The radio communicates directly with the controls via CGI serial data. A dedicated video cable is used to communicate graphical information between the radio and the display.

For non-touch color displays, a dedicated dimming circuit is used. The radio provides an output to the display based on dimming level information the radio receives.

Touch screen color displays use touch serial data communication between the display and the radio to exchange touch data, backlighting, and dimming levels.

Diagnostic Aids

- When equipped with a monochrome display, if the display is inoperative, the main radio controls will also be inoperative.
- The functions available on the steering wheel controls (if equipped) will continue to operate if the main radio controls are inoperative.

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- The DTC may be stored as a history DTC without affecting the operation of the display or controls.

Reference Information

Schematic Reference

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- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition ON, A11 Radio ON.
2. Verify the P17 Info Display Module turns on and information is shown on the display.
⇒ **If the P17 Info Display Module does not turn on, or information is not shown in the display.**
Refer to [Radio Information Display Malfunction](#).
⇓ **If the P17 Info Display Module turns on and information is shown on the display.**
3. Verify that all radio controls operate and perform the correct function.
⇒ **If some, but not all, controls operate normally.**
Replace the appropriate A20 Radio/HVAC Controls or the A22 Radio Controls.
⇒ **If all controls are inoperative.**
Refer to [Radio Controls Malfunction](#).
⇓ **If all controls operate and perform the correct function.**
4. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Control Module References](#) for replacement, programming, and setup.

Symptoms - Entertainment

Note: The following steps must be completed before using the symptom table.

1. Perform the [Diagnostic System Check - Vehicle](#) before using the Symptom Tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to [Radio/Audio System Description and Operation](#).

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the Radio/Audio System. Refer to [Checking Aftermarket Accessories](#).
- Inspect for easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#).

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- [Application Malfunction](#)
- [Audio/Video Player Adapter - Audio or Video Malfunction](#)
- [Auxiliary Audio Input Malfunction](#)
- [Bluetooth Malfunction](#)
- [Eject Malfunction](#)
- [No Global Positioning System \(GPS\) Reception](#)
- [Radio Controls Malfunction](#)
- [Radio Information Display Malfunction](#)
- [Radio Poor Reception](#)
- [Speaker Malfunction](#)
- [Video Entertainment System Malfunction](#)
- [Video Entertainment System Remote Control Malfunction](#)
- [Video Entertainment System Wireless Headphone Malfunction](#)
- [Voice Recognition Malfunction](#)

Application Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provide an overview of each diagnostic category.

Circuit/System Description

The term application refers to any piece of software that works on a system (hardware) that is being operated by its own software. Applications are typically small software programs which uses the hardware to perform a specific task, as opposed to operating the entire system.

Diagnostic Aids

- For an application to be used, it must be installed on both the vehicle infotainment system and a compatible mobile device.
- The application must work correctly on the device to work with the vehicle infotainment system.
- The user may be required to log-in to the application on the mobile device before using the application from the vehicle controls.
- Applications use the mobile device and connection to a service provider to operate. Connection quality issues, or service provider data transmission issues can give the appearance of a vehicle malfunction.
- The device must be connected to the system. This may be done wirelessly via Bluetooth®, or via the vehicle USB port.
When a mobile device is connected via Bluetooth®, some or all of the device controls may be unavailable from the radio controls. This varies dependant upon the device being used. Refer to the vehicle owners manual, supplements, and the device manufacturers information for information on devices, control, and operation.
Refer to the device manufacturers information for the preferred connection method.
- The device must be unlocked, and any additional applications should be closed.
- If the device has any sound enhancement features such as noise reduction or echo control, these features should be turned off.
- A low battery condition in the mobile device may not allow the device to connect to the system, or can create communication issues with the device. Verify the device battery state of charge and re-charge or replace as needed.
- If a 'Please See Device' or similar type error message is displayed, this may indicate the device has lost its connection to the vehicle, or the device has lost its external data connection.
- If a cable is used for connection, attempt to connect the device using a different cable; cables can deteriorate over time or become damaged.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

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[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

[Circuit/System Verification](#)

1. Verify the application is installed on the mobile device and is up to date.
 - ⇒ **If the application is not installed or is not up to date.**
Install or update the application on the device.
 - ↓ **If the application is installed on the mobile device and is up to date**
2. Verify the application operates correctly on the mobile device.
 - ⇒ **If the application is not operating correctly on the mobile device.**
Refer to the application website.
 - ↓ **If the application is operating correctly on the mobile device.**
3. Verify the A11 Radio calibrations are current.
 - ⇒ **If the radio calibrations are not current**
Reprogram the A11 Radio and re-evaluate the concern.
 - ↓ **If no update calibrations are available**
4. Verify the application is installed on the A11 Radio and is up to date.
 - ⇒ **If the application is not installed or is not up to date.**
Install or update the application on the A11 Radio.
 - ↓ **If the application is installed on the A11 Radio and is up to date**
5. Ignition ON, A11 Radio ON.
6. Verify the mobile device can connect to the infotainment system. Refer to the owners manual for information on the preferred connection method for the device.
 - ⇒ **If the mobile device cannot connect to the vehicle infotainment system.**
 - If unable to connect via Bluetooth, refer to [Bluetooth Malfunction](#).
 - If unable to connect via USB, refer to [Auxiliary Audio Input Malfunction](#).
 - ↓ **If the mobile device connects to the vehicle infotainment system.**
7. Launch the application.
8. Verify the applications operates properly with the vehicle infotainment system.
 - ⇒ **If the application does not function properly**
Refer to diagnostic aids.
 - ↓ **If the application functions properly**
9. All OK.

[Repair Instructions](#)

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for radio replacement, programming, and setup.

Audio/Video Player Adapter - Audio or Video Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Right Auxiliary Audio Signal	1	1	1	—
Left Auxiliary Audio Signal	2	2	2	—
Auxiliary Audio Common Ground	—	1, 2	—	—
Auxiliary Video Ground	—	3	—	—
Auxiliary Video High Signal	3	3	3	—
1. No or distorted right side audio 2. No or distorted left side audio 3. No or distorted video				

Circuit/System Description

The audio/video adaptor allows the connection of audio and video signals from an external device such as a camcorder, video game console or MP3 player to the rear seat entertainment system. The middle jack is for left audio (white), the right jack is for right audio (red), and the left jack is for video (yellow). The system requires standard RCA cables to connect your external device to the RCA jacks. The auxiliary audio and video circuits are connected to the radio.

Diagnostic Aids

Verify the external audio or video device is operating normally before performing this diagnostic procedure.

Reference Information

Schematic Reference

[Video System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Video Entertainment System Description and Operation](#)

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Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Testing

Note: Verify the DVD player in the radio is operating normally before performing this diagnostic procedure. If there is any issues with operating the DVD player, refer to [Symptoms - Entertainment](#).

1. Ignition OFF, disconnect the harness connector at the X82 Audio/Video Input Adapter and the X3 harness connector at the A11 Radio. Ignition ON.
2. Test for less than 1 V between the signal circuit terminals listed below and ground:

- A11 Radio terminal 3 X3
- A11 Radio terminal 13 X3
- A11 Radio terminal 14 X3
- A11 Radio terminal 7 X3
- A11 Radio terminal 17 X3

⇒ **If 1 V or greater.**

Repair the short to voltage on the circuit.

⇓ **If less than 1 V.**

3. Ignition OFF.

4. Test for infinite resistance between the signal circuit terminals listed below and ground:

- A11 Radio terminal 3 X3
- A11 Radio terminal 13 X3
- A11 Radio terminal 14 X3
- A11 Radio terminal 7 X3
- A11 Radio terminal 17 X3

⇒ **If less than infinite resistance.**

Repair the short to ground on the circuit.

⇓ **If infinite resistance.**

5. Test for less than 2 Ω between signal circuit terminals listed below and ground:

- A11 Radio terminal 3 X3 and the X82 Audio/Video Input Adapter terminal 6
- A11 Radio terminal 13 X3 and the X82 Audio/Video Input Adapter terminal 5
- A11 Radio terminal 14 X3 and the X82 Audio/Video Input Adapter terminal 7
- A11 Radio terminal 7 X3 and the X82 Audio/Video Input Adapter terminal 3
- A11 Radio terminal 17 X3 and the X82 Audio/Video Input Adapter terminal 1

⇒ **If 2 Ω or greater.**

Repair the open/high resistance in the circuit.

⇓ **If less than 2 Ω .**

6. Replace the X82 Audio/Video Input Adapter.
7. Connect all harness connectors. Ignition ON, radio ON.

8. Verify the entertainment system displays video playing from a device connected to the X82 Audio/Video Input Adapter.

⇒ **If the entertainment system does not display video playing from a device.**

Test or replace the A11 Radio.

⇓ **If the entertainment system displays video playing from a device.**

9. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Audio/Video Disc Player Adapter Replacement](#)
- [Control Module References](#) for radio replacement, programming, and setup.

Auxiliary Audio Input Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provide an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Auxiliary Audio Common Signal	—	6	—	—
Auxiliary Detection Signal	5	6	—	—
Left Auxiliary Audio Signal	2	2	2, 4	—
Right Auxiliary Audio Signal	3	3	3, 4	—
USB Cable	1	1	1	—
1. USB port Inoperative 2. No left side audio from device connected to AUX jack 3. No right side audio from device connected to AUX jack 4. Noticeable distortion may be present in affected audio channel 5. Radio does not detect auxiliary device connection, AUX not available as input selection 6. AUX always available as an input selection, with or without auxiliary device connected				

Circuit/System Description

Auxiliary Audio Input Jack

The 3.5 mm (1/8 in.) auxiliary audio input jack is located in the console. All circuits from the auxiliary jack are connected directly to the radio. When a device is connected to the auxiliary jack an internal switch opens. The radio detects the device and switches to AUX as the audio source. Audio signals from the device are sent to the radio from the auxiliary input jack via the left, right, and common audio signal circuits.

USB Port

The vehicle may be equipped with a USB port in the console. This port allows USB connectivity to the infotainment system from portable media players or a USB storage device (memory stick/flash drive). When a device is connected to the USB port, the system detects the device and switches to USB as the audio source. Once connected, the device can be controlled from the radio controls.

The USB port is connected to the radio via a standard USB cable. Mini type USB connectors are used to connect the cable at the USB port and at the radio or multimedia player interface module. Standard USB male to female connections are typically used for connecting USB cables together where an in-line connection is required. An in-line cable connection is typically found between the console and I/P harness.

Not all portable media player devices are compatible. Refer to the owner's manual for information on USB devices, control, and operation.

[Diagnostic Aids](#)

Auxiliary Audio Input Jack

- When a device is first connected to the 3.5 mm (1/8 in.) input jack the infotainment system automatically switches to that device. If an auxiliary device has already been connected, press the AUX or CD/AUX button to select the device.
- If the system detects the device, but the audio is not heard or is not clear, attempt to connect the device using a different cable; cables can deteriorate over time or become damaged.
- Playback of an audio device that is connected to the 3.5 mm jack can only be controlled using the controls on the device.
- The volume control on the device may need to be adjusted to ensure sufficient playback volume through the infotainment system.

USB

- When a device is first connected to the USB port, the infotainment system automatically switches to that device. If an auxiliary device has already been connected, press the AUX or CD/AUX button to select the device.
- A low battery condition in a portable media player may not allow the device to connect to the system, or can create communication issues with the device. Verify the device battery state of charge and re-charge or replace as needed.
- Connect the device directly to the USB port if possible. Only use a cable if it is required to connect the device. The use of extension cables can cause communication issues.
- If a cable is required for connection, attempt to connect the device using a different cable; cables can deteriorate over time or become damaged.
- Attempt audio playback from multiple USB devices when diagnosing USB concerns. Device compatibility can vary based on vehicle equipment. If the infotainment system is capable of operating any USB type device, the cause of the concern is not with the vehicle system. The inoperative device(s) may be incompatible or contain no recognized media types.
- If a 'Device Not Supported' or similar type error message is displayed, this indicates the system has connected to the device but cannot communicate with it properly. This does not indicate an issue with the vehicle system. The device may be incompatible, may require a 'reset', or may require an update to its software/firmware.
- If a 'No Supported Data Found' or similar type error message is displayed, this indicates the system has connected to the device and is communicating, but cannot find any compatible files/data. This does not indicate an issue with the vehicle system. Verify the device contains compatible media/file types.
- Poor connections or damaged USB cables can cause intermittent or no operation of USB devices. Inspect connectors, terminals, and cables for damage and replace components as necessary. Ensure all USB inline connections and connections at components are fully seated and connector position retainers/locks are secure.

[Reference Information](#)

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

- *EL-50334-20* Multi-Media Interface Tester (MIT)
- *EL-50334-50* USB Cable and Adapter Kit

For equivalent regional tools, refer to [Special Tools](#)

Circuit/System Verification

Auxiliary Audio Input Jack

1. Verify no DTCs are present.
⇒ **If any DTCs are present**
Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#).
↓ **If no DTCs are present**
2. Ignition ON, radio ON.
3. Verify the infotainment system switches to AUX as the audio source with the *EL-50334-20* Multi-Media Interface Tester (MIT) connected to the auxiliary audio input jack.
⇒ **If the infotainment system does not switch to AUX as the audio source**
Refer to Circuit/System Testing – Auxiliary Input Jack.
↓ **If the infotainment system switches to AUX as the audio source**
4. Verify the audio from the *EL-50334-20* Multi-Media Interface Tester (MIT) is heard through the vehicle infotainment system while operating the test tool to begin audio playback.
⇒ **If audio is not heard from the test tool.**
Refer to Circuit/System Testing – Auxiliary Input Jack.
↓ **If audio is heard from the test tool.**
5. All OK

USB Port

1. Verify no DTCs are present.
⇒ **If any DTCs are present**
Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#).
↓ **If no DTCs are present**
2. Ignition ON, radio ON.
3. Verify the infotainment system switches to USB as the audio source with the *EL-50334-20* Multi-Media Interface Tester (MIT) connected to the USB port.
⇒ **If the infotainment system does not switch to USB as the audio source**
Refer to Circuit/System Testing – USB Port.
↓ **If the infotainment system switches to USB as the audio source**
4. Verify the audio from the *EL-50334-20* Multi-Media Interface Tester (MIT) is heard through the vehicle infotainment system while operating the system to play audio from the test tool.
⇒ **If audio is not heard from the test tool.**

Refer to Circuit/System Testing – USB Port.

↓ **If audio is heard from the device**

5. All OK.

Circuit/System Testing

Auxiliary Audio Input Jack

1. Ignition OFF, disconnect the X1 harness connector at the X83 Auxiliary Audio Input.
Ignition ON, radio ON.

2. Test for 2.5–3.5 V between the signal circuit terminal 5 and ground.

⇒ **If less than 2.5 V**

2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

2.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

2.3. Test for less than 2 Ω in the signal circuit end to end

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

⇒ **If greater than 3.5 V**

2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio, ignition ON.

2.2. Test for less than 1 V between the detection circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 2.5–3.5 V**

3. Test for less than 1 V between the signal circuits listed below and ground:

- Left auxiliary audio signal circuit terminal 1
- Right auxiliary audio signal circuit terminal 2
- Auxiliary audio common signal circuit terminal 3

⇒ **If 1 V or greater**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

3.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If less than 1 V**

4. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

5. Test for infinite resistance between the signal circuits listed below and ground:

- Auxiliary audio common signal circuit terminal 23
- Left auxiliary audio signal circuit terminal 24
- Right auxiliary audio signal circuit terminal 10

⇒ **If less than infinite resistance**

Repair the short to ground on the circuit.

↓ **If infinite resistance**

6. Test for less than 5 Ω between the signal circuit terminals listed below:

- A11 Radio terminal 24 X1 and the X83 Auxiliary Audio Input terminal 1 X1
- A11 Radio terminal 10 X1 and the X83 Auxiliary Audio Input terminal 2 X1
- A11 Radio terminal 23 X1 and the X83 Auxiliary Audio Input terminal 3 X1

⇒ **If 5 Ω greater**

Repair the open/high resistance in the circuit.

⇓ **If less than 5 Ω**

7. Replace the X83 Auxiliary Audio Input. Connect all harness connectors.

8. Connect and operate the *EL-50334-20* Multi-Media Interface Tester (MIT).

9. Verify the audio from the test tool is heard through the vehicle infotainment system.

⇒ **If audio is not heard from the test tool**

Replace the A11 Radio.

⇓ **If audio is heard from the test tool**

10. All OK.

USB Port

1. Ignition OFF, disconnect the USB cable connection at the A11 Radio.

Note: USB cables and adapters for the following tests are found in the *EL-50334-50 USB Cable and Adapter Kit*.

2. Connect the EL-50334-1 Type A male to Mini A male USB Cable to the A11 Radio. Connect the EL-50334-3 Type A female to Type A female adapter to the EL-50334-1 Cable.

3. Ignition ON, radio ON, connect the *EL-50334-20* Multi-Media Interface Tester (MIT) to the EL-50334-3 adapter.

4. Verify the infotainment system switches to USB as the audio source.

⇒ **If the infotainment system does not switch to USB as the audio source**

Replace the A11 Radio.

⇓ **If the infotainment system switches to USB as the audio source**

5. Ignition OFF, connect the vehicle USB cable to the A11 Radio. Disconnect the I/P to floor console inline USB cable connector.

Note: The EL-50334-3 or EL-50334-4 adapter may be required for the following test.

6. Ignition ON, radio ON, connect the *EL-50334-20* Multi-Media Interface Tester (MIT) to the I/P side of the inline USB cable connector.

7. Verify the infotainment system switches to USB as the audio source.

⇒ **If the infotainment system does not switch to USB as the audio source**

Replace the I/P USB cable assembly.

⇓ **If the infotainment system switches to USB as the audio source**

8. Ignition OFF, connect the I/P to floor console inline USB cable connector.

9. Disconnect the USB cable at the X83 Auxiliary Audio Input. Connect the EL-50334-4 Type A female to Mini B female adapter to the USB cable.

10. Ignition ON, radio ON, connect the *EL-50334-20* Multi-Media Interface Tester (MIT) to the EL-50334-4 adapter.

11. Verify the infotainment system switches to USB as the audio source.

⇒ **If the infotainment system does not switch to USB as the audio source**

Replace the console USB cable assembly.

⇓ **If the infotainment system switches to USB as the audio source**

12. Test or replace the X83 Auxiliary Audio Input.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Audio Disc Player and USB Receptacle Replacement](#)
- [Control Module References](#) for radio replacement, programming, and setup.

Bluetooth Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provide an overview of each diagnostic category.

Circuit/System Description

Bluetooth® wireless technology is a short-range communications technology intended to replace the cables connecting portable and/or fixed devices while maintaining high levels of security. The operating range of the signal is approximately 30 feet.

The available features and functions are determined by the type of device and the software within the devices being used. For a feature or function to operate, it must be supported in both devices.

The Bluetooth® hardware is internal to the radio. The radio supports streaming of data (music, voice, information) from cellular phones and other mobile devices that support those features. The radio may also be capable of interfacing with cellular phones for hands-free features.

Refer to the vehicle owners manual, supplements, and the device manufacturers information for information on devices, control, operation, and pairing instructions.

Diagnostic Aids

- Verify the mobile device is properly configured for the feature being used. Refer to the device manufacturers information.
- Verify the function/feature that is being used is supported by the mobile device.
- The device must be paired to the radio to use the available Bluetooth® feature(s). The pairing process must only be performed once for each device, unless that device's information is deleted.
- The system can store pairing information for multiple devices, but can only be actively connected to one at any given time.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

EL-50334-20 Multi-Media Interface Tester (MIT)

For equivalent regional tools, refer to [Special Tools](#).

Circuit/System Verification

1. Verify no DTCs are present.
 - ⇒ **If any DTCs are present**
Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#).
 - ↓ **If no DTCs are present**
2. Verify the A11 Radio calibrations are current.
 - ⇒ **If the radio calibrations are not current**
Reprogram the A11 Radio and re-evaluate the concern.
 - ↓ **If no update calibrations are available**
Note: The MIT tool can be used to test either cellular phone or streaming audio functions. Refer to the tool instructions, and perform the appropriate test(s) related to the customers concern in the following steps.
3. Ignition ON, infotainment system ON.
4. Verify the infotainment system successfully pairs with the MIT tool.
 - ⇒ **If the infotainment system does not successfully pair with the MIT tool.**
Replace the A11 Radio.
 - ↓ **If the infotainment system successfully pairs with the MIT tool.**
5. Verify the infotainment system successfully completes the desired feature test using the MIT tool.
 - ⇒ **If the feature test is not successful**
Replace the A11 Radio.
 - ↓ **If the feature test is successful**
6. All OK. Refer to Diagnostic Aids.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for radio replacement, programming, and setup

Eject Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Media Eject Signal	1	1	1	—
1. Eject switch inoperative.				

Circuit/System Description

The disc player is integral to the radio. The eject switch is part of the HVAC controls assembly. When the switch is pressed a signal is sent via a discrete eject signal circuit to the radio display/controls assembly. The radio controls send a serial data message to the radio to eject the disc.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Radio/Audio System Description and Operation](#)

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- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Verify no DTCs are present.
⇒ **If any DTCs are present**
Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#).
⇓ **If no DTCs are present**
2. Ignition ON, infotainment system ON. Insert a disc in the disc player.

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3. Verify the disc ejects when commanding the eject function with the scan tool.

⇒ **If the disc does not eject**

Replace the A11 Radio.

↓ **If the disc ejects**

4. Ignition ON, infotainment system ON. Insert a disc in the disc player.

5. Verify the disc ejects after pressing the eject switch.

⇒ **If the disc does not eject**

Refer to Circuit/System Testing

↓ **If the disc ejects**

6. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the X1 harness connector at the P17 Info Display Module .

2. Ignition ON.

3. Verify a test lamp does not illuminate between the signal circuit terminal 8 and ground.

⇒ **If the test lamp illuminates**

3.1. Ignition OFF, disconnect the harness connector at the A26 HVAC Controls. Ignition ON.

3.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A26 HVAC Controls.

↓ **If the test lamp does not illuminate**

4. Test for greater than 11 V between the signal circuit terminal 8 and ground while pressing the eject switch.

⇒ **If less than 11 V.**

4.1. Ignition OFF, disconnect the harness connector at the A26 HVAC Controls.

4.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

4.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A26 HVAC Controls.

↓ **If greater than 11 V.**

5. Test or replace the P17 Info Display module.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for HVAC controls or radio controls replacement, programming, and setup.

No Global Positioning System (GPS) Reception

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC B2462 01

Global Positioning System Short to Battery

DTC B2462 02

Global Positioning System Short to Ground

DTC B2462 04

Global Positioning System Open

Circuit Description

The navigation antenna is connected to the navigation radio by a shielded coaxial cable. The radio supplies 5V through the coax cable to power the internal antenna amplifier.

Conditions for Running the DTC

- Radio On.
- System voltage is greater than 9V and less than 16V.
- The navigation radio tests the GPS antenna every 10 seconds.

Conditions for Setting the DTC

B2462 01

The navigation radio detects a short to B+ on the GPS antenna signal circuit.

B2462 02

The navigation radio detects a short to ground on the GPS antenna signal circuit.

B2462 04

The navigation radio detects an open/high resistance on the GPS antenna signal circuit.

Actions Taken When the DTC Sets

- The radio uses the last reported position and the vehicle speed signal to calculate the vehicle position.
- Route guidance may be inaccurate.
- Turn by turn navigation may be inaccurate or inoperative.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 50 consecutive malfunction-free ignition cycles have occurred.

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Diagnostic Aids

The navigation antenna requires a clear line of sight to the sky to operate properly. The GPS may have limited, intermittent, or no reception near tall buildings or inside structures.

Reference Information

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[Radio/Navigation System Schematics](#)

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- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

EL-49903 GM OnStar Antenna Diagnostic Tool Kit

Circuit/System Testing

1. Ignition OFF, disconnect the navigation antenna coax cable connector at the A11 Radio. Connect the EL-49903 GM OnStar antenna diagnostic tool kit to the A11 Radio, place the test antenna on the roof of the vehicle.
2. Ignition ON, radio ON, navigation selected.
3. Verify DTC B2462 is not set.
 - ⇒ **If DTC B2462 is set**
Replace the A11 Radio.
 - ↓ **If DTC B2462 is not set**
4. Ignition OFF, disconnect the radio navigation coax cable at the T4P Navigation Antenna.
5. Verify the radio navigation coax cable passes the coax cable component test. Refer to Component Testing.
 - ⇒ **If the coax cable does not pass the test**
Replace the coax cable
 - ↓ **If the coax cable passes the test**
6. Test or replace the T4P Navigation Antenna.

Component Testing

Caution: Refer to [Test Probe Caution](#).

Note: Before testing the coax cable, check the cable exterior for being pinched, cut, damaged, or having loose connections at the components, which can cause reception issues.

To prevent false reading when testing the center coax terminals, use care not to ground the test probe on the outer housing/shield.

Coax Cable Test

1. Ignition OFF, disconnect the coax cable at both components.
2. Test for less than 5 Ω between coax cable center terminal end to end.
⇒ **If 5 Ω or greater**
Replace the coax cable
↓ **If less than 5 Ω**
3. Test for less than 5 Ω between the coax cable outer shield end to end.
⇒ **If 5 Ω or greater**
Replace the coax cable
↓ **If less than 5 Ω**
4. Test for infinite resistance between the coax cable center terminal and the coax cable outer shield.
⇒ **If less than infinite resistance**
Replace the coax cable
↓ **If infinite resistance**
5. All OK

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the diagnostic procedure.

- [Radio Antenna Base Replacement](#)
- [Control Module References](#) for radio replacement, programming, and setup.

Radio Controls Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	U0255, U0257, 1, 2, 3	U0255, U0257, 1, 3, 4	—	—
Center Stack Reset Signal	U0257, 1, 2	—	—	—
Center Stack Wake up Signal	—	U0255, U0257, 1, 2	U0255, U0257, 1, 2	—
CGI Serial Data +	U0255, U0257, 1, 2	U0255, U0257, 1, 2	U0255, U0257, 1, 2	—
CGI Serial Data –	U0255, U0257, 1, 2	U0255, U0257, 1, 2	U0255, U0257, 1, 2	—
Touch Screen Serial Data +	U0255, 1	U0255, 1	U0255, 1	—
Touch Screen Serial Data –	—	U0255, 1	U0255, 1	—
Ground	—	—	—	—
1. Display Inoperative 2. Controls inoperative 3. Fault affects multiple components, dependant on vehicle equipment additional communication DTCs may be set 4. Fault may affect one or more components, dependant on fault location				

Circuit/System Description

The radio controls/display assembly is a separate component from the radio. The radio controls/display assembly contains the radio control knobs and buttons and an integrated display. The assembly is supplied battery voltage and ground . The radio uses a wake up circuit to control the power state of the assembly.

The display receives digital video data from the radio for on-screen display information through the video signal circuits. The radio communicates with the info display module over the touch screen serial data circuits for touch screen inputs and backlighting dimming level.

The radio controls communicate radio control inputs directly to the radio through the CAN Graphical Interface (CGI) data circuits. After receiving the message the radio will perform the requested function.

The HVAC controls are a separate component within the radio controls/display assembly. The HVAC control receives its own battery voltage and ground circuits. HVAC data for controls and status indicators is communicated between the HVAC controls and the HVAC control module with a separate LIN serial data circuit. HVAC status screen information from the HVAC control module is transmitted to the radio on the GMLAN serial data circuit. The radio then displays the desired screen information on the info display using the video data circuits.

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- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition ON, A11 Radio ON.
2. Verify the P17 Info Display Module turns on and information is shown on the display.
⇒ **If the P17 Info Display Module does not turn on, or information is not shown in the display.**
Refer to [Radio Information Display Malfunction](#).
- ↓ **If the P17 Info Display Module turns on and information is shown on the display.**
3. Verify that all radio controls operate and perform the correct function.
⇒ **If some, but not all, controls operate normally.**
Replace the P17 Info Display Module.
- ⇒ **If all controls are inoperative.**
Refer to Circuit/System Testing
- ↓ **If all radio controls operate and perform the correct function.**
4. All OK.

Circuit/System Testing

Note: Perform the Circuit/System Verification before proceeding with Circuit/System Testing.

1. Ignition OFF, disconnect the X2 harness connector at the P17 Info Display Module.

2. Test for less than 20 Ω between the data shield circuit terminal 6 and ground.

⇒ **If 20 Ω or greater**

2.1. Ignition OFF, disconnect the X1 connector at the A11 Radio.

2.2. Test for less than 2 Ω in the data shield circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

↓ **If less than 20 Ω**

3. Ignition ON.

4. Test for 2–3 V between the serial data circuit terminals listed below and ground.

◦ terminal 1

◦ terminal 2

⇒ **If less than 2 V**

4.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

4.2. Test for infinite resistance between the serial data circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

4.3. Test for less than 2 Ω in the serial data circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

⇒ **If greater than 3 V**

4.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

4.2. Test for less than 1 V between the serial data circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 2–3 V**

5. Replace the P17 Info Display Module. Connect all harness connectors.

6. Ignition ON, radio ON.

7. Verify that all radio controls operate and perform the correct function.

⇒ **If the radio controls still malfunction.**

Replace the A11 Radio.

↓ **If all radio controls operate and perform the correct function.**

8. All OK

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for radio or radio control assembly replacement, programming, and setup.

Radio Information Display Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	U0255, U0257, 1, 2, 3	U0255, U0257, 1, 3, 4	—	—
Center Stack Reset Signal	U0257, 1, 2	—	—	—
Center Stack Wake up Signal	—	U0255, U0257, 1, 2	U0255, U0257, 1, 2	—
CGI Serial Data +	U0255, U0257, 1, 2	U0255, U0257, 1, 2	U0255, U0257, 1, 2	—
CGI Serial Data –	U0255, U0257, 1, 2	U0255, U0257, 1, 2	U0255, U0257, 1, 2	—
Touch Screen Serial Data +	U0255, 1	U0255, 1	U0255, 1	—
Touch Screen Serial Data –	—	U0255, 1	U0255, 1	—
Ground	—	—	—	—
1. Display Inoperative 2. Controls inoperative 3. Fault affects multiple components, dependant on vehicle equipment additional communication DTCs may be set 4. Fault may affect one or more components, dependant on fault location				

Circuit/System Description

The radio controls/display assembly is a separate component from the radio. The radio controls/display assembly contains the radio control knobs and buttons and an integrated display. The assembly is supplied battery voltage and ground . The radio uses a wake up circuit to control the power state of the assembly.

The display receives digital video data from the radio for on-screen display information through the video signal circuits. The radio communicates with the info display module over the touch screen serial data circuits for touch screen inputs and backlighting dimming level.

The radio controls communicate radio control inputs directly to the radio through the CAN Graphical Interface (CGI) data circuits. After receiving the message the radio will perform the requested function.

The HVAC controls are a separate component within the radio controls/display assembly. The HVAC control receives its own battery voltage and ground circuits. HVAC data for controls and status indicators is communicated between the HVAC controls and the HVAC control module with a separate LIN serial data circuit. HVAC status screen information from the HVAC control module is transmitted to the radio on the GMLAN serial data circuit. The radio then displays the desired screen information on the info display using the video data circuits.

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- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition ON, radio ON.
2. Verify the information display turns on and information is shown on the display.
⇒ **If the information display does not turn on, or information is not shown in the display.**
Refer to Circuit/System Testing
- ⇓ **If the information display turns on and information is shown on the display.**
3. All OK.

Circuit/System Testing

1. Ignition OFF.
2. Verify the video interface cable is properly connected at the P17 Info Display Module X3 and A11 Radio X5 connections and there is no damage to the cable or connections.
⇒ **If connection problems or cable damage is noted.**
Perform the appropriate repair or replacement to correct any issues.
⇓ **If no issues are found with the video interface cable.**
3. Disconnect the X1 harness connector at the P17 Info Display Module.
4. Test for less than 10 Ω between the ground circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

- 4.1. Ignition OFF.
- 4.2. Test for less than 2 Ω in the ground circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , repair the open/high resistance in the ground connection.

↓ **If less than 10 Ω**

5. Verify that a test lamp illuminates between the B+ circuit terminal 6 and ground.

⇒ **If the test lamp does not illuminate and the circuit fuse is good**

- 5.1. Ignition OFF.
- 5.2. Test for less than 2 Ω in the B+ circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , verify the fuse is not open and there is voltage at the fuse.

⇒ **If the test lamp does not illuminate and the circuit fuse is open**

- 5.1. Ignition OFF.
- 5.2. Test for infinite resistance between the B+ circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇒ If infinite resistance, replace the P17 Info Display Module .

↓ **If the test lamp illuminates.**

6. Ignition ON

7. Test for less than 1 V between the control circuit terminals listed below and ground.

- terminal 3
- terminal 9

⇒ **If greater than 1 V**

- 7.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.
- 7.2. Test for less than 1 V between the control circuit and ground.
 - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
 - ⇒ If less than 1 V, replace the A11 Radio.

↓ **If less than 1 V**

8. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.
9. Test for infinite resistance between the control circuit terminals listed below and ground.
 - P17 Info Display Module terminal 3 X1
 - P17 Info Display Module terminal 9 X1

⇒ **If less than infinite resistance,**

Repair the short to ground on the circuit.

↓ **If infinite resistance**

10. Test for less than 2 Ω between the control circuits listed below.
 - P17 Info Display Module terminal 3 X1 and the A11 Radio terminal 13 X1
 - P17 Info Display Module terminal 9 X1 and the A11 Radio terminal 27 X1

⇒ **If 2 Ω or greater**

Repair the open/high resistance in the circuit.

↓ **If less than 2 Ω .**

11. Ignition OFF, connect the A11 Radio X1 harness connector.
12. Disconnect the X2 harness connector at the P17 Info Display Module .
13. Test for less than 20 Ω between the data shield circuit terminal 9 and ground.

⇒ **If 20 Ω or greater**

- 13.1. Ignition OFF, disconnect the X1 connector at the A11 Radio.
- 13.2. Test for less than $2\ \Omega$ in the data shield circuit end to end.
 - ⇒ If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than $2\ \Omega$, replace the A11 Radio.

↓ **If less than $20\ \Omega$**

- 14. Ignition ON.
- 15. Test for 2–3 V between the data circuit terminals listed below and ground.
 - terminal 5
 - terminal 10

⇒ **If less than 2 V**

- 15.1. Ignition OFF, disconnect the X4 harness connector at the A11 Radio.
- 15.2. Test for infinite resistance between the data circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ↓ If infinite resistance
- 15.3. Test for less than $2\ \Omega$ in the data circuit end to end.
 - ⇒ If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than $2\ \Omega$, replace the A11 Radio.

⇒ **If greater than 3 V**

- 15.1. Ignition OFF, disconnect the X4 harness connector at the A11 Radio. Ignition ON.
- 15.2. Test for less than 1 V between the data circuit and ground.
 - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
 - ⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 2–3 V**

- 16. Replace the video interface cable.
- 17. Connect all harness connectors.
- 18. Ignition ON, radio ON.
- 19. Verify the P17 Info Display Module turns on and information is shown on the display.
 - ⇒ **If the P17 Info Display Module does not turn on, or information is not shown in the display.**
 - 19.1. Replace the P17 Info Display Module .
 - 19.2. Ignition ON, radio ON.
 - 19.3. Verify the P17 Info Display Module turns on and information is shown on the display.
 - ⇒ If the information display does not turn on, or information is not shown in the display, replace the A11 Radio.
 - ↓ If the info display module turns on and information is shown on the display.
 - 19.4. All OK.
 - ↓ **If the info display module turns on and information is shown on the display.**
- 20. All OK

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for radio or radio control assembly replacement, programming, and setup.

Radio Poor Reception

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC B125A 02

Antenna Signal Circuit Short to Ground

DTC B125A 04

Antenna Signal Circuit Open Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Radio Antenna Coax	B125A 02	B125A 04	1	—
Ground	—	1	—	—
1. May exhibit possible AM/FM interference.				

Circuit/System Description

The multi-band antenna is located on the roof of the vehicle. The radio antenna is enabled when the radio is turned on. The radio provides battery voltage to the antenna using the center conductor of the antenna coaxial cable. When a 12 V signal is seen on the center conductor of the antenna coax, both AM and FM signals are amplified.

Conditions for Running the DTC

- Ignition ON.
- Battery voltage must be between 9–16 V.

Conditions for Setting the DTC

B125A 02

The radio detects a short to ground in the antenna signal circuit center conductor.

B125A 04

The radio detects an open in the antenna signal circuit center conductor.

Action Taken When the DTC Sets

Radio reception may be poor or not available.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.

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- A history DTC will clear after 50 consecutive malfunction-free ignition cycles have occurred.

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- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition ON, A11 Radio ON.
2. Verify station reception is normal when tuned to several known good AM and FM stations.
⇒ **If AM or FM reception is poor.**
Refer to Circuit/System Testing
↓ **If reception is normal**
3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the radio antenna coax cable from the A11 Radio and from the T4M Radio Antenna.
2. Verify the antenna coax cable passes the coax cable component test. Refer to Component Testing.
⇒ **If the coax cable does not pass the test**
Replace the antenna coax cable
↓ **If the coax cable passes the test**
3. Connect the radio antenna coax cable to the A11 Radio.
4. Ignition ON, A11 Radio ON.
5. Verify a test lamp illuminates between the antenna coax cable center terminal at the T4M Radio Antenna and chassis ground.
⇒ **If the test lamp does not illuminate**
Replace the A11 Radio.
↓ **If the test lamp illuminates**
6. Test or replace the T4M Radio Antenna.

Component Testing

Caution: Refer to [Test Probe Caution](#).

Note: Before testing the coax cable, check the cable exterior for being pinched, cut, damaged, or having loose connections at the components, which can cause reception issues.

To prevent false reading when testing the center coax terminals, use care not to ground the test probe on the outer housing/shield.

Coax Cable Test

1. Ignition OFF, disconnect the coax cable at both components.
2. Test for less than $5\ \Omega$ between coax cable center terminal end to end.
⇒ **If $5\ \Omega$ or greater**
Replace the coax cable
↓ **If less than $5\ \Omega$**
3. Test for less than $5\ \Omega$ between the coax cable outer shield end to end.
⇒ **If $5\ \Omega$ or greater**
Replace the coax cable
↓ **If less than $5\ \Omega$**
4. Test for infinite resistance between the coax cable center terminal and the coax cable outer shield.
⇒ **If less than infinite resistance**
Replace the coax cable
↓ **If infinite resistance**
5. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Radio Antenna Base Replacement](#)
- [Control Module References](#) for radio replacement, programming, and setup.

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[Driver Information and Entertainment](#) | [Cellular, Entertainment, and Navigation](#) | [Diagnostic Information and Procedures](#) |

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Speaker Replacement Reference

Speaker Replacement Reference

Component	Repair Instruction
Center I/P Speaker	Radio Front Center Speaker Replacement
Front Tweeter Speaker	Radio Windshield Side Garnish Molding Speaker Replacement
Front Door Speaker	Radio Front Side Door Speaker Replacement
Rear Door Speaker	Radio Rear Side Door Speaker Replacement
Subwoofer Speaker	Radio Rear Speaker Replacement

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Speaker Malfunction (UQA)

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Amplifier B+	1	1	—	—
Amplifier Center Audio Signal	2	2	2, 3	2
Amplifier LF Audio Signal	2	2	2, 3	2
Amplifier LR Audio Signal	2	2	2, 3	2
Amplifier RF Audio Signal	2	2	2, 3	2
Amplifier RR Audio Signal	2	2	2, 3	2
Amplifier Subwoofer Audio Signal	2	2	2, 3	2
Radio LF Audio Signal	2	2	2, 3	2
Radio LR Audio Signal	2	2	2, 3	2
Radio RF Audio Signal	2	2	2, 3	2
Radio RR Audio Signal	2	2	2, 3	2
Remote Enable Signal	B1265 02, 1, 4	1, 4	—	—
Amplifier Control	B1287 02	B1287 04	B1287 01	—
Amplifier Ground	1	1	—	—
1. Audio inoperative, no sound from all speakers. 2. No or reduced audio from speaker(s) on the affected audio circuit. 3. Noticeable audio distortion may be present. 4. Fault may affect one or more components, dependant on vehicle equipment.				

Circuit/System Description

Each of the audio output channel circuits (+) and (-), at the radio and audio amplifier have a DC bias voltage that is approximately one-half of battery voltage. When using a DMM, each of

the audio output channel circuits will measure approximately 6.5 V DC. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. The frequency (Hz) of the AC voltage signal is directly related to the frequency of the input (audio source playing) to the audio system. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

With the premium speaker system, the radio supplies four channels of input to the amplifier, and the amplifier supplies all audio signals to the speakers. The radio or amplifier does not set DTCs for the audio output circuits with this system.

Diagnostic Aids

- Improper speaker mounting or loose trim may cause an audible buzz or distortion. Inspect the appropriate speaker and the surrounding interior trim for proper and secure mounting.
The EL-50334-6 Audio System Diagnostic CD contains audio tracks that can be used to duplicate and isolate such concerns. Tracks 11 and 12 contain audio sweep tones for testing for speaker and grill rattles.
If the speaker or surrounding interior trim is found to be loose or improperly secured, correctly secure the item.
- The front tweeter speakers are connected to the same channel as the front door speakers.
- The amplifier control circuit will measure less than 1 V when the mute function is OFF, and approximately 8 V DC when at full mute. When mute is active, the radio stops sending the varying AC voltage to the amplifier.

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Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

EL-50334-50 USB Cable and Adapter Kit

Circuit/System Verification

1. Ignition ON, A11 Radio ON, mute OFF.
 2. Verify clear audio is heard from each speaker, adjusting fade and balance controls to test each speaker individually.
- ⇒ **If audio is inoperative from one or more speakers, or the audio emitted is not clear**

Refer to Circuit/System Testing.

↓ **If clear audio is heard from all speakers**

3. All OK.

Circuit/System Testing

Note: Some circuits supply audio signals to more than one speaker. It may be necessary to disconnect all speakers on the affected audio circuit when performing circuit tests.

In the following tests, audio signal frequencies (Hz) will be tested. To prevent misdiagnosis, the door chime must be OFF during testing. Ensure the driver door latch is closed during testing.

1. Ignition OFF, disconnect the X1 harness connector at the T3 Audio Amplifier.
2. Test for less than 10 Ω between the ground circuit terminal 8 and ground.

⇒ **If 10 Ω or greater**

- 2.1. Ignition OFF.
- 2.2. Test for less than 2 Ω in the ground circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , repair the open/high resistance in the ground connection.

↓ **If less than 10 Ω**

3. Verify that a test lamp illuminates between the B+ circuit terminal 4 and ground.

⇒ **If the test lamp does not illuminate and the circuit fuse is good**

- 3.1. Ignition OFF, disconnect the test lamp.
- 3.2. Test for less than 2 Ω in the B+ circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , refer to [Power Mode Mismatch](#).

⇒ **If the test lamp does not illuminate and the circuit fuse is open**

- 3.1. Ignition OFF, disconnect the test lamp.
- 3.2. Test for infinite resistance between the B+ circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇒ If infinite resistance, replace the T3 Audio Amplifier.

↓ **If the test lamp illuminates**

4. Verify a test lamp does not illuminate between the control circuit terminal 8 and ground.

⇒ **If the test lamp illuminates**

- 4.1. Disconnect the X1 harness at the A11 Radio. Ignition ON.
- 4.2. Verify a test lamp does not illuminate between the control circuit and ground.
 - ⇒ If the test lamp illuminates, repair the short to voltage on the circuit.
 - ⇒ If the test lamp does not illuminate, replace the A11 Radio.

↓ **If the test lamp does not illuminate**

5. Ignition ON, A11 Radio ON.
6. Verify a test lamp illuminates between the control circuit terminal 8 and ground.

⇒ **If the test lamp does not illuminate**

- 6.1. Ignition OFF, disconnect the test lamp.
- 6.2. Disconnect the X1 harness at the A11 Radio.
- 6.3. Test for less than 2 Ω in the control circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 Radio.

↓ **If the test lamp illuminates**

7. Radio ON, mute ON.

8. Test for 7.5–8.5 V between the control circuit terminal 11 and ground.

⇒ **If greater than 8.5 V**

8.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

8.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

⇒ **If less than 7.5 V**

8.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

8.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

8.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

↓ **If between 7.5–8.5 V**

9. Radio ON, mute OFF.

10. Test for less than 1 V between the control circuit terminal 11 and ground.

⇒ **If greater than 1 V**

Replace the A11 Radio.

↓ **If less than 1 V**

11. Test for 5–7 V between the signal circuit terminals listed below and ground:

- LHD- left front low level audio signal (+) – terminal 14
- LHD- left front low level audio signal (-) – terminal 6
- LHD- right front low level audio signal (+) – terminal 15
- LHD- right front low level audio signal (-) – terminal 7
- LHD- left rear low level audio signal (+) – terminal 12
- LHD- left rear low level audio signal (-) – terminal 4
- LHD- right rear low level audio signal (+) – terminal 13
- LHD- right rear low level audio signal (-) – terminal 5
- RHD- left front low level audio signal (+) – terminal 15
- RHD- left front low level audio signal (-) – terminal 7
- RHD- right front low level audio signal (+) – terminal 14
- RHD- right front low level audio signal (-) – terminal 6
- RHD- left rear low level audio signal (+) – terminal 13
- RHD- left rear low level audio signal (-) – terminal 5
- RHD- right rear low level audio signal (+) – terminal 12
- RHD- right rear low level audio signal (-) – terminal 4

⇒ **If less than 5 V**

11.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

11.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

11.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.

⇒ If less than $2\ \Omega$, replace the A11 Radio.

⇒ **If greater than 7 V**

11.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

11.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

⇓ **If between 5–7 V**

12. Play track number three (50 Hz bass test tone) from the test CD.

13. Test for 49–51 Hz AC between the audio signal circuit terminals listed below and ground:

- LHD- left front low level audio signal (+) – terminal 14
- LHD- left front low level audio signal (-) – terminal 6
- LHD- right front low level audio signal (+) – terminal 15
- LHD- right front low level audio signal (-) – terminal 7
- LHD- left rear low level audio signal (+) – terminal 12
- LHD- left rear low level audio signal (-) – terminal 4
- LHD- right rear low level audio signal (+) – terminal 13
- LHD- right rear low level audio signal (-) – terminal 5
- RHD- left front low level audio signal (+) – terminal 15
- RHD- left front low level audio signal (-) – terminal 7
- RHD- right front low level audio signal (+) – terminal 14
- RHD- right front low level audio signal (-) – terminal 6
- RHD- left rear low level audio signal (+) – terminal 13
- RHD- left rear low level audio signal (-) – terminal 5
- RHD- right rear low level audio signal (+) – terminal 12
- RHD- right rear low level audio signal (-) – terminal 4

⇒ **If not between 49–51 Hz AC**

Replace the A11 Radio.

⇓ **If between 49–51 Hz AC**

14. Ignition OFF, connect all harness connectors.

15. Disconnect the harness connector at the appropriate P19 Speaker. Ignition ON, A11 Radio ON, mute OFF.

16. Test for 5–7 V between the signal circuit terminals listed below and ground:

- Center I/P speaker or tweeter speaker signal (-) – terminal 1
- Center I/P speaker or tweeter speaker signal (+) – terminal 2
- Door speaker or subwoofer speaker signal (-) – terminal A
- Door speaker or subwoofer speaker signal (+) – terminal B

⇒ **If less than 5 V**

16.1. Ignition OFF, disconnect the X1 and X2 harness connectors at the T3 Audio Amplifier.

16.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

⇓ If infinite resistance

16.3. Test for less than $2\ \Omega$ in the signal circuit end to end.

⇒ If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.

⇒ If less than $2\ \Omega$, replace the T3 Audio Amplifier.

⇒ **If greater than 7 V**

16.1. Ignition OFF, disconnect the X1 and X2 harness connectors at the T3 Audio Amplifier.
Ignition ON.

16.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the T3 Audio Amplifier.

↓ **If between 5–7 V**

17. Mute OFF, play track number three (50 Hz bass test tone) from the test CD.

18. Test for 49–51 Hz AC between the signal circuit terminals listed below and ground:

- Center I/P speaker or tweeter speaker signal (-) – terminal 1
- Center I/P speaker or tweeter speaker signal (+) – terminal 2
- Door speaker or subwoofer speaker signal (-) – terminal A
- Door speaker or subwoofer speaker signal (+) – terminal B

⇒ **If not between 49–51 Hz AC**

Replace the T3 Audio Amplifier.

↓ **If between 49–51 Hz AC**

19. Test or replace the P19 Speaker.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Speaker Replacement Reference](#)
- [Control Module References](#) for audio amplifier or radio replacement, programming and setup.

Speaker Malfunction (UQG)

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Amplifier B+	—	1	—	—
Entertainment Remote Enable Signal	B1265	1	—	—
Left Front Speaker Output Signal	B1025 02*	B1025 04*	B1025 01**	—
Right Front Speaker Output Signal	B1035 02*	B1035 04*	B1035 01**	—
Left Rear Speaker Output Signal	B1045 02*	B1045 04*	B1045 01**	—
Right Rear Speaker Output Signal	B1055 02*	B1055 04*	B1055 01**	—
Subwoofer Speaker Output Signal	2*	2	2**	—
Amplifier Ground	—	1	—	—
1. Amplifier inoperative/no sound from subwoofer speakers. 2. No or reduced sound from subwoofer. * No or reduced audio from the speaker(s) on the affected circuit ** Noticeable audio distortion possible.				

Circuit/System Description

Each of the audio output channel circuits (+) and (-), at the radio and audio amplifier have a DC bias voltage that is approximately one half of battery voltage. When using a DMM, each of the audio output channel circuits will measure approximately 6.5 V DC. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. The frequency (Hz) of the AC voltage signal is directly related to the frequency of the input (audio source playing) to the audio system. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

This system adds two subwoofer speakers with a dedicated subwoofer amplifier to the base speaker system. The subwoofer amplifier inputs are received from either the front or rear

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speaker circuits, dependent on body style. The amplifier is enabled when it receives a signal from the radio on the remote enable circuit. The amplifier does not set DTCs.

[Diagnostic Aids](#)

- Improper speaker mounting or loose trim may cause an audible buzz or distortion. Inspect the appropriate speaker and the surrounding interior trim for proper and secure mounting.
The EL-50334-6 Audio System Diagnostic CD contains audio tracks that can be used to duplicate and isolate such concerns. Tracks 11 and 12 contain audio sweep tones for testing for speaker and grill rattles.
If the speaker or surrounding interior trim is found to be loose or improperly secured, correctly secure the item.
- The front tweeter speakers are connected to the same channel as the front door speakers.
- The subwoofer amplifier receives audio inputs from the front door speaker circuits (UTE), or rear door speaker circuits (sedan/wagon). If the associated door speakers are malfunctioning with a subwoofer system malfunction present, the door speaker diagnostics need to be performed before addressing the subwoofer concern.

[Reference Information](#)

Schematic Reference

[Radio/Navigation System Schematics](#)

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Description and Operation

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Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

EL-50334-50 USB Cable and Adapter Kit

[Circuit/System Verification](#)

1. Ignition ON, A11 Radio ON, mute OFF.
2. Verify DTC B1265 is not set.
⇒ **If DTC B1265 is set**
Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#).
⇓ **If DTC B1265 is not set**
3. Verify clear audio is heard from each speaker, adjusting fade and balance controls to test each speaker individually.
⇒ **If audio is inoperative from one or more speakers, or the audio emitted is not clear**
Refer to Circuit/System Testing.

↓ **If clear audio is heard from all speakers**

4. All OK.

Circuit/System Testing

Note: Some circuits supply audio signals to more than one speaker. It may be necessary to disconnect all speakers on the affected audio circuit when performing circuit tests.

In the following tests, audio signal frequencies (Hz) will be tested. To prevent misdiagnosis, the door chime must be OFF during testing. Ensure the driver door latch is closed during testing.

Front Speakers – Sedan/Wagon

1. Ignition OFF, disconnect the harness connector at the appropriate P19 Speaker. Ignition ON, A11 Radio ON, mute OFF.

2. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.

⇒ **If less than 5 V**

2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

2.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

2.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

⇒ **If greater than 7 V**

2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

2.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 5–7 V**

3. Play track number three (50 Hz bass test tone) from the EL-50334-6 Audio Test CD.

4. Test for 49–51 Hz AC between each signal circuit terminal 1 and terminal 2 and ground.

⇒ **If not between 49–51 Hz AC**

Replace the A11 Radio.

↓ **If between 49–51 Hz AC**

5. Test or replace the P19 Speaker.

Rear Door Speakers – Sedan/Wagon

1. Ignition OFF, disconnect the harness connector at the T3 Audio Amplifier.

2. Disconnect the harness connector at the appropriate P19 Speaker. Ignition ON, A11 Radio ON, mute OFF.

3. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.

⇒ **If less than 5 V**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

3.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

3.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than $2\ \Omega$, replace the A11 Radio.

⇒ **If greater than 7 V**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

3.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

⇓ **If between 5–7 V**

4. Ignition OFF, connect the harness connector at the T3 Audio Amplifier. Ignition ON, A11 Radio ON, mute OFF.

5. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground at the disconnected P19 Speaker.

⇒ **If not between 5–7 V**

Replace the T3 Audio Amplifier.

⇓ **If between 5–7 V**

6. Play track number three (50 Hz bass test tone) from the EL-50334-6 Audio Test CD.

7. Test for 49–51 Hz AC between each signal circuit terminal 1 and terminal 2 and ground.

⇒ **If not between 49–51 Hz AC**

Replace the A11 Radio.

⇓ **If between 49–51 Hz AC**

8. Test or replace the P19 Speaker.

Front Speakers – UTE

1. Ignition OFF, disconnect the harness connector at the T3 Audio Amplifier.

2. Disconnect the harness connector at the appropriate P19 Speaker. Ignition ON, A11 Radio ON, mute OFF.

3. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.

⇒ **If less than 5 V**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

3.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

⇓ If infinite resistance

3.3. Test for less than $2\ \Omega$ in the signal circuit end to end.

⇒ If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.

⇒ If less than $2\ \Omega$, replace the A11 Radio.

⇒ **If greater than 7 V**

3.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

3.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

⇓ **If between 5–7 V**

4. Ignition OFF, connect the harness connector at the T3 Audio Amplifier. Ignition ON, A11 Radio ON, mute OFF.

5. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground at the disconnected P19 Speaker.

⇒ **If not between 5–7 V**

Replace the T3 Audio Amplifier.

⇓ **If between 5–7 V**

6. Play track number three (50 Hz bass test tone) from the EL-50334-6 Audio Test CD.
7. Test for 49–51 Hz AC between each signal circuit terminal 1 and terminal 2 and ground.
 - ⇒ **If not between 49–51 Hz AC**
Replace the A11 Radio.
 - ⇓ **If between 49–51 Hz AC**
8. Test or replace the P19 Speaker.

Subwoofer Speakers

Note: The subwoofer amplifier inputs are received from either the front or rear speaker circuits, dependent on body style. Verify the associated door speakers are functioning properly before testing the subwoofer speaker system.

1. Ignition OFF, disconnect the harness connector at the T3 Audio Amplifier.
2. Test for less than 10 Ω between the ground circuit terminal 8 and ground.
 - ⇒ **If 10 Ω or greater**
 - 2.1. Ignition OFF.
 - 2.2. Test for less than 2 Ω in the ground circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , repair the open/high resistance in the ground connection.
 - ⇓ **If less than 10 Ω**
3. Verify that a test lamp illuminates between the B+ circuit terminal 16 and ground.
 - ⇒ **If the test lamp does not illuminate and the circuit fuse is good**
 - 3.1. Ignition OFF, disconnect the test lamp.
 - 3.2. Test for less than 2 Ω in the B+ circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , refer to [Power Mode Mismatch](#).
 - ⇒ **If the test lamp does not illuminate and the circuit fuse is open**
 - 3.1. Ignition OFF, disconnect the test lamp.
 - 3.2. Test for infinite resistance between the B+ circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇒ If infinite resistance, replace the T3 audio amplifier.
 - ⇓ **If the test lamp illuminates**
4. Verify a test lamp does not illuminate between the control circuit terminal 7 and ground.
 - ⇒ **If the test lamp illuminates**
 - 4.1. Disconnect the X1 harness connector at the A11 Radio.
 - 4.2. Verify a test lamp does not illuminate between the control circuit and ground.
 - ⇒ If the test lamp illuminates, repair the short to voltage on the circuit.
 - ⇒ If the test lamp does not illuminate, replace the A11 Radio.
 - ⇓ **If the test lamp does not illuminate**
5. Ignition ON, A11 Radio ON.
6. Verify a test lamp illuminates between the control circuit terminal 7 and ground.
 - ⇒ **If the test lamp does not illuminate**
 - 6.1. Ignition OFF, disconnect the test lamp.
 - 6.2. Disconnect the X1 harness connector at the A11 Radio.
 - 6.3. Test for less than 2 Ω in the control circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 Radio.

↓ **If the test lamp illuminates**

7. Test for 5–7 V between the signal circuit terminals listed below and ground:

- Left speaker signal circuit terminal 9
- Left speaker signal circuit terminal 10
- Right speaker signal circuit terminal 1
- Right speaker signal circuit terminal 2

⇒ **If less than 5 V**

7.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.

7.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

7.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the A11 Radio.

⇒ **If greater than 7 V**

7.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.

7.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 5–7 V**

8. Ignition OFF, connect the harness connector at the T3 Audio Amplifier.

9. Disconnect the harness connector at the appropriate P19 Speaker. Ignition ON, radio ON.

10. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.

⇒ **If less than 5 V**

10.1. Ignition OFF, disconnect the X1 harness connector at the T3 Audio Amplifier.

10.2. Test for infinite resistance between the signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground on the circuit.

↓ If infinite resistance

10.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the T3 Audio Amplifier.

⇒ **If greater than 7 V**

10.1. Ignition OFF, disconnect the X1 harness connector at the T3 Audio Amplifier. Ignition ON.

10.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the T3 Audio Amplifier.

↓ **If between 5–7 V**

11. Play track number three (50 Hz bass test tone) from the EL-50334-6 Audio Test CD.

12. Test for 49–51 Hz AC between each signal circuit terminal 1 and terminal 2 and ground.

⇒ **If not between 49–51 Hz AC**

Replace the T3 Audio Amplifier.

↓ **If between 49–51 Hz AC**

13. Test or replace the P19 speaker.

[Repair Instructions](#)

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Speaker Replacement Reference](#)
- [Control Module References](#) for audio amplifier or radio replacement, programming and setup.

Speaker Malfunction (UQF)

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Front Speaker Output Signal	B1025 02*	B1025 04*	B1025 01**	—
Left Rear Speaker Output Signal	B1045 02*	B1045 04*	B1045 01**	—
Right Front Speaker Output Signal	B1035 02*	B1035 04*	B1035 01**	—
Right Rear Speaker Output Signal	B1055 02*	B1055 04*	B1055 01**	—

* No or reduced audio from the speaker(s) on the affected circuit

** Noticeable audio distortion possible.

Circuit/System Description

Each of the audio output channel circuits (+) and (-), at the radio and audio amplifier have a DC bias voltage that is approximately one half of battery voltage. When using a DMM, each of the audio output channel circuits will measure approximately 6.5 V DC. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. The frequency (Hz) of the AC voltage signal is directly related to the frequency of the input (audio source playing) to the audio system. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

With the standard speaker system, the radio has four audio output channels supplying four or six speakers, dependent on body style.

Diagnostic Aids

- Improper speaker mounting or loose trim may cause an audible buzz or distortion. Inspect the appropriate speaker and the surrounding interior trim for proper and secure mounting.
The EL-50334-6 Audio System Diagnostic CD contains audio tracks that can be used to duplicate and isolate such concerns. Tracks 11 and 12 contain audio sweep tones for testing for speaker and grill rattles.
If the speaker or surrounding interior trim is found to be loose or improperly secured, correctly secure the item.
- The front tweeter speakers are connected to the same channel as the front door speakers.

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Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

EL-50334-50 USB Cable and Adapter Kit

Circuit/System Verification

1. Ignition ON, A11 Radio ON, mute OFF.
2. Verify clear audio is heard from each speaker, adjusting fade and balance controls to test each speaker individually.
 - ⇒ **If audio is inoperative from one or more speakers, or the audio emitted is not clear**
Refer to Circuit/System Testing.
 - ↓ **If clear audio is heard from all speakers**
3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate P19 speaker. Ignition ON, A11 Radio ON, mute OFF.
2. Test for 5–7 V between each audio signal circuit terminal 1 and terminal 2 and ground.
 - ⇒ **If less than 5 V**
 - 2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.
 - 2.2. Test for infinite resistance between the signal circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ↓ If infinite resistance
 - 2.3. Test for less than 2 Ω in the signal circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 Radio.
 - ⇒ **If greater than 7 V**
 - 2.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio. Ignition ON.
 - 2.2. Test for less than 1 V between the signal circuit and ground.
 - ⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the A11 Radio.

↓ **If between 5–7 V**

Note: In the following tests, audio signal frequencies (Hz) will be tested. To prevent misdiagnosis, the door chime must be OFF during testing. Ensure the driver door latch is closed during testing.

3. Play track number three (50 Hz bass test tone) from the EL-50334-6 Audio Test CD.
4. Test for 49–51 Hz AC between each signal circuit terminal 1 and terminal 2 and ground.

⇒ **If not between 49–51 Hz AC**

Replace the A11 Radio.

↓ **If between 49–51 Hz AC**

5. Test or replace the P19 speaker.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Speaker Replacement Reference](#)
- [Control Module References](#) for radio replacement, programming, and setup.

Video Entertainment System Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Video Display B+	2	1	—	—
Remote Enable Control Circuit	B1265 02, 3	4	5	—
DVD Audio Common Signal (-)	6	6	6	—
Left DVD Audio Signal (+)	7	7	7	—
Right DVD Audio Signal (+)	8	8	8	—
DVD Video Signal (+)	9	9	7	—
DVD Video Signal (-)	9	9	9, 10	—
Infrared Remote Signal (+)	11	11	11	—
Infrared Remote Signal (-)	11	11	11	—
Video Mode Signal	B1288 02, 12	B1288 04, 12	B1288 01, 12	—
Video Bright Signal	B1289 02, 13	B1289 04, 13	B1289 01, 13	—
Ground Terminal 8	—	1	—	—
Ground Terminal 14	—	1	—	—

1. One or both seatback displays inoperative
2. Both seatback displays inoperative
3. All infotainment devices controlled by circuit inoperative, no sound from speakers
4. One or more infotainment devices controlled by circuit inoperative
5. Power state of all infotainment devices controlled by circuit cannot be controlled by radio
6. No or distorted audio heard in wireless headphones
7. No or distorted left channel audio heard in wireless headphones

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
8. No or distorted right channel audio heard in wireless headphones 9. No or distorted image in seatback display 10. Serious damage to radio can occur 11. Infrared remote control inoperative 12. Seatback display mode cannot be controlled/changed 13. Seatback display brightness cannot be controlled/adjusted				

Circuit Description

The rear seat entertainment (RSE) system utilizes the vehicle radio to play DVD movies and transmit video signals to the seatback displays. When the radio is turned ON, the seatback displays receive a voltage signal from the radio via the remote enable signal circuit indicating the system status. Discreet output circuits from the radio are used to transmit the DVD images to each of the displays. The radio utilizes discreet mode control circuits to each display to control the screen display mode via a pulse width modulated signal. A single brightness control circuit is used by the radio to control the display screen brightness for both displays via a pulse width modulated signal.

Reference Information

Schematic Reference

[Video System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Video Entertainment System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
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- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition ON, radio ON, DVD playing.
2. Verify that the Rear Seat Entertainment System audio/video operates.
 ⇒ **If the Rear Seat Entertainment System is inoperative.**
 Refer to Circuit/System Testing.
 ↓ **If the Rear Seat Entertainment System operates.**
3. Verify that the remote control functions properly.
 ⇒ **If the remote control is inoperative.**
 Refer to [Video Entertainment System Remote Control Malfunction](#).
 ↓ **If the remote control operates.**
4. Verify that each headphone functions properly.
 ⇒ **If one or more of the headphones are inoperative.**

Refer to [Video Entertainment System Wireless Headphone Malfunction](#).

↓ **If all headphones operate.**

5. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate DVD display.
2. Test for less than 10 Ω between the ground circuit terminals listed below and ground.
 - Ground terminal 8
 - Ground terminal 14
- ⇒ **If 10 Ω or greater**
 - 2.1. Ignition OFF.
 - 2.2. Test for less than 2 Ω in the ground circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , repair the open/high resistance in the ground connection.
- ↓ **If less than 10 Ω**
3. Verify a test lamp illuminates between the B+ circuit terminal 1 and ground.
- ⇒ **If the test lamp does not illuminate and the circuit fuse is good**
 - 3.1. Ignition OFF.
 - 3.2. Test for less than 2 Ω in the B+ circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , refer to [Power Mode Mismatch](#).
- ⇒ **If the test lamp does not illuminate and the circuit fuse is open**
 - 3.1. Ignition OFF.
 - 3.2. Test for infinite resistance between the B+ circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇒ If infinite resistance, replace the appropriate P22 seatback video display.
- ↓ **If the test lamp illuminates**
4. Verify a test lamp does NOT illuminate between the control circuit terminal 2 and ground.
- ⇒ **If the test lamp illuminates**
 - 4.1. Disconnect the X1 harness at the A11 radio.
 - 4.2. Verify a test lamp does not illuminate between the control circuit and ground.
 - ⇒ If the test lamp illuminates, repair the short to voltage on the circuit.
 - ⇒ If the test lamp does not illuminate, replace the A11 radio.
- ↓ **If the test lamp does not illuminate**
5. Ignition ON, A11 radio ON.
6. Verify a test lamp illuminates between the control circuit terminal 2 and ground.
- ⇒ **If the test lamp does not illuminate**
 - 6.1. Ignition OFF. Disconnect the X1 harness at the A11 radio.
 - 6.2. Test for less than 2 Ω in the control circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 radio.
- ↓ **If the test lamp illuminates**
7. Ignition ON, radio ON, DVD playing.
8. Test for 190–210 HZ DC between the control circuit terminal 16 and ground.
- ⇒ **If not between 190–210 HZ DC.**

- 8.1. Ignition OFF, disconnect the X3 harness connector at the A11 radio.
- 8.2. Ignition ON.
- 8.3. Test for less than 1 V between the control circuit and ground.
 - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
 - ⇓ If less than 1 V
- 8.4. Ignition OFF.
- 8.5. Test for infinite resistance between the control circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇓ If infinite resistance
- 8.6. Test for less than 2 Ω in the control circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 radio.

⇓ **If between 190–210 HZ DC.**

9. Test for 190–210 HZ DC between the control circuit terminal 15 and ground.

⇒ **If not between 190–210 HZ DC.**

- 9.1. Ignition OFF, disconnect the X3 harness connector at the A11 radio.
- 9.2. Ignition ON.
- 9.3. Test for less than 1 V between the control circuit and ground.
 - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
 - ⇓ If less than 1 V
- 9.4. Ignition OFF.
- 9.5. Test for infinite resistance between the control circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇓ If infinite resistance
- 9.6. Test for less than 2 Ω in the control circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 radio.

⇓ **If between 190–210 HZ DC.**

10. Test for 1–3 V between the signal circuit terminals listed below and ground.

- terminal 9
- terminal 10

⇒ **If less than 1 V**

- 10.1. Ignition OFF, disconnect the X3 harness connector at the A11 radio.
- 10.2. Test for infinite resistance between the signal circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇓ If infinite resistance
- 10.3. Test for less than 2 Ω in the signal circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 radio.

⇒ **If greater than 3 V**

- 10.1. Ignition OFF, disconnect the X3 harness connector at the A11 radio. Ignition ON.
- 10.2. Test for less than 1 V between the signal circuit and ground.
 - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
 - ⇒ If less than 1 V, replace the A11 radio.

⇓ **If between 1–3 V**

11. Test normal or replace the appropriate P22 seatback video display.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the diagnostic procedure.

- [Video Display Replacement](#)
- [Control Module References](#) for radio replacement, setup, and programming

Video Entertainment System Remote Control Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Video Display B+	2	1	—	—
Remote Enable Control Circuit	B1265 02, 3	4	5	—
DVD Audio Common Signal (-)	6	6	6	—
Left DVD Audio Signal (+)	7	7	7	—
Right DVD Audio Signal (+)	8	8	8	—
DVD Video Signal (+)	9	9	7	—
DVD Video Signal (-)	9	9	9, 10	—
Infrared Remote Signal (+)	11	11	11	—
Infrared Remote Signal (-)	11	11	11	—
Video Mode Signal	B1288 02, 12	B1288 04, 12	B1288 01, 12	—
Video Bright Signal	B1289 02, 13	B1289 04, 13	B1289 01, 13	—
Ground Terminal 8	—	1	—	—
Ground Terminal 14	—	1	—	—

1. One or both seatback displays inoperative
2. Both seatback displays inoperative
3. All infotainment devices controlled by circuit inoperative, no sound from speakers
4. One or more infotainment devices controlled by circuit inoperative
5. Power state of all infotainment devices controlled by circuit cannot be controlled by radio
6. No or distorted audio heard in wireless headphones

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
7. No or distorted left channel audio heard in wireless headphones 8. No or distorted right channel audio heard in wireless headphones 9. No or distorted image in seatback display 10. Serious damage to radio can occur 11. Infrared remote control inoperative 12. Seatback display mode cannot be controlled/changed 13. Seatback display brightness cannot be controlled/adjusted				

Circuit/System Description

The infrared remote signal is used to transmit signals from the rear seat entertainment (RSE) remote control via pulse width modulated (PWM) signals to the radio. When a key on the remote is pressed, the remote control sends an infrared message to the infrared receiver located in the DVD display. The infrared receiver converts these infrared signals into a frequency and sends the message to the radio to perform the appropriate function. Both seatback displays contain receivers for the infrared remote, which are connected to common (+) and (-) signal circuits to the radio.

Reference Information

Schematic Reference

[Video System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Video Entertainment System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

Note: Test or replace the remote control batteries before performing the circuit/system verification.

1. Ignition ON, radio ON, DVD playing.
2. Verify that the Rear Seat Entertainment System audio/video operates.
⇒ **If the Rear Seat Entertainment System is inoperative.**
Refer to [Video Entertainment System Malfunction](#).
⇓ **If the Rear Seat Entertainment System operates.**
3. Verify that all remote control functions operate.
⇒ **If some, but not all, controls operate.**
Replace the remote control.
⇒ **If all controls are inoperative.**

- 3.1. Replace the remote control.
- 3.2. Verify that all remote control functions are working properly.
 - ⇒ If all controls are inoperative.
Refer to Circuit/System Testing
 - ⇓ If all controls operate and perform the correct function.
- 3.3. All OK.

⇓ **If all controls operate and perform the correct function.**

4. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down
2. Disconnect the harness connectors at both of the P22 seatback video displays.
3. Test for less than 10 Ω between the signal (-) circuit terminal 13 and ground at each display.
 - ⇒ **If 10 Ω or greater**
 - 3.1. Ignition OFF, disconnect the X3 connector at the A11 radio.
 - 3.2. Test for less than 2 Ω in the signal circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 radio.
 - ⇓ **If less than 10 Ω**
4. Ignition ON, radio ON, DVD playing.
5. Test for 1–4 V between the signal (+) circuit terminal 12 and ground at each display.
 - ⇒ **If less than 1 V**
 - 5.1. Ignition OFF, disconnect the X3 harness connector at the A11 radio.
 - 5.2. Test for infinite resistance between the signal circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇓ If infinite resistance
 - 5.3. Test for less than 2 Ω in the signal circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the A11 radio.
 - ⇒ **If greater than 4 V**
 - 5.1. Ignition OFF, disconnect the X3 harness connector at the A11 radio. Ignition ON.
 - 5.2. Test for less than 1 V between the signal circuit and ground.
 - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
 - ⇒ If less than 1 V, replace the A11 radio.
 - ⇓ **If between 1–4 V**
6. Ignition OFF. Connect the harness connector at the P22E driver seatback video display.
7. Ignition ON, radio ON, DVD playing.
8. Test for 1–4 V between the signal (+) circuit terminal 12 and ground at the P22F passenger seatback video display.
 - ⇒ **If less than 1 V**
Test or replace the P22E driver seatback video display
 - ⇒ **If greater than 4 V**
Test or replace the P22E driver seatback video display
 - ⇓ **If between 1–4 V**

9. Test or replace the P22F passenger seatback video display.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Video Display Replacement](#)
- [Control Module References](#) for radio replacement, programming, and setup.

Video Entertainment System Wireless Headphone Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Video Display B+	2	1	—	—
Remote Enable signal circuit	B1265 02, 3	4	5	—
DVD Audio Common Signal (-)	6	6	6	—
Left DVD Audio Signal (+)	7	7	7	—
Right DVD Audio Signal (+)	8	8	8	—
DVD Video Signal (+)	9	9	7	—
DVD Video Signal (-)	9	9	9, 10	—
Infrared Remote Signal (+)	11	11	11	—
Infrared Remote Signal (-)	11	11	11	—
Video Mode Signal	B1288 02, 12	B1288 04, 12	B1288 01, 12	—
Video Bright Signal	B1289 02, 13	B1289 04, 13	B1289 01, 13	—
Ground Terminal 8	—	1	—	—
Ground Terminal 14	—	1	—	—

1. One or both seatback displays inoperative
2. Both seatback displays inoperative
3. All infotainment devices controlled by circuit inoperative, no sound from speakers
4. One or more infotainment devices controlled by circuit inoperative
5. Power state of all infotainment devices controlled by circuit cannot be controlled by radio
6. No or distorted audio heard in wireless headphones

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
7. No or distorted left channel audio heard in wireless headphones 8. No or distorted right channel audio heard in wireless headphones 9. No or distorted image in seatback display 10. Serious damage to radio can occur 11. Infrared remote control inoperative 12. Seatback display mode cannot be controlled/changed 13. Seatback display brightness cannot be controlled/adjusted				

Circuit/System Description

The driver seatback DVD display contains the infrared transmitter for the wireless headphones. The audio that is sent over the DVD audio signal circuits is a varying AC voltage. The transmitter processes the signal and transmits the audio signals to the headphones. If the display is in the closed position, the infrared signals will not be available for the operation of the wireless headphones and the remote control.

Reference Information

Schematic Reference

[Video System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Video Entertainment System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

Note: Test or replace the headphone batteries before performing the circuit/system verification.

1. Ignition ON, radio ON, DVD playing.
2. Verify that the Rear Seat Entertainment System audio/video operates.
⇒ **If the Rear Seat Entertainment System is inoperative.**
Refer to [Video Entertainment System Malfunction](#).
- ↓ **If the Rear Seat Entertainment System operates.**
3. Turn ON the wireless headphones.
4. Verify the power indicator lamp on the wireless headphone illuminates.
⇒ **If the power indicator lamp does not illuminate.**
Replace the wireless headphones.
- ↓ **If the power indicator lamp illuminates.**

5. Ignition ON, radio ON, DVD playing.
6. Verify that clear audio is heard from each headphone.
 - ⇒ **If audio is heard from some, but not all, headphones.**
Replace the inoperative headphone.
 - ⇒ **If audio is not heard from any headphones, or the audio heard is not clear.**
Refer to Circuit/System Testing
 - ⇓ **If clear audio is heard from all headphones.**
7. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down
2. Disconnect the harness connector at the P22E Video Display- Driver Seatback.
3. Test for less than $25\ \Omega$ between the audio signal (-) circuit terminal 5 and ground.
 - ⇒ **If $25\ \Omega$ or greater**
 - 3.1. Ignition OFF, disconnect the X1 connector at the A11 Radio.
 - 3.2. Test for less than $2\ \Omega$ in the signal circuit end to end.
 - ⇒ If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than $2\ \Omega$, replace the A11 Radio.
 - ⇓ **If less than $25\ \Omega$**
4. Ignition ON, radio ON, DVD playing with audio present.
5. Test for a varying voltage from 10 mV–250 mV AC between the audio signal (+) circuits listed below and ground:
 - terminal 6
 - terminal 7
 - ⇒ **If not between 10 mV–250 mV AC and/or not varying**
 - 5.1. Ignition OFF, disconnect the X1 harness connector at the A11 Radio.
 - 5.2. Ignition ON.
 - 5.3. Test for less than 1 V between the signal circuit and ground.
 - ⇒ If 1 V or greater, repair the short to voltage on the circuit.
 - ⇓ If less than 1 V
 - 5.4. Ignition OFF.
 - 5.5. Test for infinite resistance between the signal circuit and ground.
 - ⇒ If less than infinite resistance, repair the short to ground on the circuit.
 - ⇓ If infinite resistance
 - 5.6. Test for less than $2\ \Omega$ in the signal circuit end to end.
 - ⇒ If $2\ \Omega$ or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than $2\ \Omega$, replace the A11 Radio.
 - ⇓ **If varying from 10 mV–250 mV AC**
6. Test or replace the P22E Video Display- Driver Seatback.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

- [Video Display Replacement](#)
- [Control Module References](#) for radio replacement, programming, and setup.

Voice Recognition Malfunction

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provide an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Microphone Audio Signal	1	1	1	—
Microphone Audio Low Reference	—	1	—	—
1. Voice recognition inoperative				

Circuit/System Description

The radio uses the cellular telephone microphone for voice recognition and cellular features. The radio provides a bias voltage to each microphone (+) and (-) signal circuits for operation of the microphone.

Diagnostic Aids

- Refer to the Owners Manual and/or the Navigation System Owners Manual for voice recognition use and commands.
- When the system recognizes the command the system will either perform the function or ask to confirm the choice by clearly saying "yes" or "no".
- If experiencing difficulty with the system recognizing a command, confirm that the command is correct.
- Background noise such as a climate control fan positioned on high, open windows, or very loud outside noises, can cause voice commands to be misunderstood.

Reference Information

Schematic Reference

[Radio/Navigation System Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Radio/Audio System Description and Operation](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)

- [Wiring Repairs](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Circuit/System Verification

1. Ignition ON, radio ON.

Note: Refer to the Owners Manual and/or the Navigation System Owners Manual for voice recognition use and commands.

2. Begin voice recognition for the radio and clearly speak one of the available commands.
3. Verify the infotainment system responds correctly to the command.

⇒ **If the infotainment system does not respond correctly to the command.**

- 3.1. Clearly speak a different command.

- 3.2. Verify the infotainment system responds correctly to the command.

⇒ If the infotainment system does not respond correctly to any commands, refer to Circuit/System Testing.

⇓ If the infotainment system responds correctly to the command.

- 3.3. Refer to the owners manual for hints on speaking commands.

⇓ **If the infotainment system responds correctly to the command.**

4. All OK

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B24 Cellular Phone Microphone, ignition ON.

2. Test for 8-10.5 V between the microphone signal circuit terminal B and ground.

⇒ **If less than 8 V**

- 2.1. Ignition OFF, disconnect the X4 harness connector at the A11 Radio.

- 2.2. Test for infinite resistance between the microphone signal circuit and ground.

⇒ If less than infinite resistance, repair the short to ground in the circuit.

⇓ If infinite resistance

- 2.3. Test for less than 2 Ω in the microphone signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω , replace the vehicle A11 Radio.

⇒ **If greater than 10.5 V**

- 2.1. Ignition OFF, disconnect the X4 harness connector at the A11 Radio, ignition ON.

- 2.2. Test for less than 1 V between the microphone signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V, replace the A11 Radio.

⇓ **If between 8-10.5 V**

3. Test for less than 1 V between the low signal circuit terminal A and ground.

⇒ **If greater than 1 V**

- 3.1. Ignition OFF, disconnect the X4 harness connector at the A11 Radio, ignition ON.

- 3.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage in the circuit.

⇒ If less than 1 V, repair the A11 Radio.

⇓ **If less than 1 V**

4. Test for greater than 8 V between the microphone signal circuit terminal B and the low reference circuit terminal A.

⇒ **If less than 8 V**

- 4.1. Ignition OFF, disconnect the X4 harness connector at the A11 Radio.
- 4.2. Test for less than 2 Ω in the low reference circuit end to end.
 - ⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.
 - ⇒ If less than 2 Ω , replace the vehicle A11 Radio.

⇒ **If greater than 9.5 V**

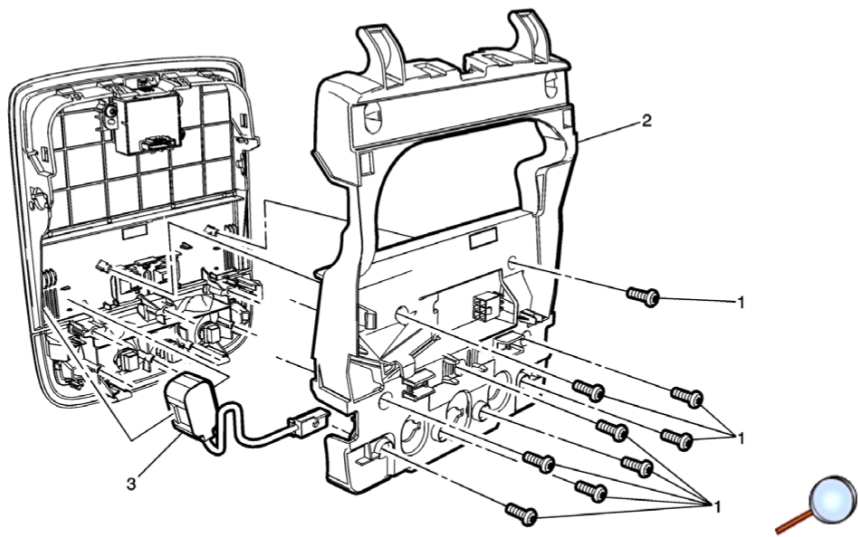
5. Test or replace the B24 Cellular Phone Microphone.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for radio replacement, programming, and setup.

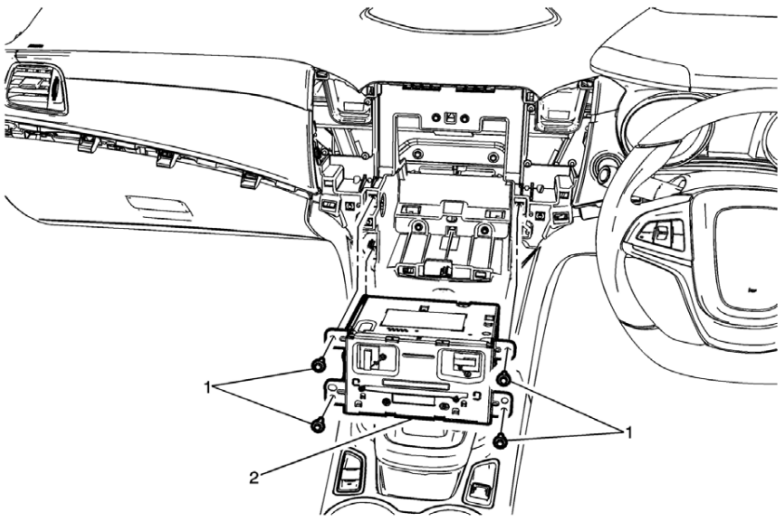
Mobile Telephone Microphone Replacement



Mobile Telephone Microphone Replacement

Callout	Component Name
Preliminary Procedure Remove the roof console. Refer to Roof Console Replacement .	
1	Roof Console Back Cover Fasteners (Qty: 9) Caution: Refer to Fastener Caution .
2	Roof Console Back Cover
3	Mobile Telephone Microphone

Radio Replacement

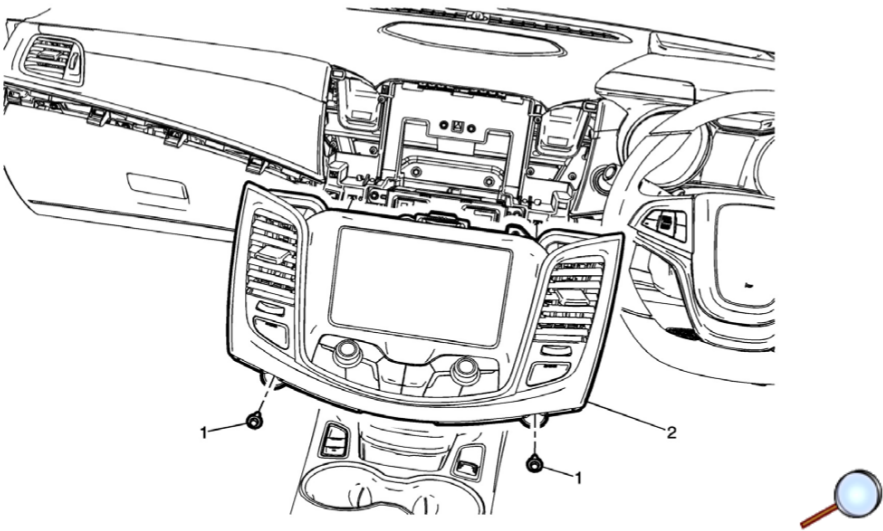


Radio Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the radio control assembly. Refer to Radio Control Assembly Replacement . 2. Remove the heater and air conditioning control. Refer to Heater and Air Conditioning Control Replacement .	
1	Radio Fastener (Qty: 4) Caution: Refer to Fastener Caution .
2	Radio Procedure 1. Disconnect the electrical connections. 2. For programming and set up, refer to Control Module References .

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Radio Control Assembly Replacement

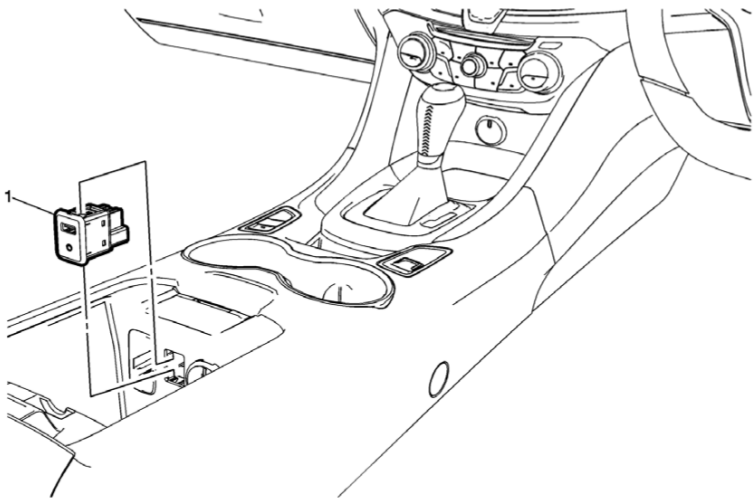


Radio Control Assembly Replacement

Callout	Component Name
Preliminary Procedure 1. Remove the instrument panel center trim panel applique. Refer to Instrument Panel Center Trim Plate Applique Replacement . 2. Remove the instrument panel trim plate applique – left side. Refer to Instrument Panel Trim Plate Applique Replacement - Left Side .	
1	Radio Control Assembly Fasteners (Qty: 2) Caution: Refer to Fastener Caution .
2	Radio Control Assembly Procedure 1. Using a plastic trim tool, release the surround clips evenly and pull away from the instrument panel. 2. Disconnect the electrical connections. 3. When replacing the radio control assembly, transfer all necessary components. 4. Refer to Control Module References for programming and setup information.

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Audio Disc Player and USB Receptacle Replacement

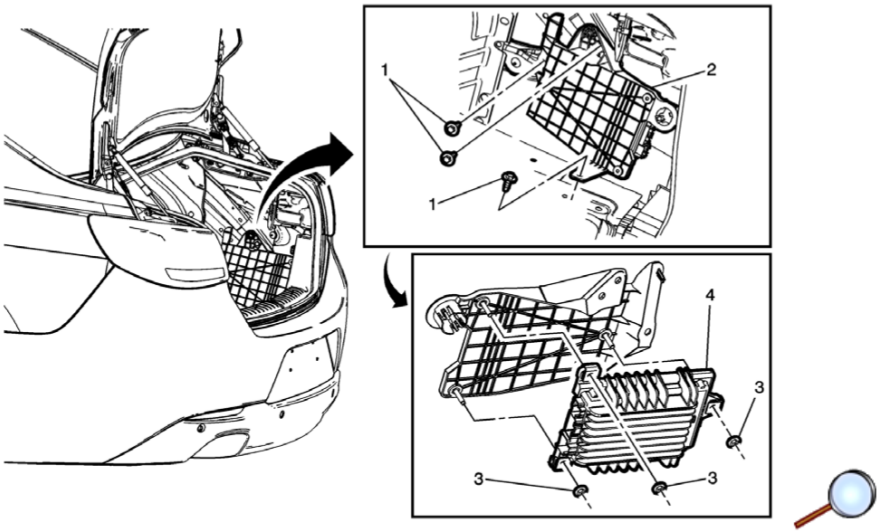


Audio Disc Player and USB Receptacle Replacement

Callout	Component Name
1	Audio Player and USB Receptacle Procedure 1. Using a small flat bladed tool, release the receptacle. 2. Disconnect the electrical connector.

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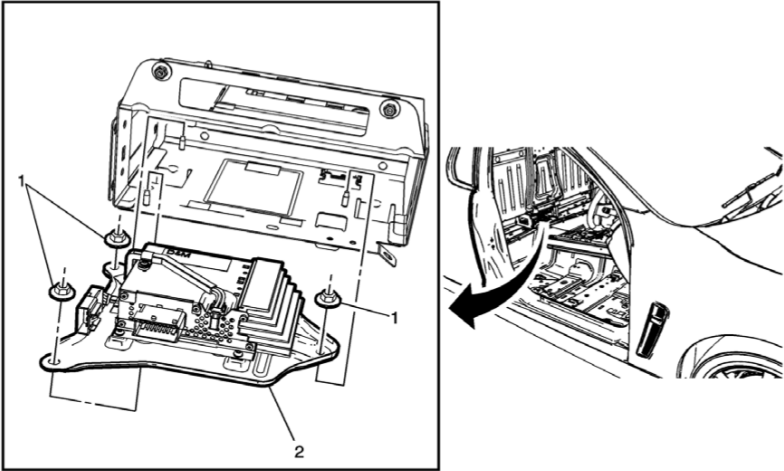
Radio Speaker Amplifier Replacement



Radio Speaker Amplifier Replacement

Callout	Component Name
Preliminary Procedure Remove the rear compartment side trim panel – right side. Refer to Rear Compartment Side Trim Panel Replacement .	
1	Radio Speaker Amplifier Bracket Bolts (Qty: 3) Caution: Refer to Fastener Caution . Tighten 10 N•m (89 lb in)
2	Radio Speaker Amplifier Bracket
3	Radio Speaker Amplifier Nuts (Qty: 3) Tighten 9 N•m (80 lb in)
4	Radio Speaker Amplifier Procedure 1. Disconnect the electrical connectors. 2. For programming and set up information, refer to Control Module References .

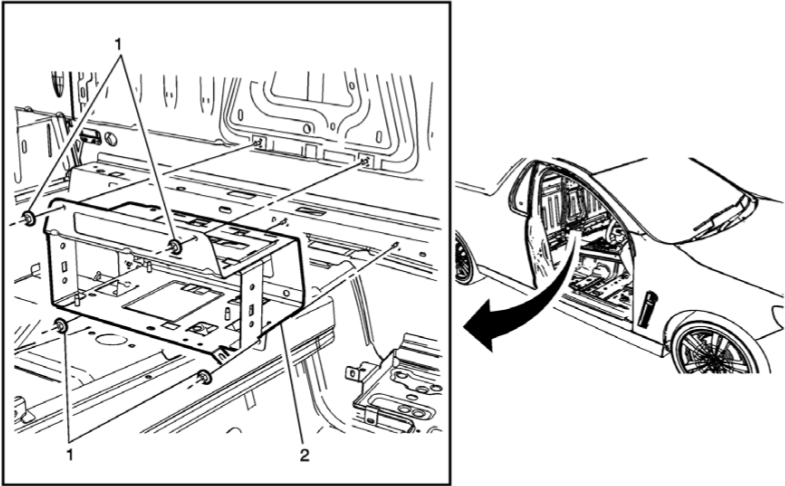
Radio Rear Speaker Amplifier Replacement (Ute)



Radio Rear Speaker Amplifier Replacement

Callout	Component Name
Preliminary Procedure Remove the rear window panel trim. Refer to Rear Window Panel Trim Replacement .	
1	Radio Speaker Amplifier Nuts (Qty: 3) Caution: Refer to Fastener Caution . Tighten 8N•m (71 lb in)
2	Radio Speaker Amplifier Procedure 1. Disconnect the electrical connectors. 2. For programming and set up information, refer to Control Module References .

Radio Speaker Amplifier Bracket Replacement (Ute)

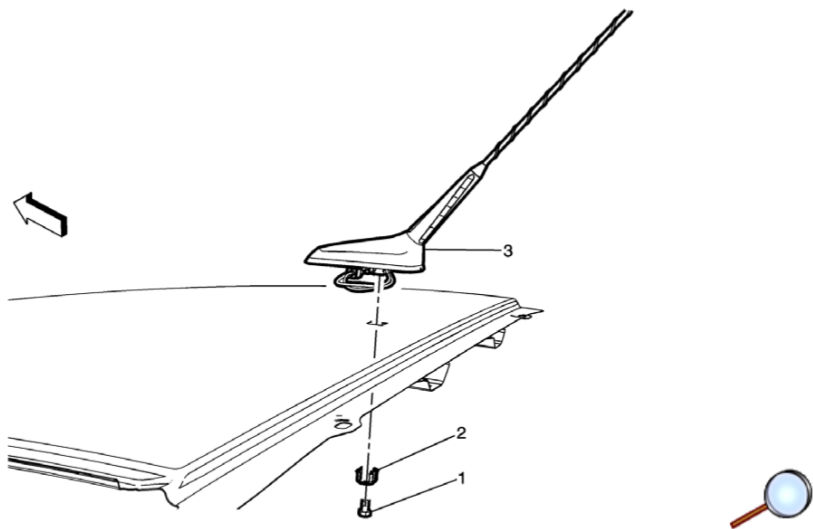


Radio Speaker Amplifier Bracket Replacement

Callout	Component Name
Preliminary Procedure Remove the rear window panel trim. Refer to Rear Window Panel Trim Replacement .	
1	Radio Speaker Amplifier Bracket Nut (Qty: 4) Caution: Refer to Fastener Caution . Tighten 9N•m (80 lb in)
2	Radio Speaker Amplifier Bracket Procedure 1. Disconnect the electrical connectors. 2. Transfer components as necessary.

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Radio Antenna Base Replacement

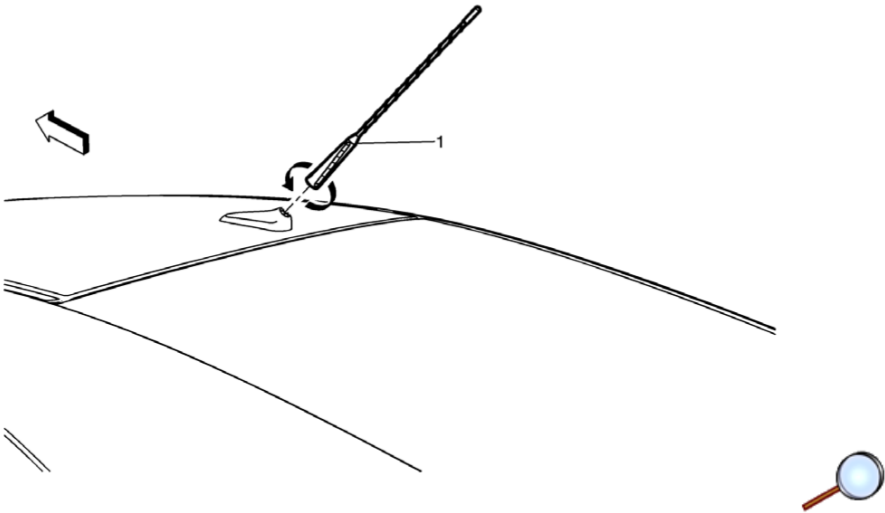


Radio Antenna Base Replacement

Callout	Component Name
Preliminary Procedure Lower the rear of the headlining trim panel. Refer to Headlining Trim Panel Replacement .	
1	Radio Antenna Base Fastener Caution: Refer to Fastener Caution . Tighten 9N•m (80 lb in)
2	Radio Antenna Base Retainer
3	Radio Antenna Base Assembly Procedure Disconnect the electrical connectors.

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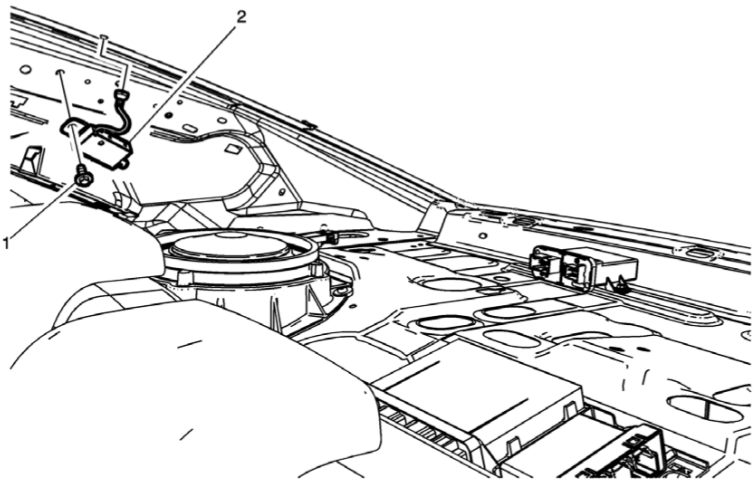
Radio Antenna Replacement



Radio Antenna Replacement

Callout	Component Name
1	Radio Antenna Procedure Rotate the mast counterclockwise in order to release the mast from the antenna base.

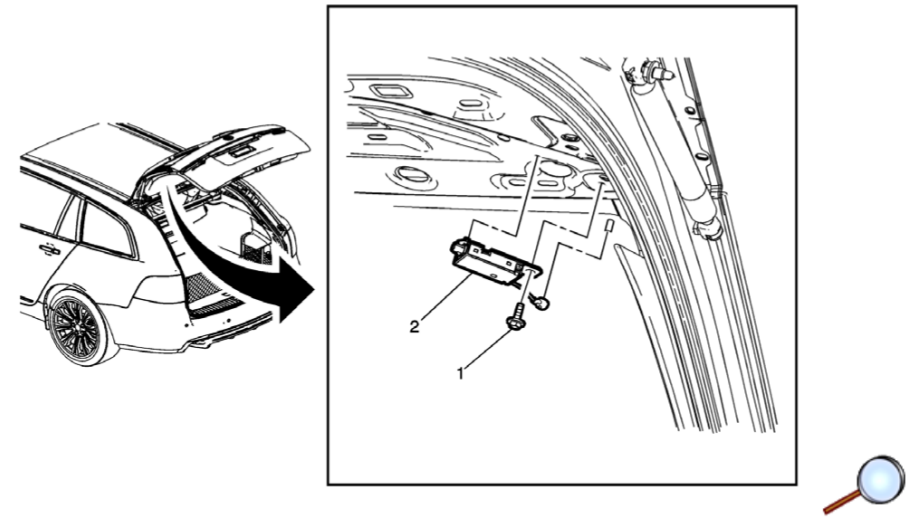
Radio Antenna Amplifier Replacement (Sedan)



Radio Antenna Amplifier Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the body lock pillar upper trim panel. Refer to Body Lock Pillar Upper Trim Panel Replacement . 2. Lower the rear of the headliner enough to gain access to the amplifier fastener. Refer to Headlining Trim Panel Replacement .	
1	Radio Antenna Amplifier Fastener Caution: Refer to Fastener Caution . Tighten 9 N•m (80 lb in)
2	Radio Antenna Amplifier Procedure 1. Disconnect the electrical connection. 2. Unsnap the wire from the glass.

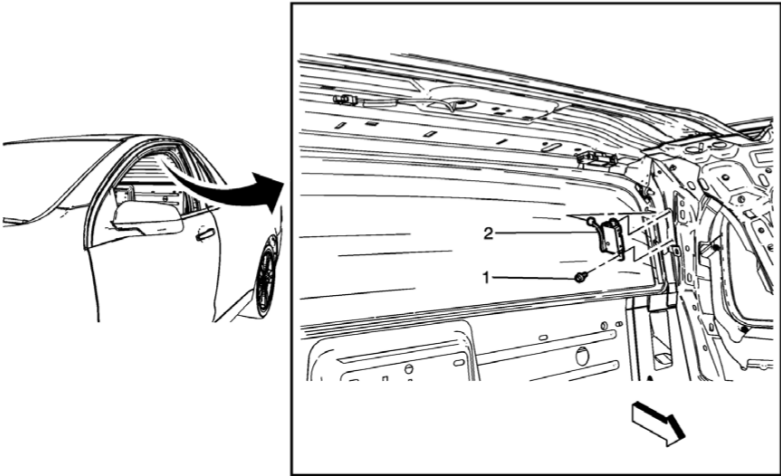
Radio Antenna Amplifier Replacement (Sportwagon)



Radio Antenna Amplifier Replacement

Callout	Component Name
Preliminary Procedure Remove the upper trim finish panel. Refer to Liftgate Upper Trim Finish Panel Replacement .	
1	Radio Antenna Amplifier Fastener Caution: Refer to Fastener Caution . Tighten 9 N•m (80 lb in)
2	Radio Antenna Amplifier Procedure 1. Disconnect the electrical connection. 2. Unsnap the wire from the glass.

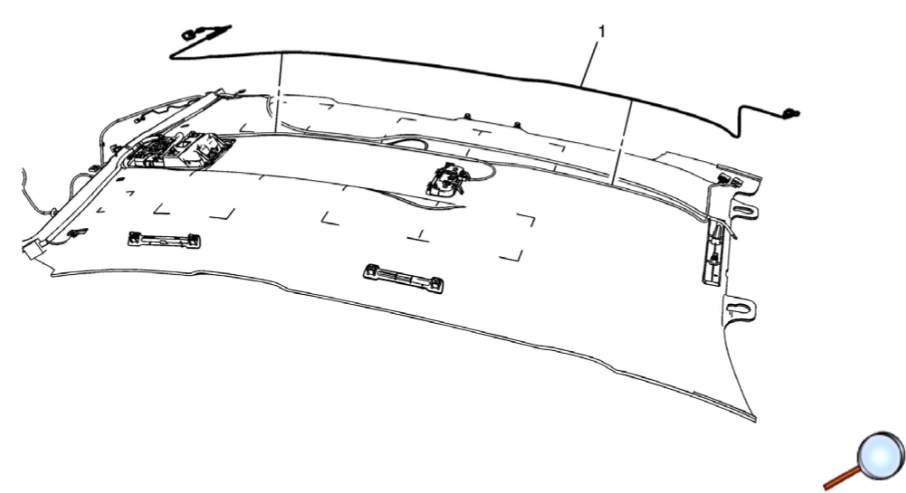
Radio Antenna Amplifier Replacement (Ute)



Radio Antenna Amplifier Replacement

Callout	Component Name
Preliminary Procedure Remove the center pillar upper trim panel. Refer to Center Pillar Upper Trim Panel Replacement .	
1	Radio Antenna Amplifier Fastener Caution: Refer to Fastener Caution . Tighten 9 N•m (80 lb in)
2	Radio Antenna Amplifier Procedure 1. Disconnect the electrical connection. 2. Unsnap the wire from the glass.

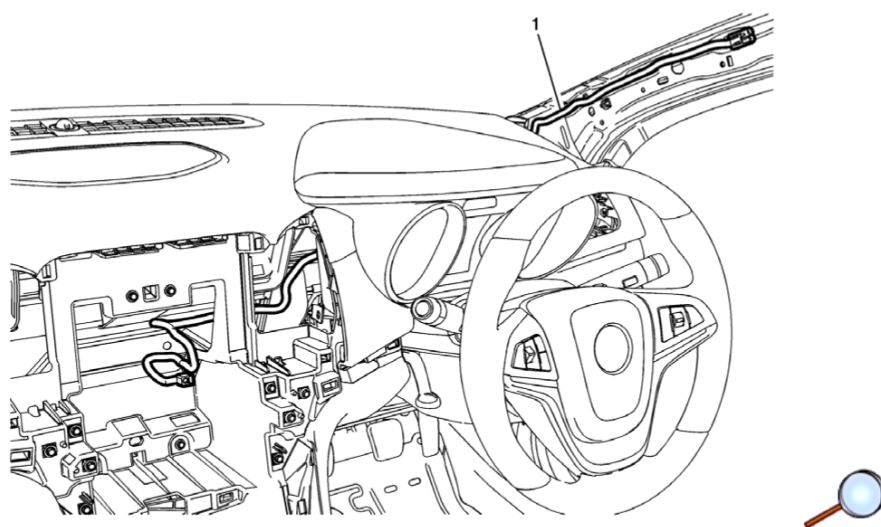
Radio Antenna Cable Replacement (Sedan, Sportwagon)



Radio Antenna Cable Replacement

Callout	Component Name
Preliminary Procedure Remove the headlining trim panel. Refer to Headlining Trim Panel Replacement .	
1	Radio Antenna Cable Procedure Separate the radio antenna cable from the headlining. Refer to Headliner Harness Replacement .

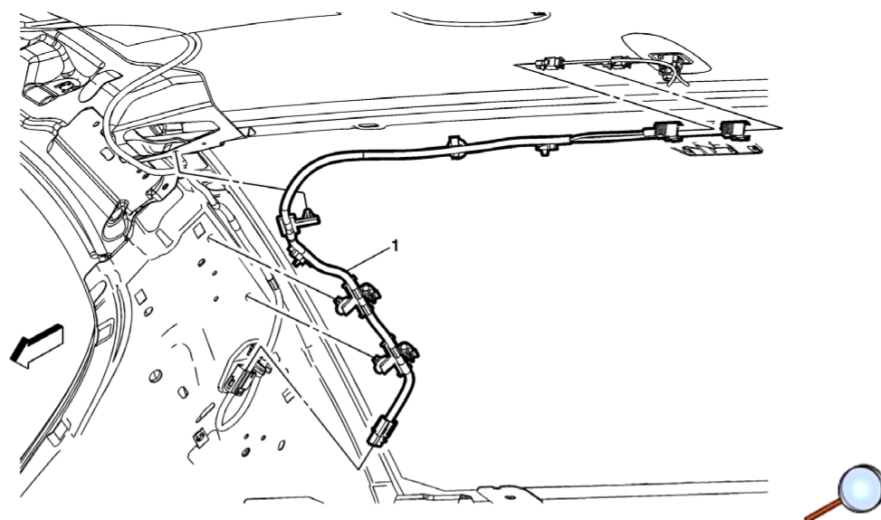
Radio Antenna Cable Replacement (Ute)



Radio Antenna Cable Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the right windshield garnish molding. Refer to Windshield Garnish Molding Replacement 2. Remove the radio control assembly. Refer to Radio Control Assembly Replacement.	
1	Radio Antenna Cable Procedure 1. Disconnect the electrical connectors at each end of the antenna. 2. If the antenna cable is taped into the wiring harness then cut the ends off the old antenna and route the new antenna as close to the old one as possible using tie straps to secure the new cable.

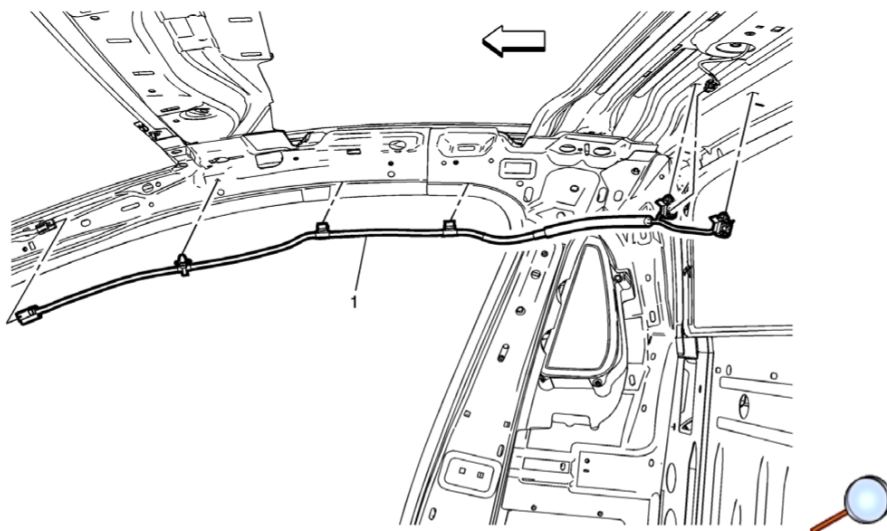
Radio Antenna Cable Extension Cable Replacement (Sedan)



Radio Antenna Cable Extension Cable Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the body lock pillar upper trim panel. Refer to Body Lock Pillar Upper Trim Panel Replacement. 2. Lower the rear of the headliner as needed. Refer to Headlining Trim Panel Replacement.	
1	Radio Antenna Cable Extension Cable Procedure 1. Disconnect the electrical connectors at each end of the antenna and unclip cable tabs from structure. 2. If the antenna cable is taped into the wiring harness then cut the ends off the old antenna and route the new antenna as close to the old one as possible using tie straps to secure the new cable.

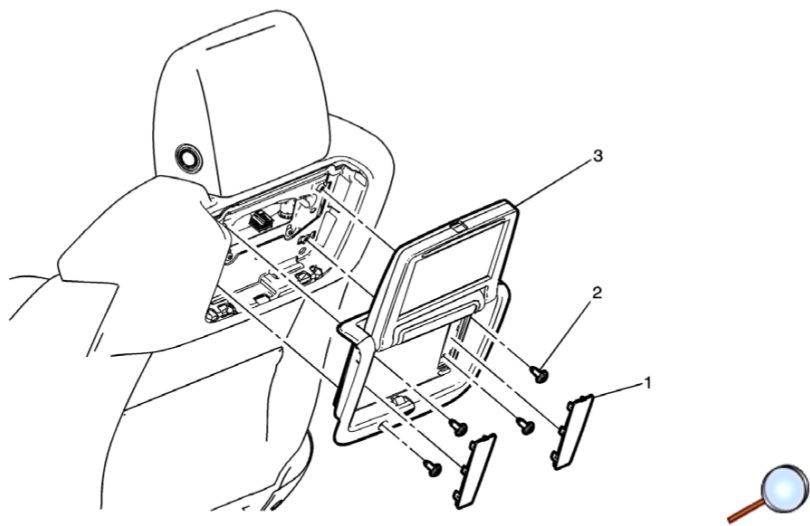
Radio Antenna Cable Extension Cable Replacement (Ute)



Radio Antenna Cable Extension Cable Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the right windshield garnish molding. Refer to Windshield Garnish Molding Replacement. 2. Remove of the headlining trim panel. Refer to Headlining Trim Panel Replacement.	
1	Radio Antenna Cable Extension Cable Procedure 1. Disconnect the electrical connectors at each end of the antenna and unclip cable tabs from structure. 2. If the antenna cable is taped into the wiring harness then cut the ends off the old antenna and route the new antenna as close to the old one as possible using tie straps to secure the new cable.

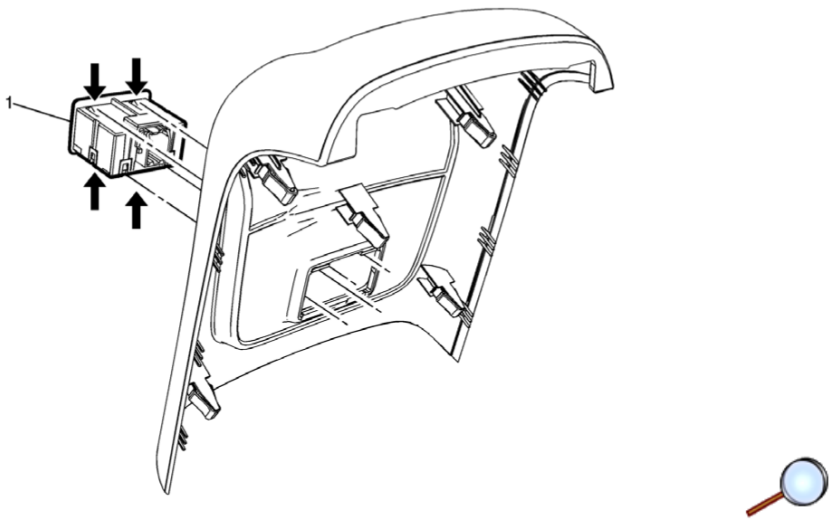
Video Display Replacement



Video Display Replacement

Callout	Component Name
1	Video Display Fastener Covers (Qty: 2)
2	Video Display Fasteners (Qty: 4) Note: Apply threadlock to video display fasteners. Refer to Adhesives, Fluids, Lubricants, and Sealers Caution: Refer to Fastener Caution . Tighten 9 N•m (80 lb in)
3	Video Display Procedure Disconnect the electrical connections.

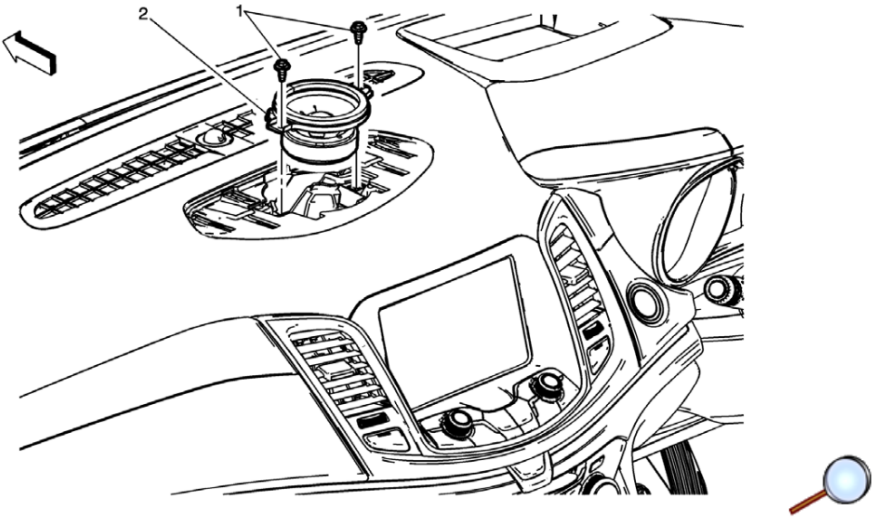
Audio/Video Disc Player Adapter Replacement



Audio/Video Disc Player Adapter Replacement

Callout	Component Name
Preliminary Procedure Remove the front floor console rear trim panel. Refer to Front Floor Console Rear Trim Panel Replacement .	
1	Audio/Video Disc Player Adapter Procedure Using a small flat bladed tool, release the adapter from the panel.

Radio Front Center Speaker Replacement

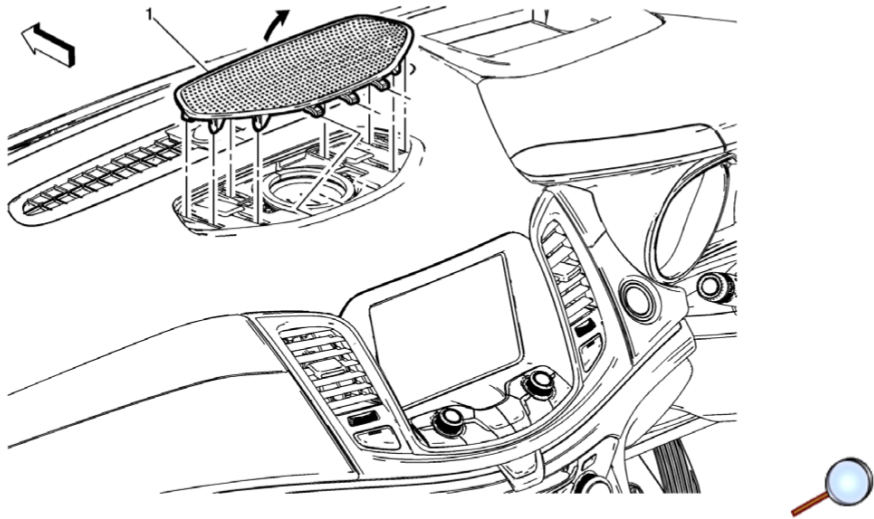


Radio Front Center Speaker Replacement

Callout	Component Name
Preliminary Procedure Remove the radio front speaker grille. Refer to Radio Front Speaker Grille Replacement .	
1	Radio Front Center Speaker Fastener (Qty: 2) Caution: Refer to Fastener Caution .
2	Radio Front Center Speaker Procedure Disconnect the electrical connector.

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Radio Front Speaker Grille Replacement

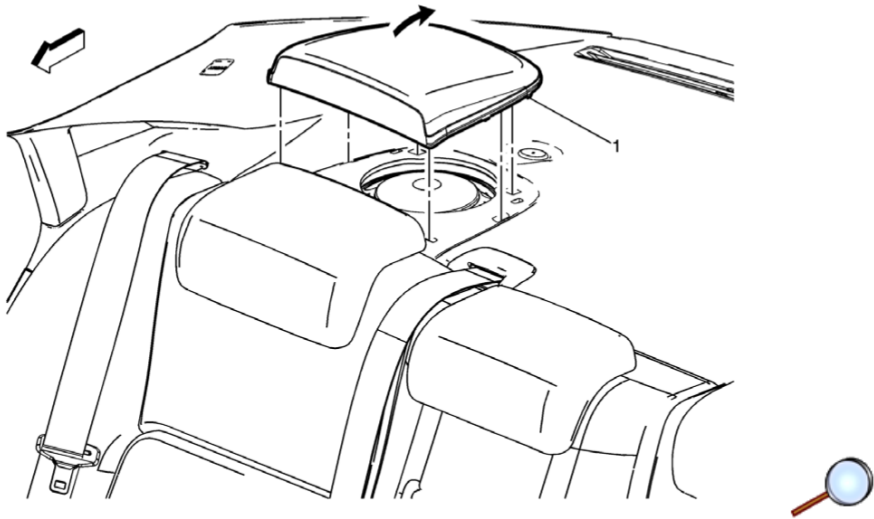


Radio Front Speaker Grille Replacement

Callout	Component Name
1	Radio Front Speaker Grille Procedure Use a plastic flat bladed tool to lever upwards at the windshield side. Tilt rearward to release the rear retainers and remove the grille assembly.

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Radio Rear Speaker Grille Replacement

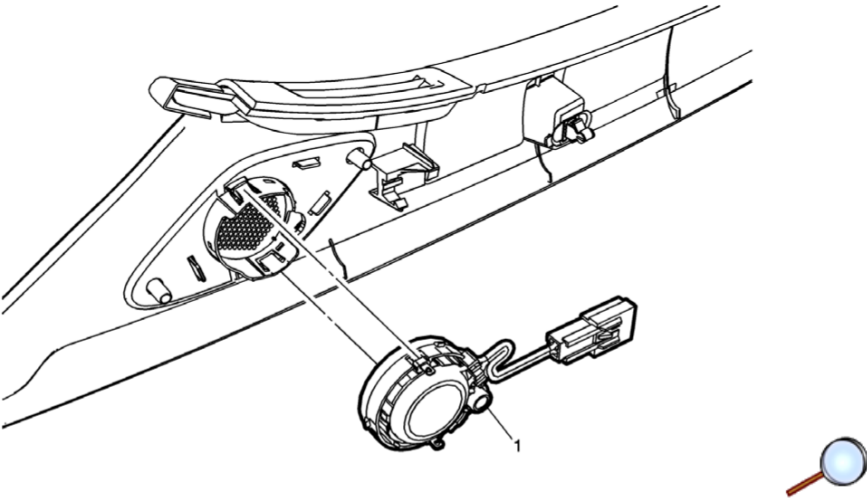


Radio Rear Speaker Grille Replacement

Callout	Component Name
1	Radio Rear Speaker Grille Procedure Using the appropriate tool, release the speaker grille from the rear shelf trim panel. The grille is attached with six integral clips.

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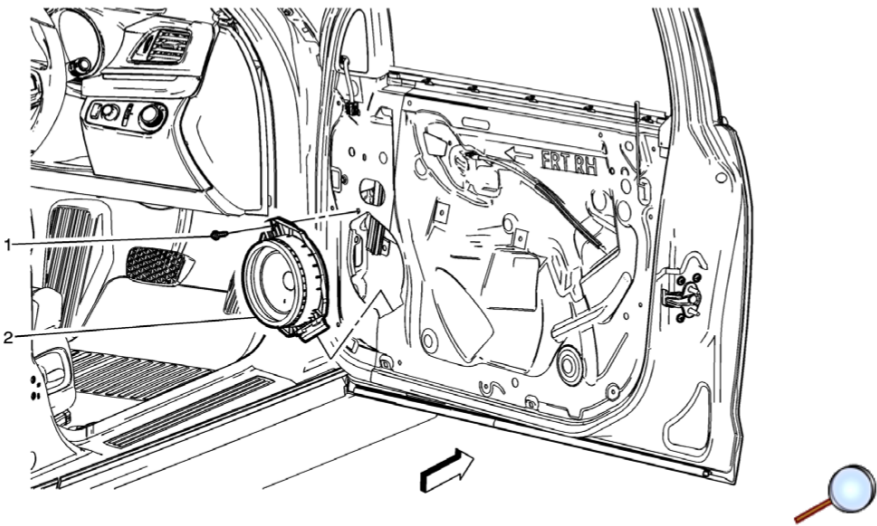
Radio Windshield Side Garnish Molding Speaker Replacement



Radio Windshield Side Garnish Molding Speaker Replacement

Callout	Component Name
Preliminary Procedure Remove the windshield garnish molding. Refer to Windshield Garnish Molding Replacement .	
1	Radio Windshield Side Garnish Molding Speaker Procedure Depress tabs to remove speaker.

Radio Front Side Door Speaker Replacement

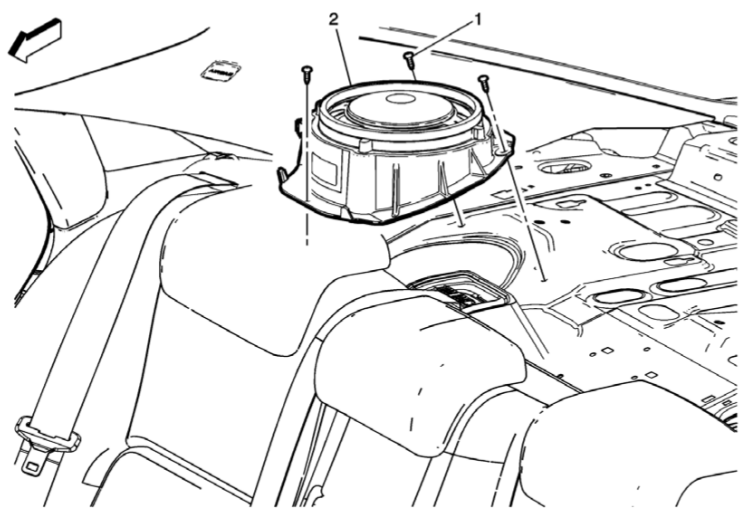


Radio Front Side Door Speaker Replacement

Callout	Component Name
Preliminary Procedure Remove the front side door trim. Refer to Front Side Door Trim Replacement .	
1	Radio Front Side Door Speaker Fastener Caution: Refer to Fastener Caution .
2	Radio Front Side Door Speaker Procedure Disconnect the electrical connector.

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Radio Rear Speaker Replacement (Sedan)

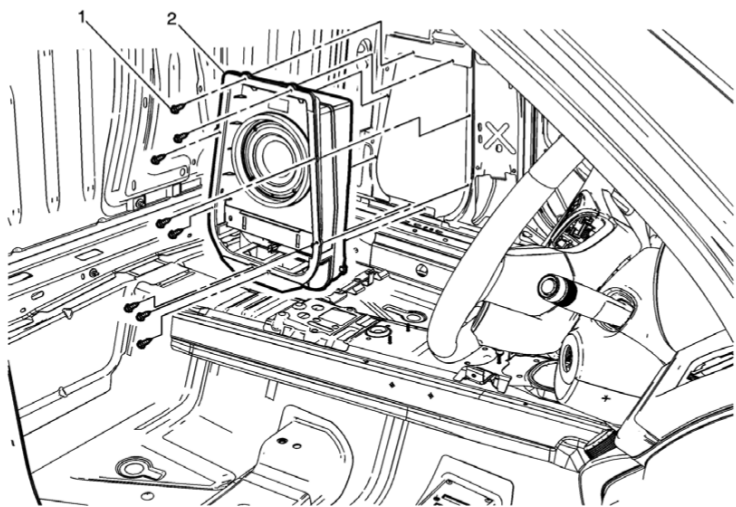


Radio Rear Speaker Replacement

Callout	Component Name
Preliminary Procedure Remove the rear window panel trim. Refer to Rear Window Panel Trim Replacement .	
1	Radio Rear Speaker Fastener (Qty: 3) Caution: Refer to Fastener Caution .
2	Radio Rear Speaker Procedure Disconnect the electrical connector.

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Radio Rear Speaker Replacement (Ute)

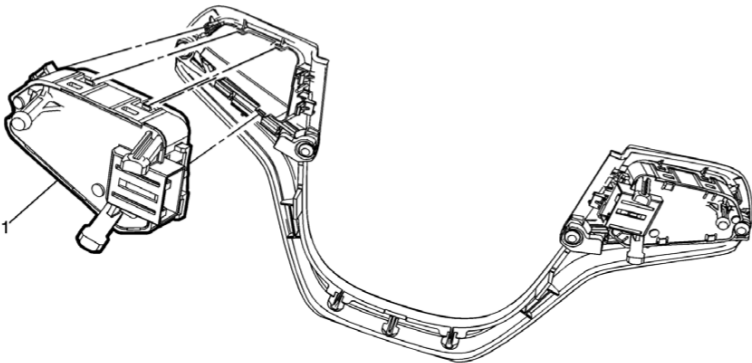


Radio Rear Speaker Replacement

Callout	Component Name
Preliminary Procedure 1. Remove the rear window panel trim. Refer to Rear Window Panel Trim Replacement . 2. Remove the center pillar lower trim panel. Refer to Center Pillar Lower Trim Panel Replacement .	
1	Radio Rear Speaker Fastener (Qty: 8) Caution: Refer to Fastener Caution .
2	Radio Rear Speaker Procedure Disconnect the electrical connector.

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Radio Control Switch Replacement (Steering Wheel)

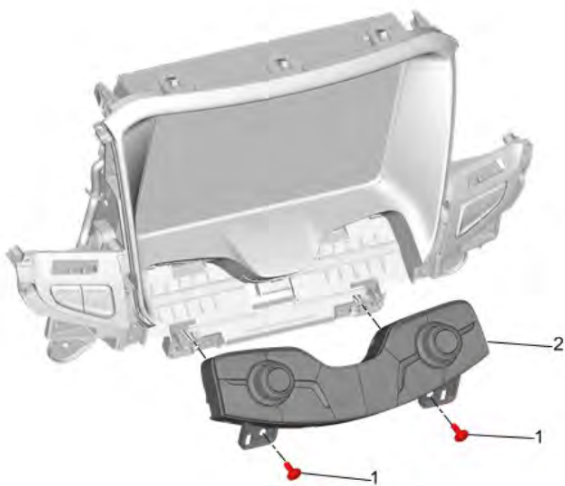


Radio Control Switch Replacement

Callout	Component Name
Preliminary Procedure Remove the steering wheel spoke lower cover. Refer to Steering Wheel Spoke Lower Cover Replacement .	
1	Radio Control Switch Procedure Use the appropriate tool to depress the tabs and release the switch from the cover.

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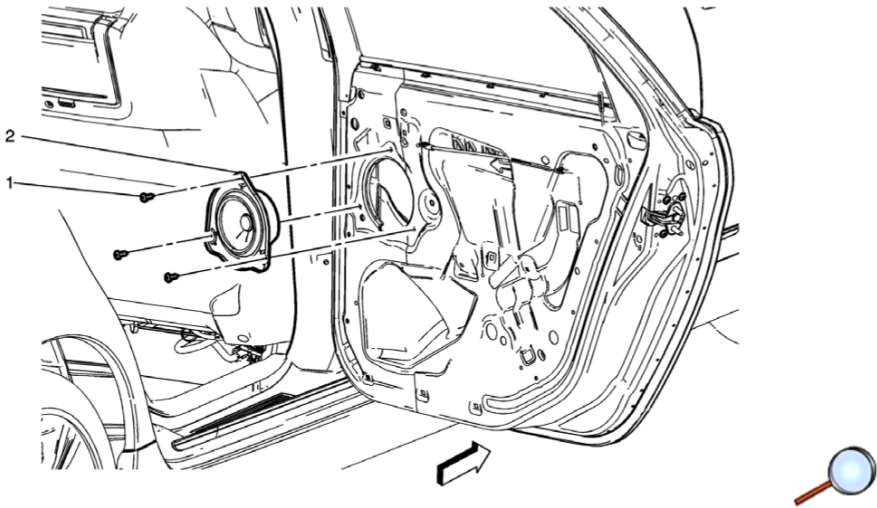
Radio Control Switch Replacement (Radio Control)



Radio Control Switch Replacement

Callout	Component Name
Preliminary Procedure Remove the instrument panel trim plate. Refer to Instrument Panel Trim Plate Replacement .	
1	Radio Control Bolt (Qty: 2) Caution: Refer to Fastener Caution . Tighten 2.5 N•m (22 lb in)
2	Radio Control Switch Procedures 1. Place the radio faceplate face down onto a clean, soft surface while accessing the fasteners. 2. Disconnect the radio button pack from the harness. Note: When re-fitting the radio button pack ensure that the button is flush to the surface.

Radio Rear Side Door Speaker Replacement



Radio Rear Side Door Speaker Replacement

Callout	Component Name
Preliminary Procedure Remove the rear side door trim. Refer to Rear Side Door Trim Replacement .	
1	Radio Rear Side Door Speaker Fastener (Qty: 3) Caution: Refer to Fastener Caution .
2	Radio Rear Side Door Speaker Procedure Disconnect the electrical connector.

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[Driver Information and Entertainment](#) | [Cellular, Entertainment, and Navigation](#) | [Specifications](#) |

Document ID: 3291497

Fastener Tightening Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Radio Antenna Amplifier Fastener	9 N•m	80 lb in
Radio Antenna Base Fastener	9 N•m	80 lb in
Radio Speaker Amplifier Bracket Bolt	10 N•m	89 lb in
Radio Speaker Amplifier Bracket Nut	9 N•m	80 lb in
Radio Speaker Amplifier Nut	8 N•m	71 lb in
Radio Speaker Amplifier Nut	9 N•m	80 lb in

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[Driver Information and Entertainment](#) | [Cellular, Entertainment, and Navigation](#) | [Specifications](#) |

Document ID: 3460846

Adhesives, Fluids, Lubricants, and Sealers

Adhesives, Fluids, Lubricants, and Sealers

Application	Type of Material	GM Part Number
Video Display Fastener	Thread Locker	Thread Locking Compound GM6175M

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Radio/Navigation System Schematics

Figure 1: [Power, Ground, Serial Data and Antennas](#)

Figure 2: [Speakers \(UQF\)](#)

Figure 3: [Amplifier \(UQG\)](#)

Figure 4: [Speakers \(UQG\)](#)

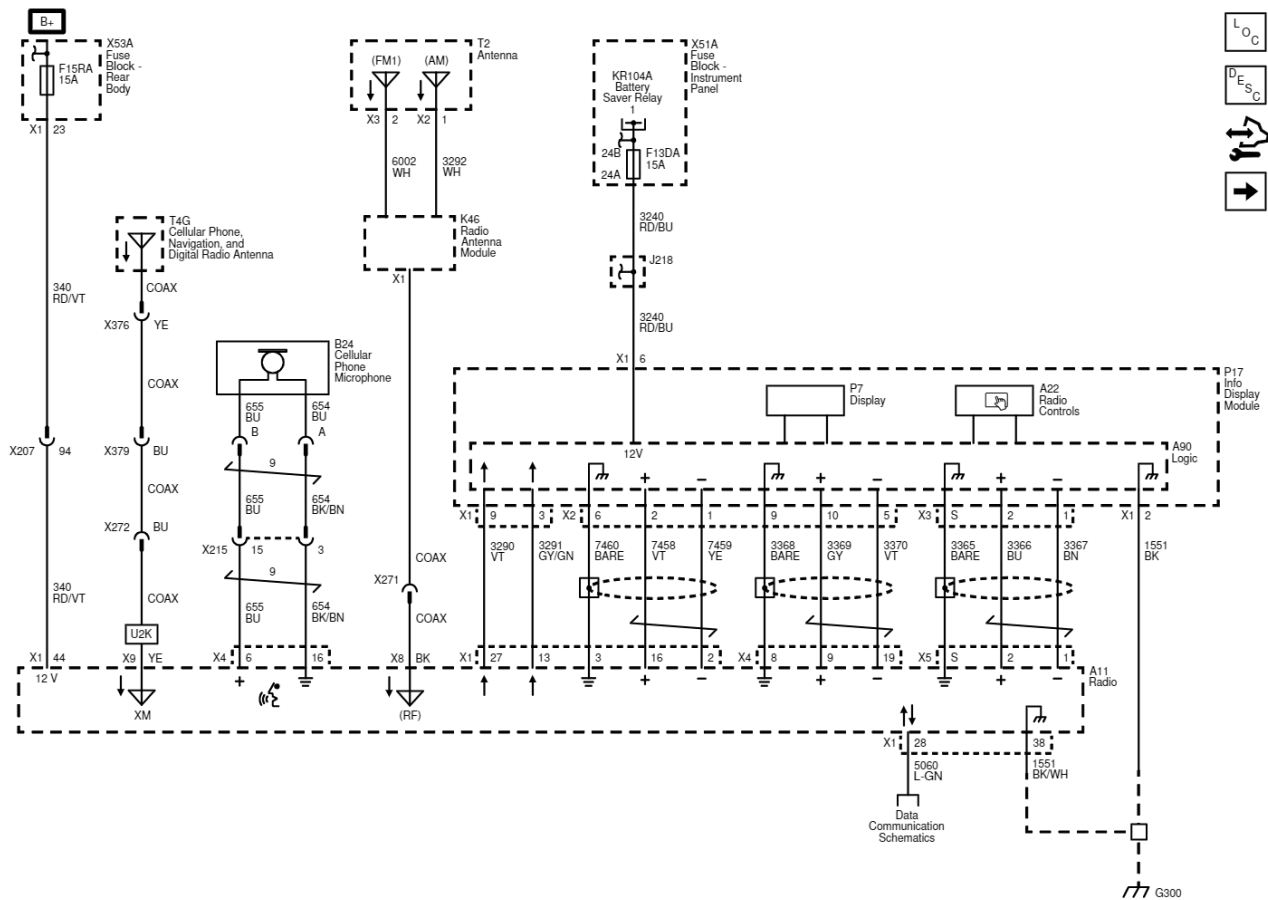
Figure 5: [Amplifier \(UQA\)](#)

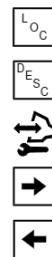
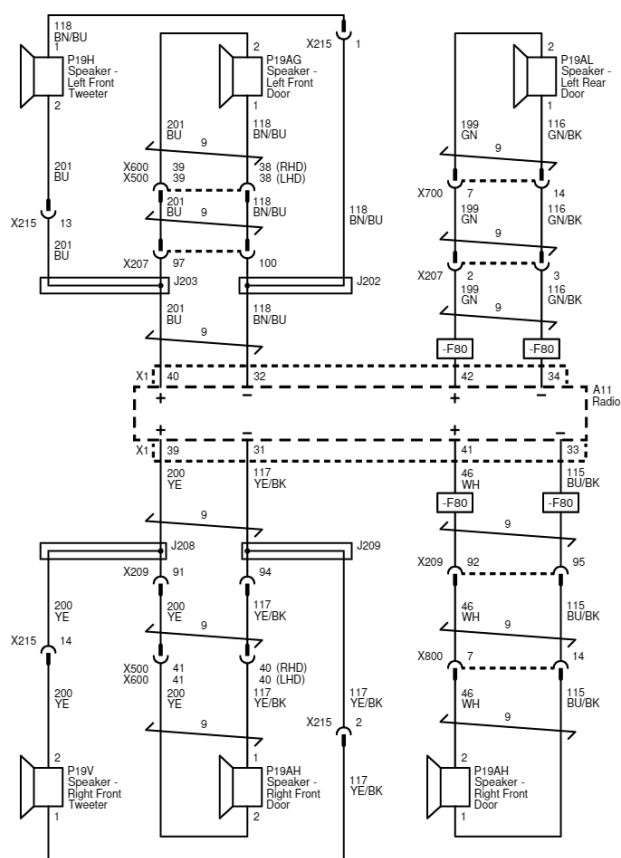
Figure 6: [Speakers \(UQA\)](#)

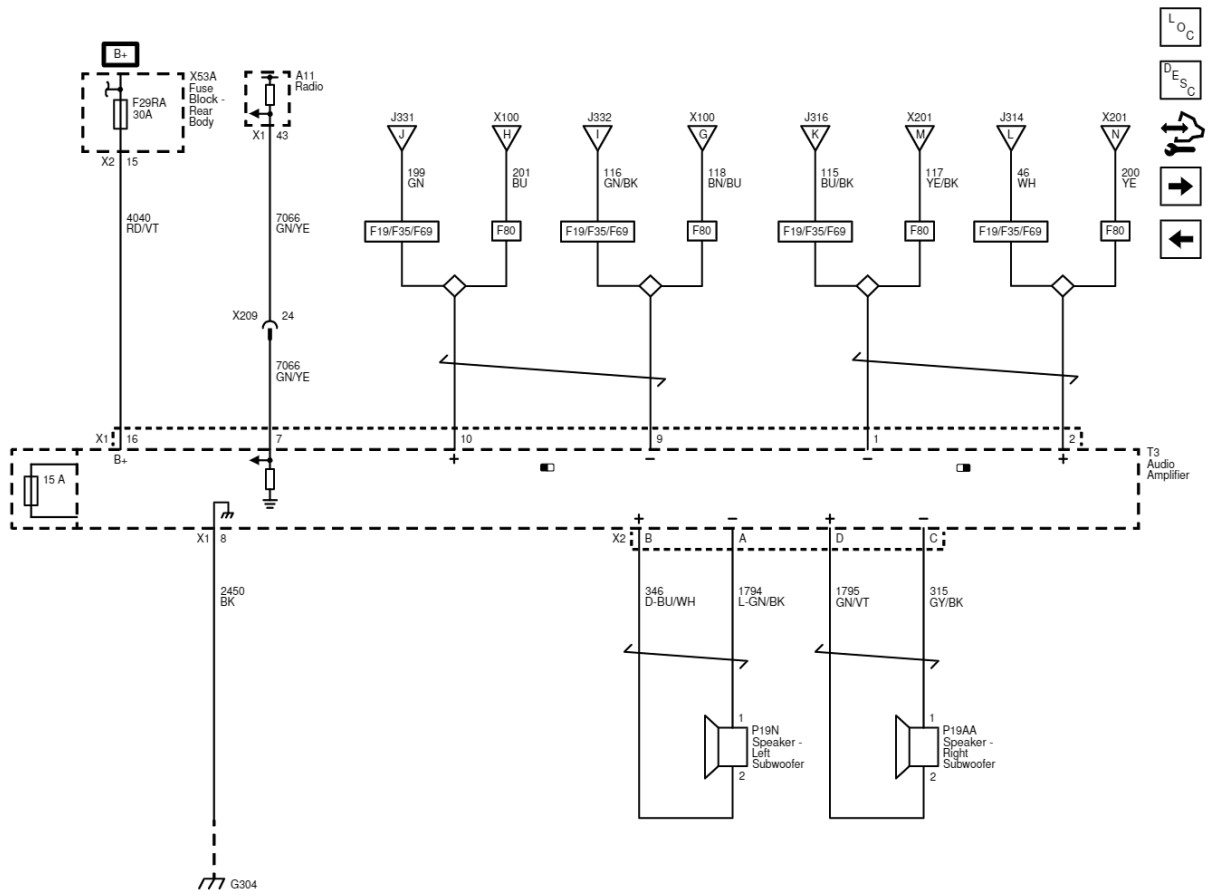
Figure 7: [Antenna Inputs](#)

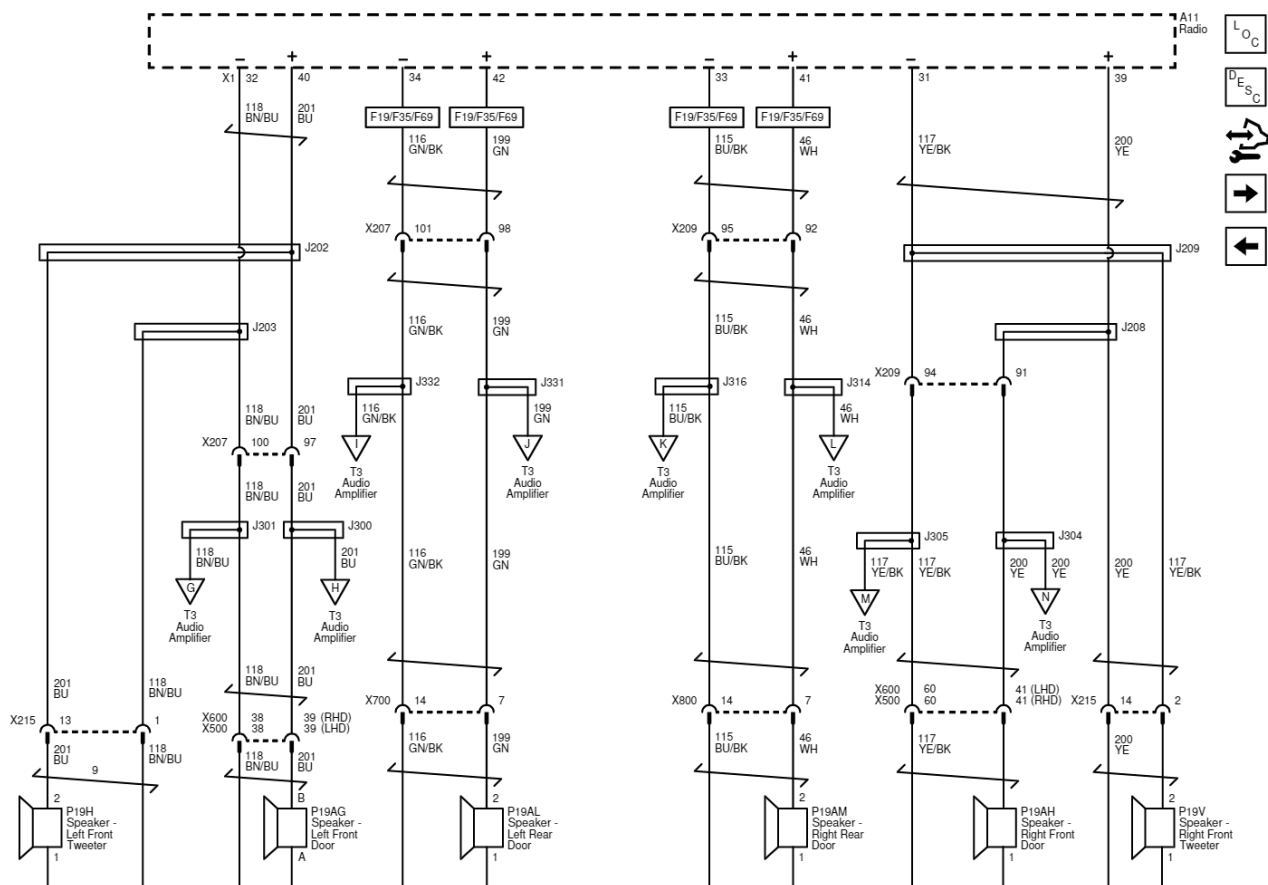
Figure 8: [Auxilliary Audio Jack \(USR\)](#)

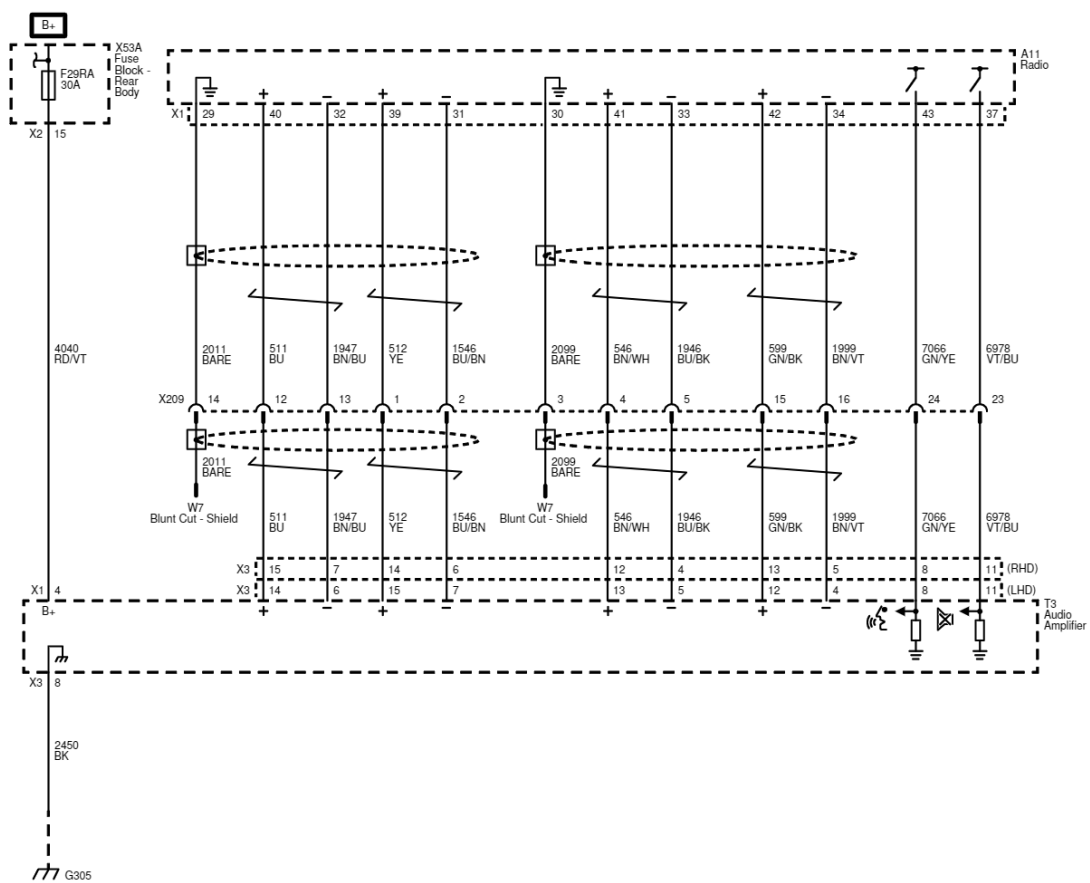
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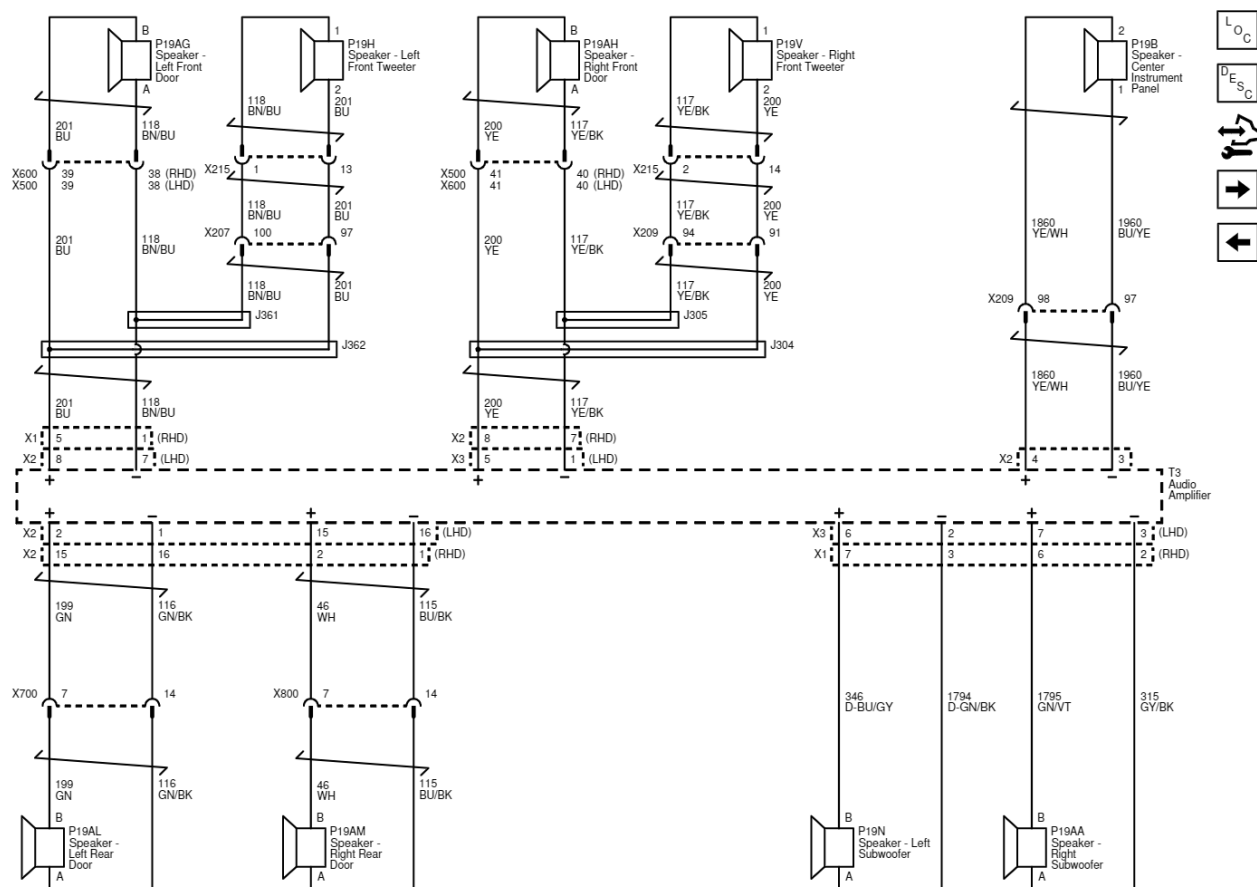












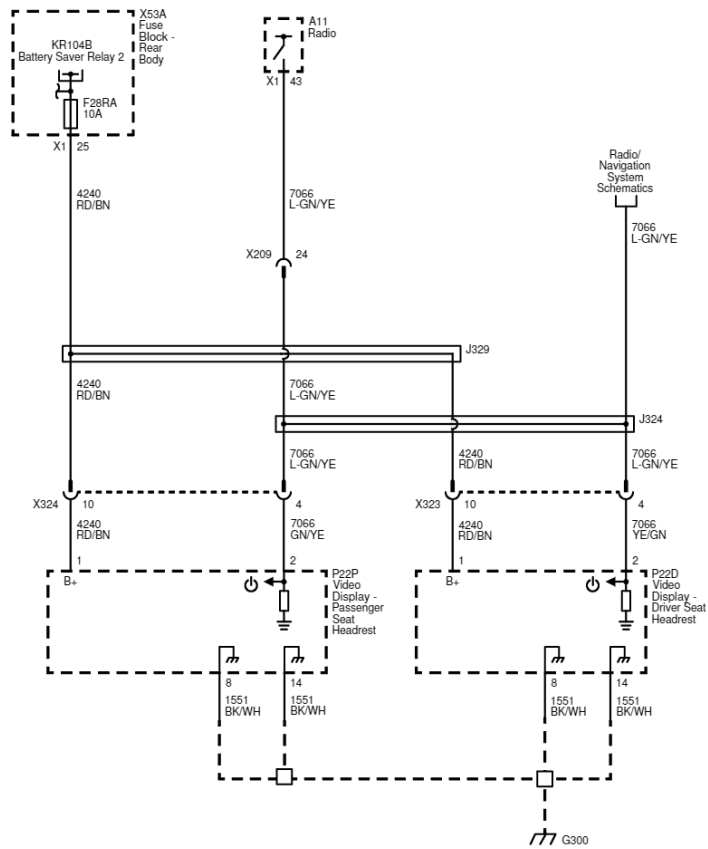
Video System Schematics

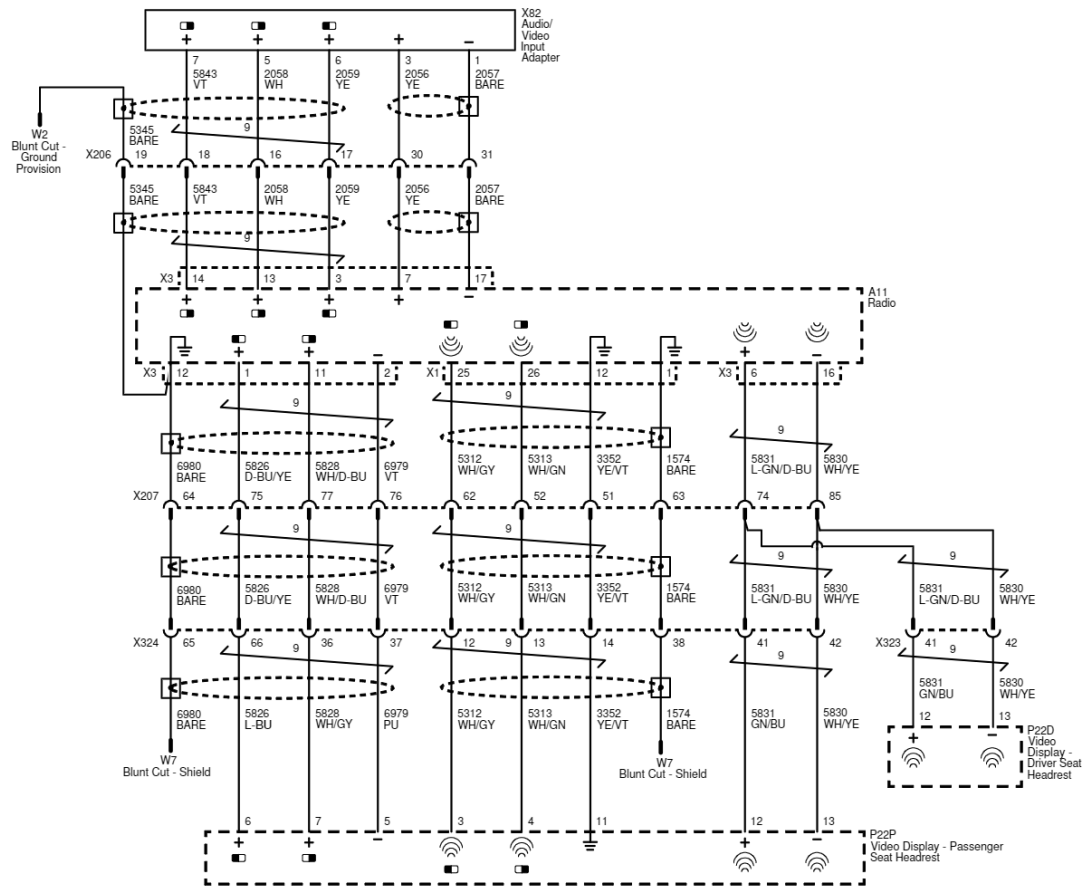
Figure 1: [Video Display Power and Ground](#)

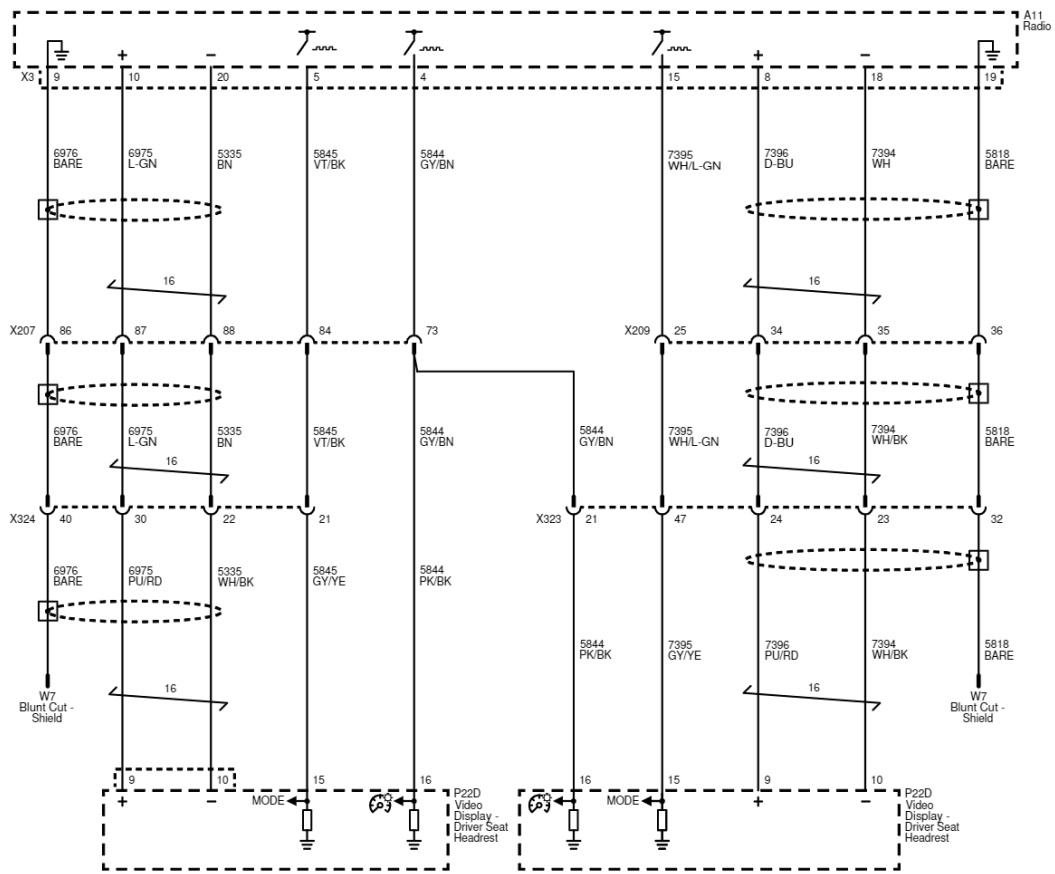
Figure 2: [Video Display Audio Signals](#)

Figure 3: [Video Display Video Signals](#)

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Special Tools

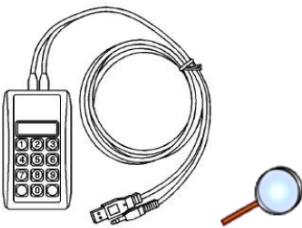
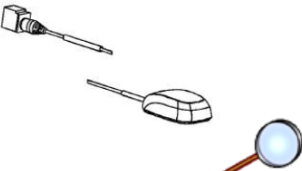
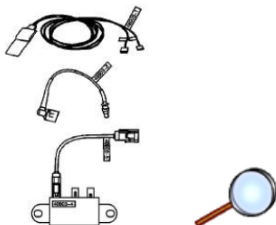
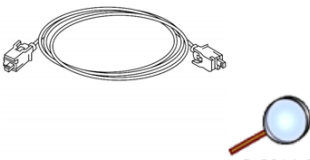
Illustration	Tool Number/Description
	EL-50334-20 Multi-Media Interface Tester (MIT)
	EL-50334-50 USB Cable and Adapter Kit
	EL-48028 Digital Radio Test Antenna
	EL-49903 OnStar Antenna -Diagnostic Tool Kit
	EL-50334-12 Infotainment Test Cable - RSE

Illustration	Tool Number/Description
	EL-50334-13 Infotainment Test Cable – RSE Splitter
	EL-50334-14 Infotainment Test Cable

Special Tools (MIT Tool Instructions)

Bluetooth Pairing for Vehicles with Radio RPO: UF7

Either reset the pin code on the radio to 0000, or go under Device Info on the radio and see what the pin code is (to enter it later on the MIT).

1. Turn the BT discoverable ON in the radio Bluetooth settings.
2. Press Pair Device on radio (DO NOT PRESS SEARCH BLUETOOTH DEVICES ON THE RADIO).
3. Press the Pair button on the MIT.
4. When the three LED lights begin flashing on the MIT, enter the pin code (either 0000 if you reset it to that or what the radio pin code was).
5. MIT will then automatically connect with the radio and should show "MIT Connected" message.
Make test call and the audio streaming test.

Holden Radio Bluetooth Pairing Instructions

1. Using the radio controls, place the radio into "Discoverable Mode".
2. Place the MIT into Bluetooth mode by pressing TEST SELECTOR until the Bluetooth LED is illuminated.
3. With the MIT in Bluetooth mode Press and Release the #1 button (the Bluetooth LED will begin to slowly blink).
4. Now Press and release the PAIR/CALL button on the MIT (the Bluetooth LED will begin to blink a little faster).
5. On the radio Enter the PASSKEY when prompted: (press "0000" then Press "OK").
6. The MIT and radio will PAIR and CONNECT (the Bluetooth LED will be Fast Flashing).
7. Use as regular MIT at this point.

For all other Radios

Testing the Bluetooth Function

1. Verify connection of the MIT to the USB port.
2. Press and release the TEST SELECTOR button until the Bluetooth LED illuminates.
3. Disable all other Bluetooth devices present in the vehicle (ie. cell phones, laptops, etc.).

Standard Bluetooth Pairing/Bonding

1. Use the vehicle controls to place the radio into Bluetooth Pairing mode. The vehicle will prompt you with a security code.
2. Press and release the PAIR/CALL button. The Bluetooth LED will blink slowly while preparing to have a security code entered.
3. Wait for the all three LEDs to blink confirming it is ready to have the security code entered.
4. Enter the code with the MIT keypad and hit ENTER.
5. The Bluetooth LED will blink slowly while pairing/bonding and move to a quick flash once paired/bonded.
The vehicle should confirm pairing/bonding is complete.

Streaming Audio

1. Confirm pairing/bonding is complete – the Bluetooth LED will be in a quick flash mode.

2. On some radios the MIT automatically begins streaming audio via A2DP. The audio playback will confirm that the Bluetooth connection using streaming and the audio is working correctly.
3. On other radios you will need to select Bluetooth Audio from the Source menu to verify Audio Streaming.
4. Audio playback confirms that the Bluetooth connection using Streaming Audio is working correctly.
5. Placing a test call will temporarily stop the streaming audio function, but upon disconnection of that test call, the streaming audio from the MIT will resume.

To Place a Test Call

1. Confirm pairing/bonding is complete – the Bluetooth LED will be in a quick flash mode. If the vehicle is equipped with streaming audio, and the radio is set to play a Bluetooth audio file, the streaming audio playback will be audible.
2. Press and release PAIR/CALL button to place a test call. Streaming audio will be temporarily turned off.
3. Use the vehicle controls to answer the call.

Note: If the call is not answered within several rings, the MIT's audio files will not transmit, even though an active call is occurring.

4. Audio playback confirms that the Bluetooth connectivity is working correctly.

Note: The MIT will remain paired/bonded when the call is ended by the vehicle. To re-test the call function, place the MIT in Bluetooth mode and press and release the Pair button to reconnect. When testing is completed, delete MIT from the audio system before returning the vehicle to the customer.

5. Use the vehicle controls to end the call. If applicable, streaming audio will resume.

Testing the AUX/Line-In Function

1. Verify connection of the MIT as stated above.
2. Press and release the TEST SELECTOR button until the MIT AUX LED illuminates.
3. Use the vehicle controls to put the audio system into Audio (Line-In) mode.
4. Audio playback confirms that the audio input is working correctly.

Testing the USB Function

1. Verify connection of the MIT as stated above.
2. Press and release the TEST SELECTOR button until the MIT USB LED illuminates.
3. Use the vehicle controls to put the audio system into USB mode.

Note: Volume levels may vary dependent upon vehicle audio system.

4. Audio playback confirms that the USB is working correctly.

Troubleshooting Guide

If the MIT unit is still not working properly after following the below troubleshooting, the unit is malfunctioning and should be repaired or replaced.

Unit not Working

- Verify the MIT is powered on correctly as indicated by the green Power LED.
- If Power LED is not illuminated, verify USB power source is working properly.
- If USB power adapter is being used to power the MIT, check and, if necessary, replace the fuse in adapter.

Problem with Aux/Line-In Test

- Verify Aux/Line-In test cable is inserted properly into the vehicle audio input jack. Verify the MIT is in Aux/Line-In mode as indicated by the red AUX LED.

- Verify the vehicle audio system is in Auxiliary or Line-in mode. Verify the vehicle audio system volume is turned up and not in mute mode.

Problem with USB Test

- Verify MIT is in USB mode as indicated by the red USB LED. Verify the vehicle audio system is in USB mode.
- Verify the vehicle audio system volume is turned up and not in mute mode.

Problem with Bluetooth Pairing

- Delete previous devices stored in the device list of the radio and then pair the MIT
- Remove USB cable, and then reconnect to reset the MIT. Carefully follow the bonding instructions for the correct Passkey procedure.

Problem with Bluetooth Test Call Audio

- Verify the MIT is paired with the vehicle. This is indicated by the quick flashing Bluetooth LED.
- Audio system should have indicated the MIT is bonded.