Information and Entertainment System

Special Tool(s)

	Fluke 77-IV Digital Multimeter FLU77-4 or equivalent
	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool
	Flex Probe Kit 105-R025D or equivalent
	Multi-Media Interface Tester 105-00120
	Universal Serial Bus (USB) Male-A To Male-A Cable CCMUSB2-AM-AM-10

Principles of Operation

NOTE: *The Smart Junction Box (SJB) is also known as the Generic Electronic Module (GEM) .*

Audio Front Control Module (ACM)

The Audio Front Control Module (ACM) can be operated with the key in RUN or ACC. The accessory delay feature allows the audio system to be operated for a preset period of time after the key is turned off and a door has not been opened. The ACM sends AC voltage audio signals to the speakers or to the amplifiers, depending on vehicle configuration. The ACM can produce its own DTCs, which can be communicated to the scan tool through the Medium Speed Controller Area Network (MS-CAN) .

Front Controls Interface Module (FCIM)

The Front Controls Interface Module (FCIM) acts as a customer interface with the audio system and the climate control system. When a switch is pressed, a message is broadcast over the MS-CAN . When a climate control switch is pressed, the HVAC module sends a message back to the FCIM to illuminate the correct switches to indicate the status of the climate control.

Front Display Interface Module (FDIM)

For vehicles without navigation, the Front Display Interface Module (FDIM) is a stand-alone module. It receives messages for all of its displays, which include:

- Audio information
- Climate control fan speed and temperature setting
- Outside air temperature
- Compass heading

For vehicles with navigation, the FDIM is hardwired to the ACM . When the touchscreen is pressed, a signal is sent to the ACM , which acts on the signal either by changing the audio setting or by broadcasting a message via the MS-CAN to the module controlling the function that was selected. The audio system, navigation, and climate control video feed to the FDIM is provided by the ACM . If equipped with a rear view camera, the video feed for the camera is provided directly by the rear view camera.

AM/FM Antenna

The AM/FM antenna is a fixed mast antenna mounted on the exterior of the vehicle. The antenna receives both AM and FM radio waves. The audio signals are then sent to the ACM through the antenna cables.

Satellite Radio Antenna

The satellite radio antenna receives satellite radio signals. The signals are sent to the ACM through the satellite radio antenna cables. If equipped with the navigation system, an antenna splitter is used to provide separate satellite radio and Global Positioning System (GPS) inputs to the ACM .

Navigation System

The vehicle navigation system guides the user to a pre-entered destination. No navigation map DVD is needed, as the map guidance information is stored in the ACM hard-drive. The ACM calculates route information based on GPS data. The ACM also uses vehicle speed and transmission gear selected signals received through the MS-CAN to detect vehicle speed and direction, resulting in more accurate navigation tracking.

The navigation display is shown on the FDIM . Either the FDIM touchscreen or the buttons on the FCIM can be used to interact with the navigation system.

The compass heading is derived from the GPS antenna signal. There are no serviceable parts for the compass.

A voice recognition system allows the user to interface with the system without using the touchscreen. A microphone located in the auto-dimming interior mirror provides the voice recognition input. The microphone is shared with the SYNC system.

SYNC System

The SYNC system allows interaction with several types of customer devices, including mobile phones and media devices. The APIM contains an on-board Bluetooth chipset which enables certain wireless devices to interact with the system.

The APIM consists of 2 internal modules: the Consumer Interface Processor (CIP) and the Vehicle Interface Processor (VIP) . The modules are not replaceable individually, but can be flashed independently, if required.

The CIP interfaces with all of the inputs to the APIM . The CIP contains an analog-to-digital-to-analog converter, as well as the Bluetooth chipset. Any consumer-available application upgrades that are available are loaded directly to the CIP through the USB port.

The VIP provides an interface between the CIP and the vehicle. The main functions of the VIP are controlling the APIM power management and translating both inbound and outbound signals over the CAN .

The APIM can receive inputs from the following audio sources:

- USB port
- Audio input jack
- Bluetooth

The USB port can be used for connecting a media device (such as an iPod®) with the device's available cable, or for directly plugging in a portable mass storage device (such as a "thumb drive"). When playing media files stored on a mass storage device, the SYNC system only plays files that do not have Digital Rights Management (DRM) protection. The USB port can also be used for uploading vehicle application upgrades.

The USB port is powered by the APIM , so no external power source is needed to power a device plugged into the USB port if the device supports this feature.

The audio input jack can be used for connecting a media device (such as an iPod®) utilizing a 1/8-inch audio jack. When a device is connected through the audio input jack, only the speaker volume can be controlled by the ACM . All other functions (such as seek, fast forward, pause, etc.) must be carried out on the device itself.

The Bluetooth interface can accommodate both Bluetooth-enabled mobile phones and Bluetooth-enabled media devices. Any Bluetooth device used with the SYNC system must first be paired with the system before it is operational.

Bluetooth is a secure, short-range radio frequency that allows devices to communicate wirelessly through radio waves. The operating range of a Bluetooth signal is a maximum of 9.75 m (32 ft).

Only one Bluetooth phone and one Bluetooth media device can be connected to the system at any one time. If an additional device of either type is paired with the system and made active, the APIM will disconnect any active connection and establish a connection with the new device.

It is important to understand that not all mobile phones will have the same level of features when interacting with the SYNC system. For a list of compatible phones, refer to the SyncMyRide website.

In addition to audio information, metadata may also be sent to the APIM from a device plugged into the USB port. Metadata consists of such information as artist, album title, song title, and genre. The metadata is used by the APIM to create indexes that can be used to sort for particular music, based on customer preference. Not all USB devices can send metadata to the APIM ; also, no metadata is transferred when a device is connected through the audio input jack. When a new media device is connected to the SYNC system, the APIM automatically indexes the information. This may take several minutes (depending on the amount of data on the device), and is considered normal operation. When a device that was previously connected to the SYNC system is reconnected, the APIM updates the index (rather than creating a new one), which reduces the amount of time needed to create the index.

The APIM receives both stereo and mono sound inputs and can also transmit both stereo and mono sound. The mono function is used to receive the microphone input, and to send sound to the ACM for voice prompts, the Text-To-Speech (TTS) feature, ringtones, and

any audio received through a connected mobile phone. The TTS feature speaks information so that it does not have to be read from the display.

The APIM communicates on the MS-CAN and the High Speed Controller Area Network (HS-CAN) . Communication with the scan tool is established through the HS-CAN .

Global Positioning System Module (GPSM)

The Global Positioning System Module (GPSM) provides vehicle location for real-time traffic reports and re-routing, and for identifying vehicle location in the event of a collision. The vehicle location information is broadcast to the APIM over the MS-CAN . The GPSM is part of the SYNC system and is only present for vehicles without navigation.

Voice Recognition For Vehicles With Navigation And The SYNC System

When the audio system enters voice recognition mode, the ACM initially controls the voice recognition feature. The microphone is wired directly to the APIM , which relays the microphone input to the ACM through dedicated wiring. If the first command spoken is part of the ACM voice recognition set, the ACM retains control of the voice recognition and takes the appropriate action(s). If the first command spoken is part of the APIM voice recognition set, the ACM shuts off its own voice recognition and broadcasts a Controller Area Network (CAN) message to the APIM , transferring the voice recognition to the SYNC system and providing the voice command that was spoken. The ACM controls the voice engine for the base audio, navigation, and climate control systems. The APIM controls the voice engine for the SYNC system (USB port, audio input jack, Bluetooth).

Steering Wheel Controls

The steering wheel controls consist of a series of resistors. Each steering wheel control switch function corresponds with a specific resistance value within the switch. When a switch is pressed, the ACM (or the APIM) monitors the change in reference voltage to determine the requested function.

Noise Suppression Equipment

The radio frequency suppression equipment reduces interference transmitted through the speakers by the engine ignition and electrical systems. When installing any new radio suppression equipment components, make sure that a good contact is made at all connections.

Subwoofers

The subwoofer speakers on the Shaker 500 system are located in the front doors and are powered by individual amplifiers located in the left hand kick panel. In addition to these subwoofer speakers, the Shaker 1000 system includes an enclosure with 2 subwoofer speakers powered by an amplifier. The enable/clip circuit carries out 2 functions: to turn on the subwoofer amplifier, and to monitor an overload condition to the subwoofer amplifier. In the event of an overload, the ACM clips the audio output signal to the subwoofer amplifier (heard as distortion).

Audio Input Jack

The audio input jack allows for a portable MP3 player to be connected to the vehicle audio system. When a portable MP3 player is connected, audio from the MP3 player can be played through the vehicle speakers.

Audio Signals

Stereo signals contain left and right channel information, and are used for most audio signals.

A mono signal is used for the microphone input to the APIM . The mono signal is also used for the voice prompts, the TTS feature, ringtones, and any audio received through a connected mobile phone. These audio signals are output from the APIM to the ACM . The mono and stereo outputs from the APIM utilize separate circuits.

A digital signal is used to transmit data from a media device connected through the USB port to the APIM . The APIM then converts the signal to analog and relays the signal to the ACM .

A wireless signal is used to broadcast audio signals from a Bluetooth device to the APIM . As with a digital signal sent through the USB port, the APIM converts the wireless audio signal to analog and relays it to the ACM .

Network Communication

The following audio system components communicate via the MS-CAN :

- ACM
- Navigation ACM
- FCIM
- FDIM (vehicles without navigation)
- APIM
- GPSM

There are numerous messages internal to the audio system. The functions of these messages include (but are not limited to):

- Changing the audio source
- Changing equalizer settings
- Updating the FDIM display
- Dialing phone numbers from the ACM (if equipped with the SYNC system)

In addition, the following messages are utilized by the audio system in conjunction with systems outside of the audio system:

Audio System

Message	Transmitting Module	Receiving Module(s)	Audio System Function
Accessory Delay Status	SJB	ACM APIM FCIM FDIM	When active, this signal allows the audio component to be operated after the vehicle is shut off.
AFE Data	Instrument Panel Cluster (IPC)	ACM	Provides average fuel economy data to the ACM . This message is only applicable for vehicles with navigation.
Brake Sensor Data	IPC	GPSM	Provides vehicle yaw rate to the GPSM for use in vehicle tracking.
Compass Display Data	IPC	FDIM	Indicates the compass heading or mode (calibration, zone). This message only applies to vehicles without navigation.
eCall Notification	Restraints Control Module (RCM)	APIM	Provides the eCall status to the APIM . This message is also used to confirm that the APIM and the RCM are both configured for the eCall feature.
eCall Status	APIM	RCM	Provides the eCall status to the RCM . This message is also used to confirm that the APIM and the RCM are both configured for the eCall feature.
English/Metric Mode	IPC	ACM	Indicates whether English or metric units is currently selected.
FCIM Button State	FCIM	ACM APIM IPC	Indicates when a button is pressed on the FCIM so the audio system can make the desired setting change.
HVAC System Button Status (from ACM)	ACM	HVAC module	Indicates when a climate control setting is changed using the FDIM touchscreen (which is hardwired to the ACM) so the HVAC module can make the desired setting changes. This message only applies to vehicles with navigation.
HVAC System Button Status (from FCIM)	FCIM	HVAC module	Indicates when a climate control button is pressed on the FCIM so the HVAC module can make the desired setting change.
HVAC System Indication Command (to ACM)	HVAC module	ACM	Indicates the mode of the HVAC module so the ACM can send the correct display information to the FDIM . This message only applies to vehicles with navigation.
HVAC System Indication Command (to FCIM)	HVAC module	FCIM	Indicates the mode of the HVAC module so the FCIM can illuminate the appropriate indicator on the bezel face.
HVAC System Voice Request Status	ACM	HVAC module	Provides climate control setting changes that are initiated through the voice recognition system. This message only applies to vehicles with navigation.
Ignition Switch Position	SJB	ACM APIM FCIM FDIM GPSM	Indicates the ignition position to the audio system modules in order to control power management.
Instrument Illumination Level	SJB	ACM FCIM FDIM	Controls the backlight intensity based on the position of the dimmer switch.
Navigation Audio Radio Rolling Wheel Count	IPC	ACM	Used by the ACM to more accurately track vehicle position when the GPS signal is temporarily unavailable.
		GPSM	Used by the GPSM for vehicle tracking if the vehicle speed signal is lost.

Message	Transmitting Module	Receiving Module(s)	Audio System Function
Odometer Rolling Count	PCM	APIM	Provides the odometer reading to the APIM in order to initiate maintenance interval notifications.
Park Brake Status	SJB	ACM	Provides the park brake status to the ACM .
Temperature Display Status	HVAC module	ACM (with navigation) FDIM (without navigation)	Indicates certain climate control settings such as temperature, fan speed, air distribution, and outside air temperature.
TPMS Status	SJB	APIM	Provides the current tire pressure and TPMS warning indicator status to the APIM .
Transmission Selector (PRNDL) Status	IPC	ACM GPSM	For the navigation system, this signal is used for more accurate navigation tracking. For vehicles with rear view camera, this signal is used by the ACM to determine if it should allow the video feed from the rear view camera to be shown on the FDIM . For vehicles with the SYNC system but not navigation, this signal is used by the GPSM for more accurate vehicle tracking.
Vehicle Speed	IPC	ACM	Used by the ACM for the speed-compensated volume function.
		APIM	Used by the APIM to prevent driver distraction by limiting certain SYNC functions based on vehicle speed.
		GPSM	Used by the GPSM for vehicle tracking.
Vehicle Identification Number (VIN) Information	IPC	ACM APIM	Provides the VIN to verify the correct modules are installed.

Inspection and Verification

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
• Front Controls Interface Module (FCIM) • Front Display Interface Module (FDIM) • AM/FM antenna • Satellite radio antenna • Audio input jack • Noise suppression equipment • Speaker(s) • Steering wheel controls • Universal Serial Bus (USB) port	• Battery Junction Box (BJB) ▪ 20 (30A) (VBATT) ▪ 33 (30A) (VBATT) • Smart Junction Box (SJB) fuse(s): ▪ 3 (15A) (VBATT) ▪ 14 (10A) (VBATT) ▪ 15 (15A) (VBATT) ▪ 19 (25A) (VBATT) ▪ 28 (5A) (START signal) ▪ 39 (20A) (VBATT) • Wiring, terminals or connectors

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. **NOTE:** *Do not reprogram the SYNC Module / APIM to try and resolve a customer reported issue unless specifically directed by a Ford service publication; TSB, FSA, or EFC.*

   If vehicle is equipped with SYNC® or SYNC® with MyTouch, refer to the Symptom chart before continuing with scan tool hook up and diagnosis.

5. **NOTE:** *Make sure to use the latest scan tool software release.*

   If the cause is not visually evident, connect the scan tool to the Data Link Connector (DLC) .

6. **NOTE:** *The Vehicle Communication Module (VCM) LED prove-out confirms power and ground from the DLC are provided to the VCM .*

   If the scan tool does not communicate with the VCM :
   - Check the VCM connection to the vehicle.
   - Check the scan tool connection to the VCM .
   - Refer to Section 418-00, No Power To The Scan Tool, to diagnose no power to the scan tool.

7. If the scan tool does not communicate with the vehicle:
   - Verify the ignition key is in the ON position.
   - Verify the scan tool operation with a known good vehicle.
   - Refer to Section 418-00 to diagnose no response from the PCM.

8. Carry out the network test.
   - If the scan tool responds with no communication for one or more modules, refer to Section 418-00.
   - If the network test passes, retrieve and record the continuous memory DTCs.

9. **NOTE:** *Do not press any buttons on the FCIM or FDIM while the Audio Front Control Module (ACM) is carrying out the self-test.*

   Clear the continuous DTCs and carry out the self-test diagnostics for the ACM .

10. If the DTCs retrieved are related to the concern, go to DTC Charts. For all other DTCs, refer to the Diagnostic Trouble Code (DTC) Chart in Section 419-10.

11. If no DTCs related to the concern are retrieved, refer to the Symptom Charts.

DTC Charts

Audio Front Control Module (ACM) DTC Chart — Without Navigation

NOTE: *For SYNC® related concerns, REFER to the SYNC® Symptom Chart before connecting the scan tool and beginning DTC-based diagnostics.*

NOTE: *This module utilizes a 5-character DTC followed by a 2-character failure-type code. The failure-type code provides information about specific fault conditions such as opens, or shorts to ground. Continuous memory DTCs have an additional 2-character DTC status code suffix to assist in determining DTC history.*

DTC	Description	Action
B11BA:1C	Steering Wheel Audio Switch Pack: Circuit Voltage out of Range	GO to Pinpoint Test P.
B11BA:63	Steering Wheel Audio Switch Pack: Circuit / Component Protection Time-Out	GO to Pinpoint Test P.
B1A01:01	Speaker #1: General Electrical Failure	GO to Pinpoint Test C.
B1A01:11	Speaker #1: Circuit Short to Ground	GO to Pinpoint Test C.
B1A01:12	Speaker #1: Circuit Short to Battery	GO to Pinpoint Test C.
B1A01:13	Speaker #1: Circuit Open	GO to Pinpoint Test C.
B1A02:01	Speaker #2: General Electrical Failure	GO to Pinpoint Test C.
B1A02:11	Speaker #2: Circuit Short to Ground	GO to Pinpoint Test C.
B1A02:12	Speaker #2: Circuit Short to Battery	GO to Pinpoint Test C.
B1A02:13	Speaker #2: Circuit Open	GO to Pinpoint Test C.

DTC	Description	Action
B1A03:01	Speaker #3: General Electrical Failure	GO to Pinpoint Test C.
B1A03:11	Speaker #3: Circuit Short to Ground	GO to Pinpoint Test C.
B1A03:12	Speaker #3: Circuit Short to Battery	GO to Pinpoint Test C.
B1A03:13	Speaker #3: Circuit Open	GO to Pinpoint Test C.
B1A04:01	Speaker #4: General Electrical Failure	GO to Pinpoint Test C.
B1A04:11	Speaker #4: Circuit Short to Ground	GO to Pinpoint Test C.
B1A04:12	Speaker #4: Circuit Short to Battery	GO to Pinpoint Test C.
B1A04:13	Speaker #4: Circuit Open	GO to Pinpoint Test C.
B1A05:02	Speaker #5: General Signal Failure	GO to Pinpoint Test D.
B1A06:02	Speaker #6: General Signal Failure	GO to Pinpoint Test E.
B1A56:21	Antenna: Signal Amplitude < Minimum	**NOTE:** *If DTC B1A56:21 sets after running the bezel diagnostic tests disregard this DTC. This test is used for end of line or repair bay testing at the Ford plant. Each plant has its own assigned frequency and signal strength requirements. The running and passing of this test depends on local radio stations. If no local station is broadcasting on the required frequency the test will fail. Therefore test ran from the bezel diagnostic screen and the DTC generated from the test can be disregarded.* DISREGARD this DTC.
B1A89:01	Satellite Antenna: General Electrical Failure	GO to Pinpoint Test B.
B1A89:13	Satellite Antenna: Circuit Open	GO to Pinpoint Test B.
B1D19:49	Compact Disc Unit: Internal Electronic Failure	CLEAR the DTCs. REPEAT the self-test. If DTC B1D19:49 is retrieved again, INSTALL a new Audio Front Control Module (ACM) . REFER to Audio Control Module (ACM) in this section. REPEAT the self-test.
B1D78:13	Auxiliary Input: Circuit Open	**NOTE:** *This DTC is only applicable for vehicles without the SYNC system. For vehicles with the SYNC system, disregard the DTC.* GO to Pinpoint Test Q.
U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AB.
U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test AC.
U0197:00	Lost Communication With Telephone Control Module: No Sub Type Information	GO to Pinpoint Test AD.
U0255:00	Lost Communication With Front Display Interface Module: No Sub Type Information	GO to Pinpoint Test AE.
U0256:00	Lost Communication With Front Controls Interface	GO to Pinpoint Test AF.

DTC	Description	Action
	Module: No Sub Type Information	
U2014:41	Control Module Hardware: General Checksum Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U2014:41 is retrieved again, INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. REPEAT the self-test.
U2014:42	Control Module Hardware: General Memory Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U2014:42 is retrieved again, INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. REPEAT the self-test.
U2014:96	Control Module Hardware: Component Internal Failure	GO to Pinpoint Test H.
U201A:51	Control Module Main Calibration Data: Not Programmed	REFER to Section 418-01.
U2100:00	Initial Configuration Not Complete: No Sub Type Information	REFER to Section 418-01.
U2101:00	Control Module Configuration Incompatible: No Sub Type Information	REFER to Section 418-01.
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AL.
U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AM.

Audio Front Control Module (ACM) DTC Chart — Navigation

NOTE: *This module utilizes a 5-character DTC followed by a 2-character failure-type code. The failure-type code provides information about specific fault conditions such as opens, or shorts to ground. Continuous memory DTCs have an additional 2-character DTC status code suffix to assist in determining DTC history.*

DTC	Description	Action
B119F:01	GPS Antenna: General Electrical Failure	GO to Pinpoint Test U.
B119F:13	GPS Antenna: Circuit Open	GO to Pinpoint Test U.
B11BA:1C	Steering Wheel Audio Switch Pack: Circuit Voltage out of Range	GO to Pinpoint Test P.
B11BA:63	Steering Wheel Audio Switch Pack: Circuit / Component Protection Time-Out	GO to Pinpoint Test P.
B1201:1C	Steering Wheel Audio Switch Pack 2: Circuit Voltage out of Range	GO to Pinpoint Test P.
B1201:63	Steering Wheel Audio Switch Pack 2: Circuit / Component Protection Time-Out	GO to Pinpoint Test P.
B121C:01	Hard Drive: General Electrical Failure	CLEAR the DTCs. REPEAT the self-test. If DTC B121C:01 is retrieved again, INSTALL a new Audio Front Control Module (ACM) . REFER to Audio Control Module (ACM) in this section. REPEAT the self-test.
B1A01:01	Speaker #1: General Electrical Failure	GO to Pinpoint Test C.
B1A02:01	Speaker #2: General Electrical Failure	GO to Pinpoint Test C.

DTC	Description	Action
B1A03:01	Speaker #3: General Electrical Failure	GO to Pinpoint Test C.
B1A04:01	Speaker #4: General Electrical Failure	GO to Pinpoint Test C.
B1A05:01	Speaker #5: General Electrical Failure	GO to Pinpoint Test D.
B1A56:21	Antenna: Signal Amplitude < Minimum	**NOTE:** *If DTC B1A56:21 sets after running the bezel diagnostic tests disregard this DTC. This test is used for end of line or repair bay testing at the Ford plant. Each plant has its own assigned frequency and signal strength requirements. The running and passing of this test depends on local radio stations. If no local station is broadcasting on the required frequency the test will fail. Therefore test ran from the bezel diagnostic screen and the DTC generated from the test can be disregarded.* DISREGARD this DTC.
B1A89:01	Satellite Antenna: General Electrical Failure	GO to Pinpoint Test B.
B1A89:13	Satellite Antenna: Circuit Open	GO to Pinpoint Test B.
B1D19:49	Compact Disc Unit: Internal Electrical Failure	CLEAR the DTCs. REPEAT the self-test. If DTC B1D19:49 is retrieved again, INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. REPEAT the self-test.
B1D19:4B	Compact Disc Unit: Over Temperature	The ACM was over-temperature. This may occur during extended use. Audio operation can resume after the ACM cools. CLEAR the DTCs. This is normal operation.
B1D79:01	Microphone Input: General Electrical Failure	GO to Pinpoint Test T.
U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AB.
U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test AC.
U0162:00	Lost Communication With Navigation Display Module: No Sub Type Information	GO to Pinpoint Test L.
U0164:00	Lost Communication With HVAC Control Module: No Sub Type Information	GO to Pinpoint Test AG.
U0197:00	Lost Communication With Telephone Control Module: No Sub Type Information	GO to Pinpoint Test AD.
U0256:00	Lost Communication With Front Controls Interface Module: No Sub Type Information	GO to Pinpoint Test AF.
U2014:09	Control Module Hardware: Component Failure	GO to Pinpoint Test V.
U2014:41	Control Module Hardware: General Checksum Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U2014:41 is retrieved again, INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. REPEAT the self-test.
U2014:96	Control Module Hardware: Component Internal Failure	GO to Pinpoint Test H.
U201A:51	Control Module Main Calibration Data: Not Programmed	REFER to Section 418-01.
U2100:00	Initial Configuration Not Complete: No Sub Type	REFER to Section 418-01.

DTC	Description	Action
	Information	
U2101:00	Control Module Configuration Incompatible: No Sub Type Information	REFER to Section 418-01.
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AL.
U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AM.

Accessory Protocol Interface Module (APIM) DTC Chart

NOTE: *This module utilizes a 5-character DTC followed by a 2-character failure-type code. The failure-type code provides information about specific fault conditions such as opens, or shorts to ground. Continuous memory DTCs have an additional 2-character DTC status code suffix to assist in determining DTC history.*

DTC	Description	Action
B1201:1C	Steering Wheel Audio Switch Pack 2: Circuit Voltage Out of Range	GO to Pinpoint Test P.
B1201:63	Steering Wheel Audio Switch Pack 2: Circuit / Component Protection Time-Out	GO to Pinpoint Test P.
B1252:04	USB Port: System Internal Failure	GO to Pinpoint Test Z.
B1252:11	USB Port: Circuit Short to Ground	GO to Pinpoint Test Z.
B1A16:01	Microphone Input Circuit: General Electrical Failure	GO to Pinpoint Test T.
U0100:00	Lost Communication With ECM /PCM "A": No Sub Type Information	GO to Pinpoint Test AH.
U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AB.
U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	GO to Pinpoint Test AI.
U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test AC.
U016A:00	Lost Communication With Global Positioning System Module: No Sub Type Information	GO to Pinpoint Test AJ.
U0184:00	Lost Communication With Radio: No Sub Type Information	GO to Pinpoint Test AK.
U0255:00	Lost Communication With Front Display Interface Module: No Sub Type Information	GO to Pinpoint Test AE.
U0256:00	Lost Communication With Front Controls Interface Module: No Sub Type Information	GO to Pinpoint Test AF.
U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	RETRIEVE and FOLLOW other DTCs present in the Accessory Protocol Interface Module (APIM) or Smart Junction Box (SJB) .
U0423:00	Invalid Data Received From Instrument Panel Control Module: No Sub Type Information	RETRIEVE and FOLLOW other DTCs present in the APIM or Instrument Panel Cluster (IPC) .
U046B:00	Invalid Data Received From Global Positioning System Module: No Sub Type Information	RETRIEVE and FOLLOW other DTCs present in the APIM or Global Positioning System Module (GPSM) .
U0485:00	Invalid Data Received From Radio: No Sub Type Information	RETRIEVE and FOLLOW other DTCs present in the APIM or Audio Front Control Module (ACM) .
U2100:00	Initial Configuration Not Complete: No Sub Type Information	REFER to Section 418-01.

DTC	Description	Action
U2101:00	Control Module Configuration Incompatible: No Sub Type Information	REFER to Section 418-01.
U3000:04	Control Module: System Internal Failure	GO to Pinpoint Test X.
U3000:41	Control Module: General Checksum Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U3000:41 is still present,  **VIN required to access Guided Routine (APIM)**
U3000:42	Control Module: General Memory Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U3000:42 is still present,  **VIN required to access Guided Routine (APIM)**
U3000:88	Control Module: Bus Off	REFER to Section 418-00.
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AN.
U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AO.

Front Controls Interface Module (FCIM) DTC Chart

NOTE: *This module utilizes a 5-character DTC followed by a 2-character failure-type code. The failure-type code provides information about specific fault conditions such as opens, or shorts to ground. Continuous memory DTCs have an additional 2-character DTC status code suffix to assist in determining DTC history.*

DTC	Description	Action
U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AB.
U0184:00	Lost Communication With Radio: No Sub Type Information	GO to Pinpoint Test AK.
U2013:63	Switch Pack: Circuit / Component Protection Time-Out	GO to Pinpoint Test I.
U2014:41	Control Module Hardware: General Checksum Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U2014:41 is still present, INSTALL a new Front Controls Interface Module (FCIM) . REFER to Front Controls Interface Module (FCIM) in this section. REPEAT the self-test.
U2014:42	Control Module Hardware: General Memory Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U2014:42 is still present, INSTALL a new FCIM . REFER to Front Controls Interface Module (FCIM) in this section. REPEAT the self-test.
U201A:51	Control Module Main Calibration Data: Not Programmed	REFER to Section 418-01.
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AP.
U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AQ.

Front Display Interface Module (FDIM) DTC Chart — Without Navigation

DTC	Description	Action
B1318	Battery Voltage Low	GO to Pinpoint Test AR.

DTC	Description	Action
B1342	ECU is Faulted	CLEAR the DTCs. REPEAT the self-test. If DTC B1342 is still present, INSTALL a new Front Display Interface Module (FDIM) . REFER to Front Display Interface Module (FDIM) in this section. REPEAT the self-test.
B2477	Module Configuration Failure	REFER to Section 418-01.
U0140	Lost Communication With Body Control Module (GEM)	GO to Pinpoint Test AB.
U0155	Lost Communication With Instrument Panel Cluster (IPC) Control Module	GO to Pinpoint Test AC.
U0164	Lost Communication With HVAC Control Module (EATC)	GO to Pinpoint Test AG.
U0184	Lost Communication With Radio (ACM)	GO to Pinpoint Test AK.
U0197	Lost Communication With Telephone Control Module	GO to Pinpoint Test AD.
U2050	No Application Present	REFER to Section 418-01.
U2051	One or More Calibration Files Missing/Corrupt	REFER to Section 418-01.

Global Positioning System Module (GPSM) DTC Chart

NOTE: *This module utilizes a 5-character DTC followed by a 2-character failure-type code. The failure-type code provides information about specific fault conditions such as opens, or shorts to ground. Continuous memory DTCs have an additional 2-character DTC status code suffix to assist in determining DTC history.*

DTC	Description	Action
U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AB.
U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test AC.
U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	RETRIEVE and FOLLOW other DTCs present in the Global Positioning System Module (GPSM) or Smart Junction Box (SJB) .
U0423:00	Invalid Data Received from Instrument Panel Cluster Control Module: No Sub Type Information	RETRIEVE and FOLLOW other DTCs present in the GPSM or Instrument Panel Cluster (IPC) .
U3000:09	Control Module: Component Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U3000:09 is still present, INSTALL a new GPSM . REFER to Global Positioning System Module (GPSM) in this section. REPEAT the self-test.
U3000:41	Control Module: Component Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U3000:41 is still present, INSTALL a new GPSM . REFER to Global Positioning System Module (GPSM) in this section. REPEAT the self-test.
U3000:42	Control Module: Component Failure	CLEAR the DTCs. REPEAT the self-test. If DTC U3000:42 is still present, INSTALL a new GPSM . REFER to Global Positioning System Module (GPSM) in this section. REPEAT the self-test.
U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AS.
U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AT.

Symptom Chart — General Audio System

General Audio System

Condition	Possible Sources	Action
• No communication with the Audio Front Control Module (ACM)	• Fuse • Wiring, terminals or connectors • ACM	• REFER to Section 418-00.
• No communication with the Accessory Protocol Interface Module (APIM)	• Fuse • Wiring, terminals or connectors • APIM	• REFER to Section 418-00.
• No communication with the Front Controls Interface Module (FCIM)	• Fuse • Wiring, terminals or connectors • FCIM	• REFER to Section 418-00.
• No communication with the Front Display Interface Module (FDIM)	• Fuse • Wiring, terminals or connectors • FDIM	• REFER to Section 418-00.
• No communication with the Global Positioning System Module (GPSM)	• Fuse • Wiring, terminals or connectors • GPSM	• REFER to Section 418-00.

• The CD player is inoperative/does not operate correctly	• CD
	• ACM
		• INSPECT the CD for scratches, fingerprints, a loose paper label, incorrect format, or damage. INSERT a known good CD and TEST the system.
		  • If the system operates correctly, the concern was caused by a damaged CD.
		  • If the system does not operate correctly, INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.

• The Front Controls Interface Module (FCIM) illumination is inoperative	• Backlighting system concern • FCIM	• REFER to Section 413-00.
• The audio system does not operate correctly from the Front Controls Interface Module (FCIM)	• Communication network concern • FCIM	• GO to Pinpoint Test I.
• An individual Front Display Interface Module (FDIM) display is inoperative — vehicles without navigation	• Communication network concern • FDIM	• GO to Pinpoint Test J.
• An individual Front Display Interface Module (FDIM) display is inoperative — vehicles with navigation	• Communication network concern • FDIM • ACM	• GO to Pinpoint Test K.
• The audio system does not operate correctly from the Front Display Interface Module (FDIM) — vehicles with navigation	• Wiring, terminals or connectors • FDIM • ACM	• GO to Pinpoint Test L.
• The Front Display Interface Module (FDIM) is completely inoperative — vehicles without navigation	• Communication network concern • FDIM	• GO to Pinpoint Test M.
• The Front Display Interface Module (FDIM) is completely inoperative — vehicles with navigation	• Fuse • Wiring, terminals or connectors • FDIM	• GO to Pinpoint Test N.

	• ACM	
• The Front Display Interface Module (FDIM) illumination is inoperative — vehicles with navigation	• Wiring, terminals or connectors • FDIM • ACM	• GO to Pinpoint Test N.
• The Front Display Interface Module (FDIM) does not display DVD video played from the Audio Front Control Module (ACM) — vehicles with navigation	• Wiring, terminals or connectors • FDIM • ACM	• GO to Pinpoint Test O.
• Loud popping sound when cycling the ignition	• Fuse • Wiring, terminals or connectors • ACM	• GO to Pinpoint Test R.
• The steering wheel controls are inoperative/do not operate correctly	• Wiring, terminals or connectors • Clockspring • Steering wheel controls • ACM • APIM (without navigation only)	• GO to Pinpoint Test P.
• The audio input jack is inoperative/does not operate correctly	• Wiring, terminals or connectors • Audio input jack • APIM (vehicles with the SYNC system) • ACM (vehicles without the SYNC system)	• GO to Pinpoint Test Q.
• The speed sensitive volume does not operate correctly	• Speed sensitive volume setting • Vehicle Speed Sensor (VSS) signal concern • Communication network concern • ACM	• GO to Pinpoint Test S.
• Voice recognition is inoperative/does not operate correctly	• Wiring, terminals or connectors • Microphone (part of auto-dimming interior mirror) • Steering wheel controls • ACM (if equipped with navigation) • APIM (if equipped)	• GO to Pinpoint Test T.

Symptom Chart — Sound Quality

Sound Quality

Condition	Possible Sources	Action
• Poor reception — AM/FM	• Wiring, terminals or connectors • AM/FM antenna • AM/FM antenna cable • Charging system • Ignition system • Noise suppression equipment • Audio Front Control Module (ACM)	• GO to Pinpoint Test A.

• Poor reception — satellite radio	• Obstructions to the antenna line of sight • Satellite radio antenna • Satellite radio antenna cable • ACM	• GO to Pinpoint Test B.
• Continuous seek/scan — AM/FM	• No channel found in the selected category • AM/FM antenna • AM/FM antenna cable • Noise suppression equipment • ACM	• GO to Pinpoint Test A.
• Continuous seek/scan — satellite radio	• Obstructions to the antenna line of sight • No channel found in the selected category • Satellite radio antenna • Satellite radio antenna cable • ACM	• GO to Pinpoint Test B.
• Poor sound quality/no sound while in satellite radio mode — all other functions operate correctly	• Satellite radio antenna • Satellite radio antenna cable • ACM	• GO to Pinpoint Test B.
• No sound from one or more speakers (not all speakers) — except subwoofers	• Wiring, terminals or connectors • Audio amplifier (navigation only) • Speaker • ACM	• GO to Pinpoint Test C.
• No sound from the door subwoofer(s)	• Fuse • Wiring, terminals or connectors • Door subwoofer speaker • Door subwoofer amplifier • ACM	• GO to Pinpoint Test D.
• No sound from the luggage compartment subwoofer	• Fuse • Wiring, terminals or connectors • Speaker enclosure • Luggage compartment subwoofer amplifier • ACM	• GO to Pinpoint Test E.
• No sound from all speakers	• Fuse • Wiring, terminals or connectors • ACM	• GO to Pinpoint Test F.
• Poor quality/distorted/no sound while in SYNC mode	• Wiring, terminals or connectors • Accessory Protocol Interface Module (APIM) • ACM	• GO to Pinpoint Test G.
• Poor sound quality or distorted sound from one or more speakers (not all speakers)	• Wiring, terminals or connectors • Speaker(s) • Loose trim panel fasteners • Loose trim panels • Loose speaker grille • Loose harnesses • Loose items in storage areas • Loose harness fasteners • Loose door and handle lock components • Loose component fasteners • Watershield bonding and placement • Subwoofer enclosure	• GO to Pinpoint Test AU

Symptom Chart — Satellite Radio

Satellite Radio

Condition	Possible Sources	Action
• Poor reception — satellite radio	• Obstructions to the antenna line of sight • Satellite radio antenna • Satellite radio antenna cable • ACM	• GO to Pinpoint Test B.
• Continuous seek/scan — satellite radio	• Obstructions to the antenna line of sight • No channel found in the selected category • Satellite radio antenna • Satellite radio antenna cable • ACM	• GO to Pinpoint Test B.
• Poor sound quality/no sound while in satellite radio mode — all other functions operate correctly	• Obstructions to the antenna line of sight • Satellite radio antenna • Satellite radio antenna cable • ACM	• GO to Pinpoint Test B.
• The satellite radio is inoperative/does not operate correctly	• Subscription status • ACM	• GO to Pinpoint Test H.

Symptom Chart — Navigation

Navigation

Condition	Possible Sources	Action
• No Global Positioning System (GPS) antenna signal	• Satellite radio antenna cable • Audio Front Control Module (ACM)	• GO to Pinpoint Test U.
• The position cursor is inaccurate	• GPS antenna concern • Network message concern • ACM	• GO to Pinpoint Test V.
• The voice guidance is inoperative/does not operate correctly	• Incorrect voice guidance setting • ACM	• GO to Pinpoint Test W.
• Voice recognition is inoperative/does not operate correctly	• Wiring, terminals or connectors • Microphone (part of the auto-dimming interior mirror) • Steering wheel controls • ACM • Accessory Protocol Interface Module (APIM)	• GO to Pinpoint Test T.

Symptom Chart — SYNC System

SYNC System

Condition	Possible Sources	Action
• The SYNC® system is inoperative (no response is received from phone, voice, and media inputs)	• Customer device • Accessory Protocol Interface Module (APIM)	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test X.
• The SYNC® system voice or tone prompts, Text-To-Speech (TTS) feature, or ringtones	• Customer's setting • Wiring, terminals, or connectors • APIM	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test AA.

are inoperative or do not operate correctly	• Audio Front Control Module (ACM) (for vehicles without the Audio DSP Module) or Audio DSP Module (If equipped)	
• During a phone call, no incoming audio is heard in the vehicle	• Customer's setting • Wiring, terminals, or connectors • APIM • Audio Front Control Module (ACM) (for vehicles without the Audio DSP Module) or Audio DSP Module (If equipped)	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test AA.
• Voice recognition is inoperative or does not operate correctly	• Wiring, terminals, or connectors • Microphone • APIM	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test T.
• During a phone call, no outgoing audio is heard on the outside device	• Wiring, terminals, or connectors • Microphone • APIM	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test T.
• No sound from all SYNC® audio sources (Bluetooth, USB, audio input jack)	• Customer's device • Wiring, terminals, or connectors • Audio Front Control Module (ACM) • APIM	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test G.
• The SYNC® steering wheel switches are inoperative or do not operate correctly	• Steering wheel switch • Wiring, terminals, or connectors • Clockspring • APIM	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test P.
• The audio input jack is inoperative or does not operate correctly	• Customer's device • Wiring, terminals, or connectors • Audio input jack • APIM	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test Q.
• The USB port is inoperative or does not operate correctly	• USB cable/port • Customer's device • APIM	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test Z.
• Unable to pair Bluetooth device	• Incompatible Bluetooth device • APIM	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, GO to Pinpoint Test Y.
• An individual Bluetooth device feature is inoperative (text messaging, media playback or controls, phone book download, call history, or call waiting)	• Customer's device compatibility	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, INSTRUCT the customer to review the device compatibility list. REFER to refer to the SyncMyRide website. It is normal operation for unsupported or incompatible Bluetooth features to be unavailable through the SYNC® system. If the inoperative feature is compatible, ADVISE the customer to check their device for firmware updates, and if required, reset their device following the manufacturer's instructions.
• SYNC® AppLink™ is inoperative or	• Incompatible Bluetooth device	• PERFORM the APIM Reset, REFER to Accessory Protocol Interface Module (APIM) Reset. If the concern is still present, INSTRUCT the customer to review the mobile device platform, application, and

does not operate correctly	• USB cable/port • Customer's device • APIM	application version compatibility list. REFER to www.syncmyride.com. It is normal operation for incompatible mobile device platforms, applications, and application versions to be unavailable through SYNC® AppLink™. If the mobile device platform, application, and application version are compatible, and the device is connected through Bluetooth only, GO to Pinpoint Test Y. If the mobile device platform, application, and application version are compatible, and the device is connected through Bluetooth and the USB port, GO to Pinpoint Test Z.
• 911 Assist™ or Vehicle Health Report (VHR) is inoperative or does not operate correctly	• Unregistered SYNC® owner account • RCM misconfiguration • IPC misconfiguration	• Verify that the customer has a SYNC® Owner Account on www.syncmyride.com. This error message appears due to incomplete or incorrect PMI procedures. CHECK the vehicle service history for recent service actions related to the IPC or RCM . If there have been recent service actions with the IPC or RCM , REPEAT/PERFORM the Programmable Module Installation (PMI) procedure as directed by the diagnostic scan tool. REFER to: Section 418-01. If there have been no recent service actions,  **VIN required to access Guided Routine (APIM)**

Pinpoint Tests

Pinpoint Test A: Poor Reception — AM/FM

Refer to Wiring Diagrams Cell 130, Audio System/Navigation for schematic and connector information.

Normal Operation

The AM/FM antenna receives AM and FM radio waves and transmits them to the Audio Front Control Module (ACM) through the AM/FM antenna cables. The ACM powers the AM/FM antenna in order to amplify the AM signal.

The noise suppression equipment reduces engine ignition and electrical systems interference transmitted through the speakers.

The RDS function allows the vehicle operator to choose which genre (category) of music to listen to. When the SCAN button is pressed, the ACM only stops at channels falling within the selected category. If no channel in the selected category is found, the ACM continues to scan without stopping. This may appear to be a reception issue, but it is actually due to the customer setting.

- DTC B1A56:21 (Antenna: Signal Amplitude < Minimum) — sets when the signal strength is less than the pre-configured threshold value during the self-test.

This pinpoint test is intended to diagnose the following:

- No channel found in the selected category
- Wiring, terminals or connectors
- AM/FM antenna
- AM/FM antenna cable
- Charging system
- Ignition system
- Noise suppression equipment
- ACM

PINPOINT TEST A : POOR RECEPTION — AM/FM

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

A1 CHECK THE RDS SETTING

- Turn the RDS function off. Refer to the Owner's Literature.
- Scan for a good channel.

Does the audio system find a good channel with normal reception?

Yes	The system is operating correctly at this time. The concern was a result of no channel being found in the selected category.
No	GO to A2.

A2 CHECK THE AUDIO SYSTEM RECEPTION

- Check the audio system reception with the engine running, and with the engine off.

Does the poor reception only occur with the engine running?

Yes	GO to A3.
No	GO to A7.

A3 CHECK THE NOISE SUPPRESSION EQUIPMENT

- Check the engine ground strap for security, cleanliness, and metal-to-metal contact.

Are the connections clean, secure, and in metal-to-metal contact?

Yes	GO to A4.
No	CLEAN and SECURE the connections, or INSTALL a new engine ground strap as needed. TEST the system for normal operation.

A4 CHECK THE RADIO INTERFERENCE CAPACITOR

- Install a new radio interference capacitor.
- Start the vehicle.
- Operate the audio system in radio tuner (AM/FM) mode.

Is the reception OK?

Yes	The cause of the concern was an inoperative radio interference capacitor. The system is now operating correctly.
No	GO to A5.

A5 CHECK THE GENERATOR

- Ignition OFF.
- Disconnect: Generator C102A .
- Start the engine.
- Operate the audio system in radio tuner (AM/FM) mode.

Is the reception OK?

Yes	INSTALL a new generator. REFER to Section 414-00. TEST the system for normal operation.
No	GO to A6.

A6 CHECK THE IGNITION CIRCUITS

- Ignition OFF.
- Connect: Generator C102A .
- Check the ignition circuits for correct routing, grounding, and integrity of the connections.

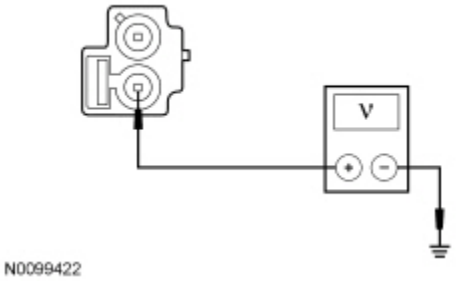
Are the ignition components OK?

Yes	USE a jumper cable to ground various parts of the vehicle to the frame (for example: engine, fenders, quarter panels, stone deflectors, air cleaner, body sheet metal). When the noise is eliminated, PROVIDE a permanent ground where necessary. TEST the system for normal operation.

No	REPAIR the ignition system as necessary. TEST the system for normal operation.

A7 CHECK THE AM/FM ANTENNA ENABLE CIRCUIT

- Ignition OFF.
- Disconnect: AM/FM Antenna C4082 .
- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the voltage between the AM/FM antenna C4082 Pin 1, circuit CME44 (YE/GN), harness side and ground.

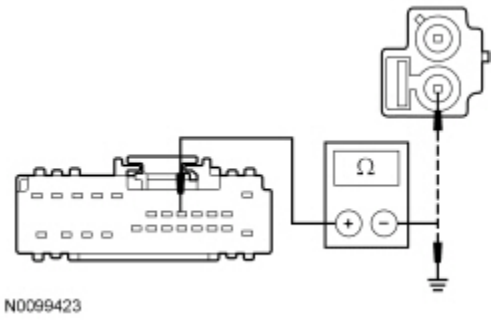


Is the voltage greater than 10 volts?

Yes	GO to A9.
No	GO to A8.

A8 CHECK THE AM/FM ANTENNA ENABLE CIRCUIT FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Disconnect: ACM C290D .
- Measure the resistance between the ACM C290D Pin 5, circuit CME44 (YE/GN), harness side and the AM/FM antenna C4082 Pin 1, circuit CME44 (YE/GN), harness side; and between the ACM C290D Pin 5, circuit CME44 (YE/GN), harness side and ground.



Is the resistance less than 5 ohms between the ACM and the AM/FM antenna, and greater than 10,000 ohms between the ACM and ground?

Yes	GO to A11.
No	REPAIR the circuit. TEST the system for normal operation.

A9 ISOLATE THE AM/FM ANTENNA

- Ignition OFF.
- Connect: ACM C290D .
- Install a new AM/FM antenna. Refer to Antenna — AM/FM in this section.
- Operate the audio system in radio tuner (AM/FM) mode.

Is the reception OK?

Yes	The concern was caused by an inoperative AM/FM antenna. The system is now operating correctly.
No	GO to A10.

A10 ISOLATE THE AM/FM ANTENNA CABLES

- Ignition OFF.
- Substitute each AM/FM antenna cable one at a time by routing a new component. Do not remove the original antenna cable at this time.
- Operate the audio system in radio tuner (AM/FM) mode.

Is the reception OK?

Yes	INSTALL a new AM/FM antenna cable for the inoperative cable. REFER to Antenna Cable — AM/FM in this section. TEST the system for normal operation.
No	GO to A11.

A11 CHECK FOR CORRECT ACM OPERATION

- Ignition OFF.
- Disconnect all the ACM connectors.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect all the ACM connectors and make sure they seat correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. TEST the system for normal operation.

Pinpoint Test B: Poor Reception/Poor Sound Quality/No Sound — Satellite Radio

Normal Operation

Digital signals are received by the satellite radio antenna and sent to the Audio Front Control Module (ACM) , as the satellite radio receiver is built-in to the ACM .

A short to ground in the satellite radio antenna typically has no effect on the antenna signal. However, an open in the antenna circuit results in no sound from the satellite radio system. A short to voltage in the antenna circuit can have varying effects on the system.

Obstructions to the antenna line of sight can affect reception, but this is considered normal operation. Possible obstructions include hills, tall buildings, tunnels, and being parked inside a garage. Be sure the vehicle is in a clear area, free of obstructions, before testing satellite radio reception.

- DTC B1A89:01 (Satellite Antenna: General Electrical Failure) — can set when any fault is detected in the satellite radio antenna circuit. This DTC can be either continuous or on-demand.
- DTC B1A89:13 (Satellite Antenna: Circuit Open) — sets when an open is detected in the satellite radio antenna circuit. This DTC can be either continuous or on-demand.

This pinpoint test is intended to diagnose the following:

- Obstructions to the antenna line of sight
- No channel found in the selected category
- Satellite radio antenna

- Satellite radio antenna cable
- ACM

PINPOINT TEST B : POOR RECEPTION/POOR SOUND QUALITY/NO SOUND — SATELLITE RADIO

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

B1 CHECK THE CATEGORY FILTER SETTING

- Turn the category filter function off. For additional information, refer to the Owner's Literature.
- Drive the vehicle to an open location, free of obstacles.
- Scan for a good channel.

Does the satellite audio system find a good channel with normal reception?

Yes	The system is operating correctly at this time. The concern was a result of no channel being found in the selected category or obstructions to the antenna line of sight.
No	GO to B2.

B2 CHECK THE SATELLITE SIGNAL PID (SAT_SIG_STR)

- Enter the following diagnostic mode on the scan tool: ACM DataLogger .
- Monitor the ACM PID (SAT_SIG_STR).

Does the PID indicate "No Signal" or "Undefined"?

Yes	GO to B3.
No	GO to B5.

B3 CHECK THE SATELLITE RADIO ANTENNA CABLE RESISTANCE

- Ignition OFF.
- Disconnect: Satellite Radio Antenna Connection At ACM .
- Disconnect: Satellite Radio Antenna Cable In-Line Connection Behind The Glove Compartment .
- Disconnect: Satellite Radio Antenna Connection At Satellite Radio Antenna .
- Measure the resistance of the front satellite radio antenna cable core between the ACM and the satellite radio antenna in-line connection; and between the front satellite radio antenna cable core and shield.
- Measure the resistance of the rear satellite radio antenna cable core between the satellite radio antenna and the satellite radio antenna in-line connection; and between the rear satellite radio antenna cable core and shield.

Is the resistance of each satellite radio antenna cable core less than 2 ohms, and the resistance between the core and shield of each satellite radio antenna cable greater than 10,000 ohms?

Yes	GO to B4.
No	INSTALL a new front or rear satellite radio antenna cable. REFER to Antenna Cable — Satellite Radio in this section. CLEAR any DTCs present. TEST the system for normal operation.

B4 ISOLATE THE SATELLITE RADIO ANTENNA

- Install a new satellite radio antenna. Refer to Antenna — Satellite Radio in this section.
- Operate the audio system in satellite radio mode.

Is the reception OK?

Yes	The concern was caused by an inoperative satellite radio antenna. The system is operating correctly at this time. CLEAR any DTCs present.
No	GO to B5.

B5 CHECK FOR CORRECT ACM OPERATION

- Ignition OFF.
- Disconnect all the ACM connectors.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect all the ACM connectors and make sure they seat correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test C: No Sound From One Or More Speakers (Not All Speakers) — Except Subwoofers

Refer to Wiring Diagrams Cell 130, Audio System/Navigation for schematic and connector information.

Normal Operation

The Audio Front Control Module (ACM) directs audio signals to the speakers in the form of an AC voltage. The ACM provides internal circuit protection for shorts to ground or shorts to voltage.

A short to ground or short to voltage in the circuitry to one of the speakers can cause multiple speakers to lose sound due to the built-in overload protection feature of the ACM . In this case, a speaker fault DTC sets, and this pinpoint test should be followed to isolate the damaged circuit.

The speaker walk test can be used to isolate a concern with a particular speaker. This can reduce the diagnostic steps necessary to isolate the concern. To carry out the speaker walk test, refer to Audio Control Module (ACM) Self-Diagnostic Mode in this section.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Speaker
- Audio amplifier (navigation only)
- ACM

Root DTC Description	Failure-Type Codes	Fault Trigger Conditions
B1A01 — Speaker #1	01, 11, 12, 13	Sets when a fault is detected in the LF speaker circuits. This DTC can be continuous or on-demand.
B1A02 — Speaker #2	01, 11, 12, 13	Sets when a fault is detected in the RF speaker circuits. This DTC can be continuous or on-demand.
B1A03 — Speaker #3	01, 11, 12, 13	Sets when a fault is detected in the RR speaker circuits. This DTC can be continuous or on-demand.
B1A04 — Speaker #4	01, 11, 12, 13	Sets when a fault is detected in the LR speaker circuits. This DTC can be continuous or on-demand.

PINPOINT TEST C : NO SOUND FROM ONE OR MORE SPEAKERS (NOT ALL SPEAKERS) — EXCEPT SUBWOOFERS

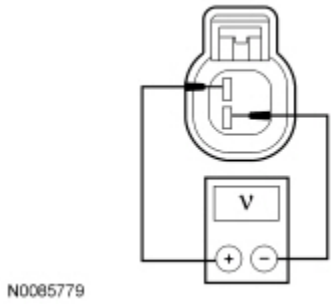
NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

NOTE: *Failure to disconnect the battery when instructed will result in false resistance readings. Refer to Section 414-01.*

C1 CHECK THE AUDIO SIGNAL TO THE SUSPECT SPEAKER

- Ignition OFF.
- Disconnect: Suspect Speaker .
- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the AC voltage between the suspect speaker pin 1 and pin 2, harness side as follows:

Suspect Speaker	Positive Meter Lead	Negative Meter Lead
LH front	C523 Pin 1 VME07 (WH)	C523 Pin 2 RME07 (WH/BN)
RH front	C612 Pin 1 VME10 (WH/VT)	C612 Pin 2 RME10 (WH/OG)
LH rear (coupe)	C484 Pin 1 VME09 (WH/GN)	C484 Pin 2 RME09 (BN/YE)
RH rear (coupe)	C485 Pin 1 VME12 (BN/WH)	C485 Pin 2 RME12 (BN/BU)
LH rear quarter panel (convertible)	C395 Pin 1 VME09 (WH/GN)	C395 Pin 2 RME09 (BN/YE)
RH rear quarter panel (convertible)	C396 Pin 1 VME12 (BN/WH)	C396 Pin 2 RME12 (BN/BU)

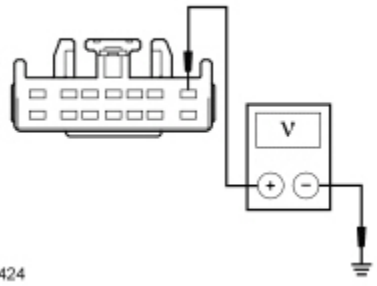


Is an alternating AC voltage present?

Yes	INSTALL a new speaker for the suspect speaker. REFER to the appropriate speaker procedure in this section. CLEAR any DTCs present. TEST the system for normal operation.
No	For vehicles with navigation, GO to C2. For vehicles without navigation, GO to C10.

C2 CHECK THE AUDIO AMPLIFIER VOLTAGE SUPPLY

- Ignition OFF.
- Disconnect: Audio Amplifier C4364B .
- Measure the voltage between the audio amplifier C4364B Pin 1, circuit SBP19 (BU/RD), harness side and ground.

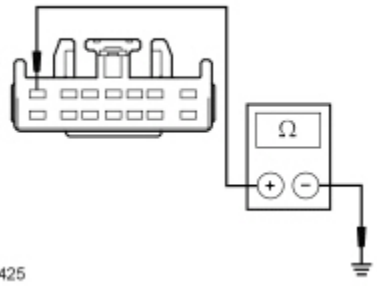


Is the voltage greater than 10 volts?

Yes	GO to C3.
No	VERIFY the SJB fuse 19 (25A) is OK. If OK, REPAIR the circuit. TEST the system for normal operation. If not OK, REFER to the Wiring Diagrams Manual to identify the possible causes of the circuit short.

C3 CHECK THE AUDIO AMPLIFIER GROUND FOR CONTINUITY

- Disconnect: Negative Battery Cable .
- Measure the resistance between the audio amplifier C4364B Pin 7, circuit GD173 (BK), harness side and ground.

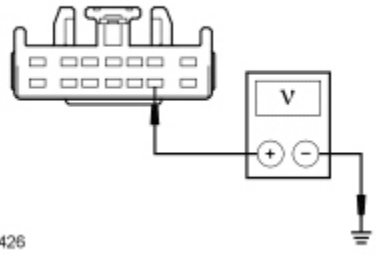


Is the resistance less than 5 ohms?

Yes	GO to C4.
No	REPAIR the circuit. CLEAR any DTCs present. TEST the system for normal operation.

C4 CHECK THE AUDIO AMPLIFIER ENABLE CIRCUIT FOR CORRECT VOLTAGE

- Connect: Negative Battery Cable .
- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the voltage between the audio amplifier C4364B Pin 9, circuit CME31 (BU/GN), harness side and ground.

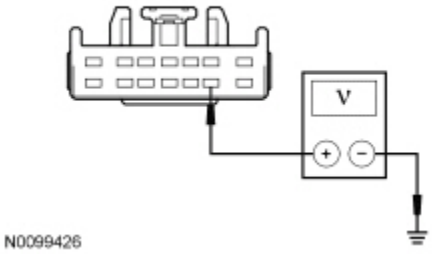


Is the voltage between 3.8 and 6.7 volts?

Yes	GO to C7.
No	GO to C5.

C5 CHECK THE AUDIO AMPLIFIER ENABLE CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290D .
- Ignition ON.
- Measure the voltage between the audio amplifier C4364B Pin 9, circuit CME31 (BU/GN), harness side and ground.

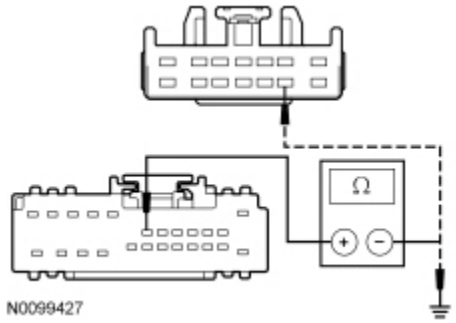


Is any voltage present?

Yes	REPAIR the circuit. TEST the system for normal operation.
No	GO to C6.

C6 CHECK THE AUDIO AMPLIFIER ENABLE CIRCUIT FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the ACM C290D Pin 7, circuit CME31 (BU/GN), harness side and the audio amplifier C4364B Pin 9, circuit CME31 (BU/GN), harness side; and between the ACM C290D Pin 7, circuit CME31 (BU/GN), harness side and ground.



Is the resistance less than 5 ohms between the ACM and the audio amplifier, and greater than 10,000 ohms between the ACM and ground?

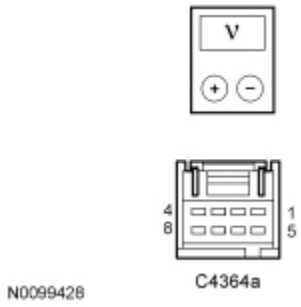
Yes	GO to C7.
No	REPAIR the circuit. TEST the system for normal operation.

C7 CHECK THE AUDIO SIGNALS TO THE AUDIO AMPLIFIER

- Connect: ACM C290D .
- Disconnect: Audio Amplifier C4364A .
- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the AC voltage between the audio amplifier pins, harness side as follows:

Suspect Speaker	Positive Meter Lead	Negative Meter Lead
LH front	C4364A Pin 8	C4364A Pin 4

Suspect Speaker	Positive Meter Lead	Negative Meter Lead
	VME17 (GN)	RME17 (GY)
RH front	C4364A Pin 6 VME18 (VT)	C4364A Pin 2 RME18 (YE)
LH rear	C4364A Pin 7 VME60 (GN/BN)	C4364A Pin 3 RME60 (GY/BN)
RH rear	C4364A Pin 5 VME61 (VT/BN)	C4364A Pin 1 RME61 (YE/BU)



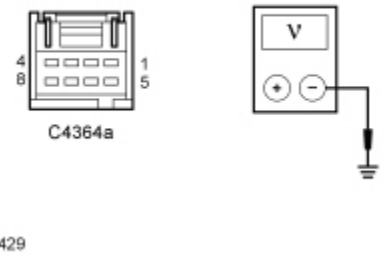
Is a fluctuating AC voltage present?

Yes	GO to C10.
No	GO to C8.

C8 CHECK THE AUDIO CIRCUITS TO THE AUDIO AMPLIFIER FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290D .
- Ignition ON.
- Measure the voltage between the audio amplifier, harness side and ground as follows:

Suspect Speaker	Positive Meter Lead	Negative Meter Lead
LH front	C4364A Pin 4 RME17 (GY)	C4364A Pin 8 VME17 (GN)
RH front	C4364A Pin 2 RME18 (YE)	C4364A Pin 6 VME18 (VT)
LH rear	C4364A Pin 3 RME60 (GY/BN)	C4464A Pin 7 VME60 (GN/BN)
RH rear	C4364A Pin 1 RME61 (YE/BU)	C4364A Pin 5 VME61 (VT/BN)



N0099429

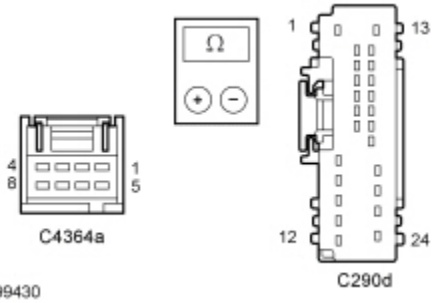
Is any voltage present?

Yes	REPAIR the circuit in question. CLEAR any DTCs present. TEST the system for normal operation.
No	GO to C9.

C9 CHECK THE AUDIO CIRCUITS TO THE AUDIO AMPLIFIER FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the audio amplifier, harness side and the ACM , harness side; and between the audio amplifier, harness side and ground as follows:

Suspect Speaker	Positive Meter Lead	Negative Meter Lead	Circuit
LH front	C4364A Pin 8	C290D Pin 8	VME17 (GN)
	C4364A Pin 4	C290D Pin 21	RME17 (GY)
RH front	C4364A Pin 6	C290D Pin 11	VME18 (VT)
	C4364A Pin 2	C290D Pin 12	RME18 (YE)
LH rear	C4364A Pin 7	C290D Pin 9	VME60 (GN/BN)
	C4364A Pin 3	C290D Pin 22	RME60 (GY/BN)
RH rear	C4364A Pin 5	C290D Pin 10	VME61 (VT/BN)
	C4364A Pin 1	C290D Pin 23	RME61 (YE/BU)



N0099430

Is the resistance less than 5 ohms between the audio amplifier and the ACM , and greater than 10,000 ohms between the audio amplifier and ground?

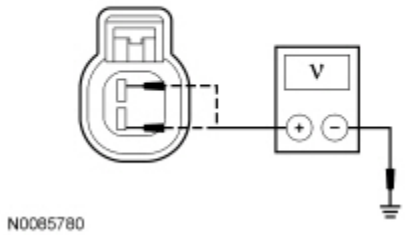
Yes	GO to C12.
No	REPAIR the circuit in question. CLEAR any DTCs present. TEST the system for normal operation.

C10 CHECK THE SPEAKER CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290D .

- Connect: Audio Amplifier C4364A .
- Connect: Audio Amplifier C4364B .
- Ignition ON.
- Measure the voltage between the suspect speaker, harness side and ground as follows:

Suspect Speaker	Positive Meter Lead	Negative Meter Lead
LH front	C523 Pin 1 VME07 (WH)	Ground
	C523 Pin 2 RME07 (WH/BN)	Ground
RH front	C612 Pin 1 VME10 (WH/VT)	Ground
	C612 Pin 2 RME10 (WH/OG)	Ground
LH rear (coupe)	C484 Pin 1 VME09 (WH/GN)	Ground
	C484 Pin 2 RME09 (BN/YE)	Ground
RH rear (coupe)	C485 Pin 1 VME12 (BN/WH)	Ground
	C485 Pin 2 RME12 (BN/BU)	Ground
LH rear quarter panel (convertible)	C395 Pin 1 VME09 (WH/GN)	Ground
	C395 Pin 2 RME09 (BN/YE)	Ground
RH rear quarter panel (convertible)	C396 Pin 1 VME12 (BN/WH)	Ground
	C396 Pin 2 RME12 (BN/BU)	Ground



Is any voltage present?

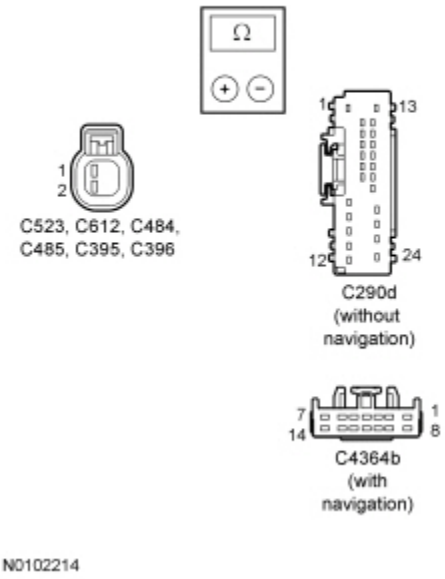
Yes	REPAIR the circuit in question. CLEAR any DTCs present. TEST the system for normal operation.
No	GO to C11.

C11 CHECK THE SPEAKER CIRCUITS FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.

- Measure the resistance between the suspect speaker, harness side and the ACM (vehicles without navigation) or the audio amplifier (vehicles with navigation) harness side; and between the suspect speaker, harness side and ground as follows:

Suspect Speaker	Positive Meter Lead	Negative Meter Lead	Circuit
LH front	C523 Pin 1	C290D Pin 8 or C4364B Pin 13, then ground	VME07 (WH)
	C523 Pin 2	C290D Pin 21 or C4364B Pin 6, the ground	RME07 (WH/BN)
RH front	C612 Pin 1	C290D Pin 11 or C4364B Pin 11, then ground	VME10 (WH/VT)
	C612 Pin 2	C290D Pin 12 or C4364B Pin 4, then ground	RME10 (WH/OG)
LH rear (coupe)	C484 Pin 1	C290D Pin 9 or C4364B Pin 12, then ground	VME09 (WH/GN)
	C484 Pin 2	C290D Pin 22, or C4364B Pin 5, then ground	RME09 (BN/YE)
RH rear (coupe)	C485 Pin 1	C290D Pin 10, or C4364B Pin 10, then ground	VME12 (BN/WH)
	C485 Pin 2	C290D Pin 23, or C4364B Pin 3, then ground	RME12 (BN/BU)
LH rear quarter panel (convertible)	C395 Pin 1	C290D Pin 9, or C4364B Pin 12, then ground	VME09 (WH/GN)
	C395 Pin 2	C290D Pin 22, or C4364B Pin 5, then ground	RME09 (BN/YE)
RH rear quarter panel (convertible)	C396 Pin 1	C290D Pin 10 or C4364B Pin 10 the ground	VME12 (BN/WH)
	C396 Pin 2	C290D Pin 23 or C4364B Pin 3, then ground	RME12 (BN/BU)



Are the resistances less than 5 ohms between the suspect speaker and the ACM (vehicles without navigation) or the audio amplifier (vehicles with navigation), and greater than 10,000 ohms between the suspect speaker and ground?

Yes	For vehicles with navigation, INSTALL a new audio amplifier. REFER to Audio Amplifier in this section. CLEAR any DTCs present. TEST the system for normal operation. For vehicles without navigation, GO to C12.
No	REPAIR the circuit in question. CLEAR any DTCs present. TEST the system for normal operation.

C12 CHECK FOR CORRECT ACM OPERATION

- Connect: All Disconnected Connectors .
- Disconnect all the ACM connectors.
- Check for:
  - corrosion

- damaged pins
- pushed-out pins

- Connect all the ACM connectors and make sure they seat correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR any DTCs present.

Pinpoint Test D: No Sound From The Door Subwoofer(s)

Refer to Wiring Diagrams Cell 130, Audio System/Navigation for schematic and connector information.

Normal Operation

To enable the amplifiers, the Audio Front Control Module (ACM) sends voltage through the enable/clip circuit. The circuit acts as both an output (to enable the amplifier) and an input (to detect an overload condition). The voltage sent by the ACM passes through a variable resistor in each amplifier, then to ground. As the amplifier reaches maximum output, the resistance in the variable resistor decreases. This decreases the voltage drop, resulting in the ACM detecting a higher voltage on the enable/clip circuit. When the voltage reaches the clip threshold, the ACM clips the audio output signal to the amplifier (heard as distortion) in order to prevent damage to the amplifier and speakers.

The enable/clip status is based on the following voltages, as detected by the ACM :

- Less than 0.4 volt: amplifier disabled
- Between 3.8 and 6.7 volts (nominal): amplifier enabled
- Greater than 8.5 volts: amplifier clipped

An open in the enable/clip circuit causes the speakers powered by that particular amplifier to produce no sound because the enable signal does not reach the audio amplifier. A short to ground or short to voltage can cause severe distortion to be heard in the speakers.

- DTC B1A05:01 (Speaker #5: General Electrical Failure) — can set when any fault is detected in the subwoofer speaker circuits. This DTC can be either continuous or on-demand.

This pinpoint test is intended to diagnose the following:

- Fuse
- Wiring, terminals or connectors
- Door subwoofer speaker
- Door subwoofer amplifier
- ACM

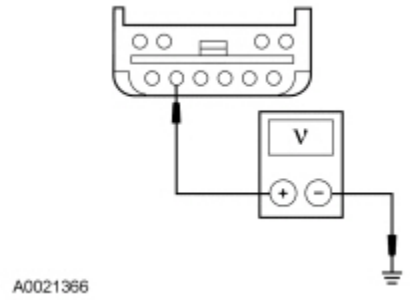
PINPOINT TEST D : NO SOUND FROM THE DOOR SUBWOOFER(S)

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

NOTE: *Failure to disconnect the battery when instructed will result in false resistance readings. Refer to Section 414-01.*

D1 CHECK THE DOOR SUBWOOFER AMPLIFIER CIRCUIT FOR VOLTAGE

- Ignition OFF.
- Disconnect: Left Door Subwoofer Amplifier C2993A (Left Subwoofer Concern) or Right Door Subwoofer Amplifier C2994A (Right Subwoofer Concern) .
- Measure the voltage between the left door subwoofer amplifier C2993A Pin 5, circuit SBB33 (RD), harness side and ground; or between the right front subwoofer amplifier C2994A Pin 5, circuit SBB33 (RD), harness side and ground.

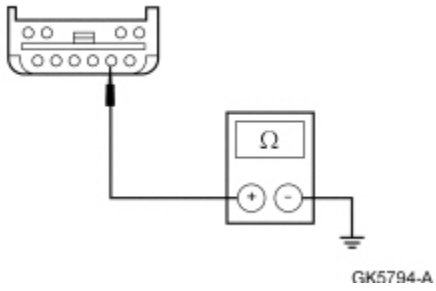


Is the voltage greater than 10 volts?

Yes	GO to D2.
No	VERIFY the SJB fuse 33 (30A) is OK. If OK, REPAIR the circuit. TEST the system for normal operation. If not OK, REFER to the Wiring Diagrams Manual to identify the possible causes of the circuit short.

D2 CHECK THE DOOR SUBWOOFER AMPLIFIER GROUND CIRCUIT FOR AN OPEN

- Disconnect: Negative Battery Cable .
- Measure the resistance between the left door subwoofer amplifier C2993A Pin 2, circuit GD115 (BK/GY), harness side and ground; or between the right door subwoofer amplifier C2994A Pin 2, circuit GD115 (BK/GY), harness side and ground.

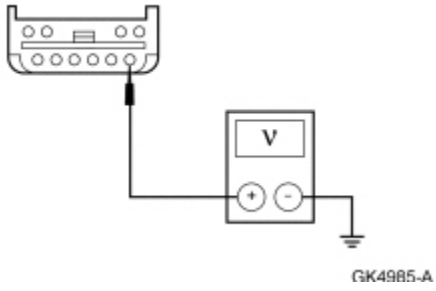


Is the resistance less than 5 ohms?

Yes	GO to D3.
No	REPAIR the circuit. TEST the system for normal operation.

D3 CHECK THE DOOR SUBWOOFER AMPLIFIER ENABLE CIRCUIT FOR CORRECT VOLTAGE

- Connect: Negative Battery Cable .
- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the voltage between the left door subwoofer amplifier C2993A Pin 1, circuit SME23 (VT/RD), harness side and ground; and between the right door subwoofer amplifier C2994A Pin 1, circuit SME23 (VT/RD), harness side and ground.



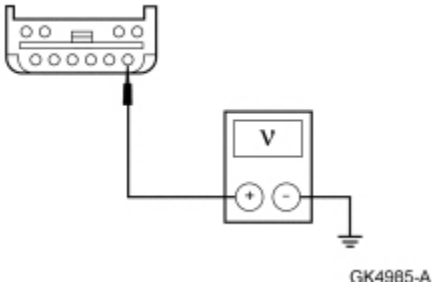
Is the voltage between 3.8 and 6.7 volts at both amplifiers?

Yes	GO to D6.

No	If the voltage is incorrect at one amplifier only, REPAIR the circuit in question. TEST the system for normal operation. If the voltage is incorrect at both amplifiers, GO to D4.

D4 CHECK THE DOOR SUBWOOFER AMPLIFIER ENABLE CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290B .
- Ignition ON.
- Measure the voltage between the left door subwoofer amplifier C2993A Pin 1, circuit SME23 (VT/RD), harness side and ground.

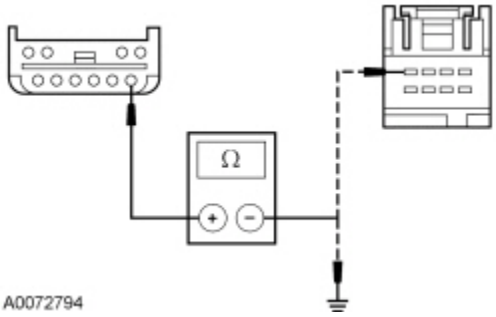


Is any voltage present?

Yes	REPAIR the circuit. TEST the system for normal operation.
No	GO to D5.

D5 CHECK THE DOOR SUBWOOFER AMPLIFIER ENABLE CIRCUIT FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the left door subwoofer amplifier C2993A Pin 1, circuit SME23 (VT/RD), harness side and the ACM C290B Pin 4, circuit SME23 (VT/RD), harness side; and between the left door subwoofer amplifier C2993A Pin 1, circuit SME23 (VT/RD), harness side and ground.

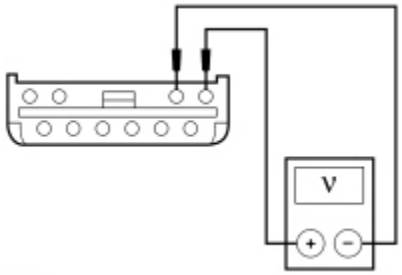


Is the resistance less than 5 ohms between the left door subwoofer amplifier and the ACM , and greater than 10,000 ohms between the left door subwoofer amplifier and ground?

Yes	GO to D13.
No	REPAIR the circuit. TEST the system for normal operation.

D6 CHECK THE AUDIO SIGNALS TO THE DOOR SUBWOOFER AMPLIFIER

- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the AC voltage between the left door subwoofer amplifier C2993A Pin 7, circuit VME22 (VT/GN), harness side and the left door subwoofer amplifier C2993A Pin 8, circuit RME22 (GN/WH), harness side; and between the right door subwoofer amplifier C2994A Pin 7, circuit VME22 (VT/GN), harness side and the right door subwoofer amplifier C2994A Pin 8, circuit RME22 (GN/WH), harness side.



A0057176

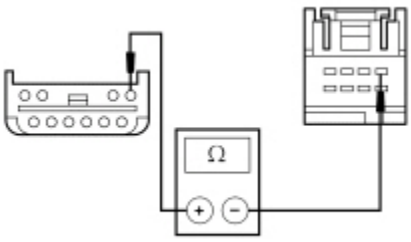
Is a fluctuating AC voltage present at both amplifiers?

Yes	GO to D10.
No	If the voltage is incorrect at one amplifier only, GO to D7 . If the voltage is incorrect at both amplifiers, GO to D8 .

D7 CHECK THE SPEAKER CIRCUITS FOR AN OPEN

NOTE: *Carry out this step only for the inoperative subwoofer.*

- Ignition OFF.
- Disconnect: ACM C290B .
- Measure the resistance between the left door subwoofer amplifier C2993A Pin 7, circuit VME22 (VT/GN), harness side and the ACM C290B Pin 1, circuit VME22 (VT/GN), harness side; or between the right door subwoofer amplifier C2994A Pin 7, circuit VME22 (VT/GN), harness side and the ACM C290B Pin 1, circuit VME22 (VT/GN), harness side.



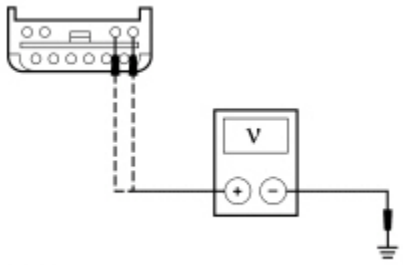
N0056195

Is the resistance less than 5 ohms?

Yes	REPAIR circuit RME22 (GN/WH). TEST the system for normal operation.
No	REPAIR circuit VME22 (VT/GN). TEST the system for normal operation.

D8 CHECK THE SPEAKER CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290B .
- Ignition ON.
- Measure the voltage between the left door subwoofer amplifier C2993A Pin 7, circuit VME22 (VT/GN), harness side and ground; and between the left door subwoofer amplifier C2993A Pin 8, circuit RME22 (GN/WH), harness side and ground.



N0035293

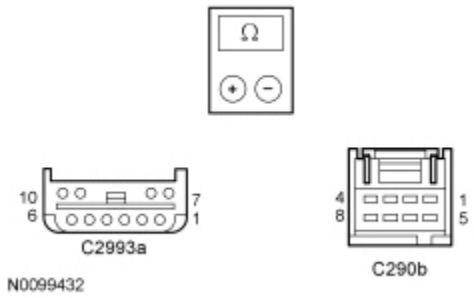
Is any voltage present?

Yes	REPAIR the circuit in question. TEST the system for normal operation.
No	GO to D9.

D9 CHECK THE SPEAKER CIRCUITS FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the suspect subwoofer amplifier, harness side and the ACM , harness side; and between the suspect subwoofer amplifier, harness side and ground as follows:

Suspect Subwoofer	Subwoofer Amplifier Connector-Pin	ACM Connector-Pin	Circuit
Left door	C2993A Pin 7	C290B Pin 1, then ground	VME22 (VT/GN)
	C2993A Pin 8	C290B Pin 2, then ground	RME22 (GN/WH)
Right door	C2994A Pin 7	C290B Pin 1, then ground	VME22 (VT/GN)
	C2994A Pin 8	C290B Pin 2, then ground	RME22 (GN/WH)



Is the resistance less than 5 ohms between the suspect door subwoofer amplifier and the ACM , and greater than 10,000 ohms between the suspect door subwoofer amplifier and ground?

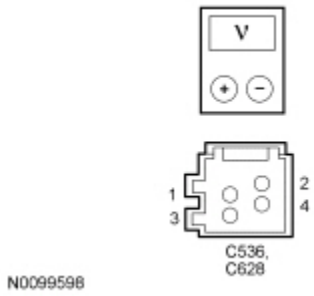
Yes	GO to D13.
No	REPAIR the circuit in question. TEST the system for normal operation.

D10 CHECK THE AUDIO CIRCUITS TO THE SUSPECT DOOR SUBWOOFER

- Ignition OFF.
- Connect: Left Door Subwoofer Amplifier C2993B and Right Door Subwoofer Amplifier C2994B .
- Disconnect: Left Door Subwoofer C536 (Left Subwoofer Concern) or Right Door Subwoofer C628 (Right Subwoofer Concern) .
- Ignition ON.
- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the AC voltage between the suspect door subwoofer circuits, harness side as follows:

Suspect Subwoofer	Positive Meter Lead	Negative Meter Lead
Left door	C536 Pin 1 VME74 (BN)	C536 Pin 2 RME74 (BU/BN)
	C536 Pin 3 VME75 (GY/YE)	C536 Pin 4 RME75 (VT/WH)
Right door	C628 Pin 1	C628 Pin 2

Suspect Subwoofer	Positive Meter Lead	Negative Meter Lead
	VME76 (WH/OG)	RME76 (GY/BU)
	C628 Pin 3 VME77 (WH/VT)	C628 Pin 4 RME77 (GY/OG)



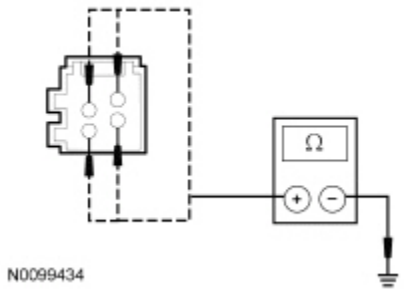
Is a fluctuating AC voltage present?

Yes	INSTALL a new subwoofer for the suspect subwoofer. REFER to Speaker — Door in this section. TEST the system for normal operation.
No	GO to D11.

D11 CHECK THE AUDIO CIRCUITS TO THE SUSPECT DOOR SUBWOOFER FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: Left Door Subwoofer Amplifier C2993B Or Right Door Subwoofer Amplifier C2994B .
- Ignition ON.
- Measure the voltage between the suspect door subwoofer, harness side and ground as follows:

Suspect Subwoofer	Subwoofer Connector-Pin	Circuit
Left door	C536 Pin 1	VME74 (BN)
	C536 Pin 2	RME74 (BU/BN)
	C536 Pin 3	VME75 (GY/YE)
	C536 Pin 4	RME75 (VT/WH)
Right door	C628 Pin 1	VME76 (WH/OG)
	C628 Pin 2	RME76 (GY/BU)
	C628 Pin 3	VME77 (WH/VT)
	C628 Pin 4	RME77 (GY/OG)



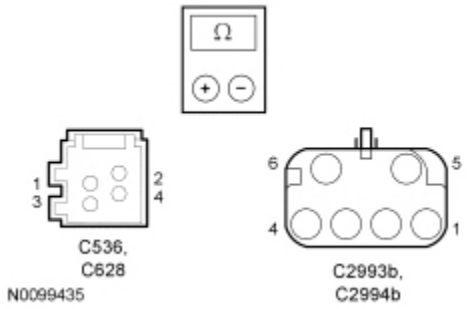
Is any voltage present?

Yes	REPAIR the circuit in question. TEST the system for normal operation.
No	GO to D12.

D12 CHECK THE AUDIO CIRCUITS TO THE SUSPECT DOOR SUBWOOFER FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the suspect door subwoofer, harness side and the door amplifier, harness side; and between the suspect door subwoofer, harness side and ground as follows:

Suspect Subwoofer	Subwoofer Connector- Pin	Subwoofer Amplifier Connector- Pin	Circuit
Left door	C536 Pin 1	C2993B Pin 1	VME74 (BN)
	C536 Pin 2	C2993B Pin 2	RME74 (BU/BN)
	C536 Pin 3	C2993B Pin 3	VME75 (GY/YE)
	C536 Pin 4	C2993B Pin 4	RME75 (VT/WH)
Right door	C628 Pin 1	C2994B Pin 1	VME76 (WH/OG)
	C628 Pin 2	C2994B Pin 2	RME76 (GY/BU)
	C628 Pin 3	C2994B Pin 3	VME77 (WH/VT)
	C628 Pin 4	C2994B Pin 4	RME77 (GY/OG)



Is the resistance less than 5 ohms between the suspect door subwoofer and the door subwoofer amplifier, and greater than 10,000 ohms between the suspect door subwoofer and ground?

Yes	INSTALL a new door subwoofer amplifier for the suspect amplifier. REFER to Subwoofer Amplifier — Door in this section. TEST the system for normal operation.
No	REPAIR the circuit in question. TEST the system for normal operation.

D13 CHECK FOR CORRECT ACM OPERATION

- Disconnect all the ACM connectors.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect all the ACM connectors and make sure they seat correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test E: No Sound From The Luggage Compartment Subwoofer

Refer to Wiring Diagrams Cell 130, Audio System/Navigation for schematic and connector information.

Normal Operation

The luggage compartment subwoofers are powered by a separate subwoofer amplifier.

To enable the amplifier, the ACM sends voltage through the enable/clip circuit. The circuit acts as both an output (to enable the amplifier) and an input (to detect an overload condition). The voltage sent by the ACM passes through a variable resistor in the amplifier, then to ground. As the amplifier reaches maximum output, the resistance in the variable resistor decreases. This decreases the voltage drop, resulting in the ACM detecting a higher voltage on the enable/clip circuit. When the voltage reaches the clip threshold, the ACM clips the audio output signal to the amplifier (heard as distortion) in order to prevent damage to the amplifier and speakers.

The enable/clip status is based on the following voltages, as detected by the ACM :

- Less than 0.4 volt: amplifier disabled
- Between 3.8 and 6.7 volts (nominal): amplifier enabled
- Greater than 8.5 volts: amplifier clipped

An open in the enable/clip circuit causes the speakers powered by that particular amplifier to produce no sound because the enable signal does not reach the audio amplifier. A short to ground or short to voltage can cause severe distortion to be heard in the speakers.

- DTC B1A06:01 (Speaker #6: General Electrical Failure) — can set when any fault is detected in the subwoofer speaker circuit. This DTC can be either continuous or on-demand.

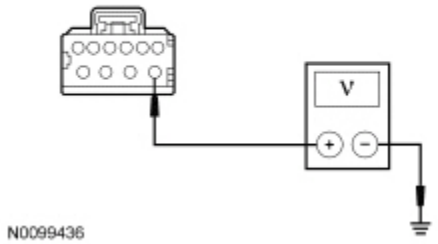
This pinpoint test is intended to diagnose the following:

- Fuse
- Wiring, terminals or connectors
- Speaker enclosure
- Luggage compartment subwoofer amplifier
- ACM

PINPOINT TEST E : NO SOUND FROM THE LUGGAGE COMPARTMENT SUBWOOFER

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.
NOTE: *Failure to disconnect the battery when instructed will result in false resistance readings. Refer to Section 414-01.*
E1 CHECK THE LUGGAGE COMPARTMENT SUBWOOFER AMPLIFIER FOR VOLTAGE

- Ignition OFF.
- Disconnect: Luggage Compartment Subwoofer Amplifier C4109 .
- Measure the voltage between the luggage compartment subwoofer amplifier C4109 Pin 7, circuit SBB20 (GN/RD), harness side and ground.



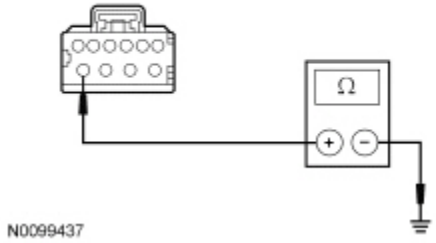
Is the voltage greater than 10 volts?

Yes	GO to E2.
No	VERIFY the Battery Junction Box (BJB) fuse 20 (30A) is OK. If OK, REPAIR the circuit. TEST the system for normal operation. If not OK, REFER to the Wiring Diagrams Manual to identify the possible causes of the

	circuit short.

E2 CHECK THE LUGGAGE COMPARTMENT SUBWOOFER AMPLIFIER GROUND CIRCUIT FOR CONTINUITY

- Disconnect: Negative Battery Cable .
- Measure the resistance between the luggage compartment subwoofer amplifier C4109 Pin 10, circuit GD173 (BK), harness side and ground.

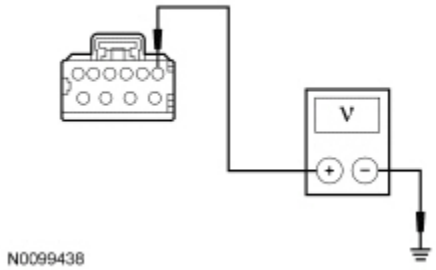


Is the resistance less than 5 ohms?

Yes	GO to E3.
No	REPAIR the circuit. TEST the system for normal operation.

E3 CHECK THE LUGGAGE COMPARTMENT SUBWOOFER AMPLIFIER ENABLE CIRCUIT FOR CORRECT VOLTAGE

- Connect: Negative Battery Cable .
- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the voltage between the luggage compartment subwoofer amplifier C4109 Pin 1, circuit SME51 (GY/VT), harness side and ground.

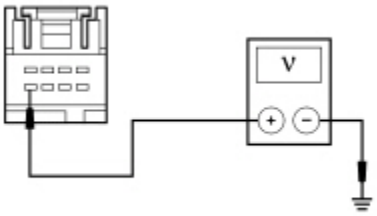


Is the voltage between 3.8 and 6.7 volts?

Yes	GO to E6.
No	GO to E4.

E4 CHECK THE LUGGAGE COMPARTMENT SUBWOOFER AMPLIFIER ENABLE CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290B .
- Ignition ON.
- Measure the voltage between the ACM C290B Pin 8, circuit SME51 (GY/VT), harness side and ground.



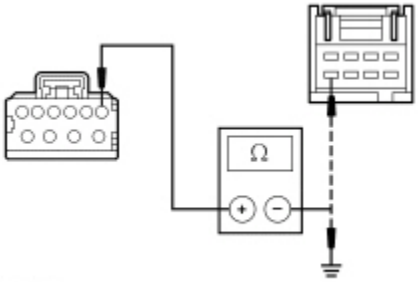
N0056196

Is any voltage present?

Yes	REPAIR the circuit. TEST the system for normal operation.
No	GO to E5.

E5 CHECK THE LUGGAGE COMPARTMENT SUBWOOFER AMPLIFIER ENABLE CIRCUIT FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the luggage compartment subwoofer amplifier C4109 Pin 1, circuit SME51 (GY/VT), harness side and the ACM C290B Pin 8, circuit SME51 (GY/VT), harness side and ground.



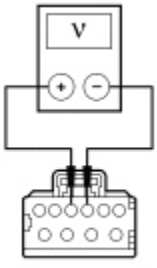
N0099439

Is the resistance less than 5 ohms between the luggage compartment subwoofer amplifier and the ACM , and greater than 10,000 ohms between the luggage compartment subwoofer amplifier and ground?

Yes	GO to E9.
No	REPAIR the circuit. TEST the system for normal operation.

E6 CHECK THE AUDIO SIGNALS TO THE LUGGAGE COMPARTMENT SUBWOOFER AMPLIFIER

- Operate the audio system in radio tuner (AM/FM) mode.
- Measure the AC voltage between the luggage compartment subwoofer amplifier C4109 Pin 3, circuit VME51 (BN/BU), harness side and the luggage compartment subwoofer amplifier C4109 Pin 4, circuit RME51 (WH/BU), harness side.



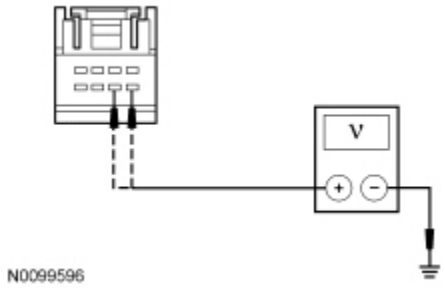
N0099440

Is a fluctuating AC voltage present?

Yes	INSTALL a new luggage compartment subwoofer amplifier. REFER to Subwoofer Amplifier — Luggage Compartment in this section. CLEAR any DTCs present. TEST the system for normal operation.
No	GO to E7.

E7 CHECK THE AUDIO SIGNALS TO THE LUGGAGE COMPARTMENT SUBWOOFER AMPLIFIER FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290B .
- Ignition ON.
- Measure the voltage between the ACM C290B Pin 5, circuit VME51 (BN/BU), harness side and ground; and between the ACM C290B Pin 6, circuit RME51 (WH/BU), harness side and ground.



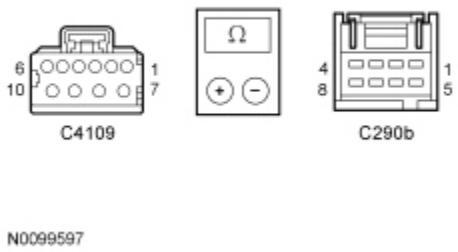
Is any voltage present?

Yes	REPAIR the circuit in question. CLEAR any DTCs present. TEST the system for normal operation.
No	GO to E8.

E8 CHECK THE AUDIO SIGNALS TO THE LUGGAGE COMPARTMENT SUBWOOFER AMPLIFIER FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the luggage compartment subwoofer amplifier, harness side and the ACM , harness side; and between the luggage compartment subwoofer amplifier, harness side and ground as follows:

Positive Meter Lead	Negative Meter Lead	Circuit
C4109 Pin 3	C290B Pin 5, then ground	VME51 (BN/BU)
C4109 Pin 4	C290B Pin 6, then ground	RME51 (WH/BU)



Is the resistance less than 5 ohms between the luggage compartment subwoofer amplifier and the ACM , and greater than 10,000 ohms between the luggage compartment subwoofer amplifier and ground?

Yes	GO to E9.

No	REPAIR the circuit in question. CLEAR any DTCs present. TEST the system for normal operation.

E9 CHECK FOR CORRECT ACM OPERATION

- Disconnect all the ACM connectors.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect all the ACM connectors and make sure they seat correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test F: No Sound From All Speakers

Refer to Wiring Diagrams Cell 130, Audio System/Navigation for schematic and connector information.

Normal Operation

When the ignition is in the START position, voltage is supplied to the Audio Front Control Module (ACM) through the START sense circuit. When the ACM receives this voltage, it mutes the speaker output.

This pinpoint test is intended to diagnose the following:

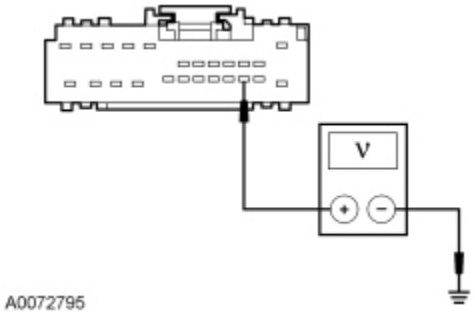
- Fuse
- Wiring, terminals or connectors
- ACM

PINPOINT TEST F : NO SOUND FROM ALL SPEAKERS

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

F1 CHECK THE START SENSE CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290D .
- Ignition ON.
- Measure the voltage between the ACM C290D Pin 15, circuit CBP28 (GY/VT), harness side and ground.



Is any voltage present?

Yes	REPAIR the circuit. TEST the system for normal operation.
No	GO to F2.

F2 CHECK FOR CORRECT ACM OPERATION

- Ignition OFF.
- Disconnect all the ACM connectors.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect all the ACM connectors and make sure they seat correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test G: No Sound From All SYNC® audio sources (Bluetooth, USB, Audio Input Jack)

Refer to Wiring Diagrams Cell 130, Audio System/Navigation for schematic and connector information.

Normal Operation

The Accessory Protocol Interface Module (APIM) sends left and right channel analog audio signals to the Audio Front Control Module (ACM) . This includes inputs from the Universal Serial Bus (USB) port, the audio input jack, and a Bluetooth media device.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- APIM
- ACM

PINPOINT TEST G : NO SOUND FROM ALL SYNC® AUDIO SOURCES (BLUETOOTH, USB, AUDIO INPUT JACK)

NOTICE: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.

G1 VERIFY THE OPERATION OF THE SYNC SYSTEM AUDIO SOURCES

- Connect: Multi-Media Interface Tester .
- Using the Multi-Media Interface Tester, test the audio output for the audio input jack, USB port, and Bluetooth connection.

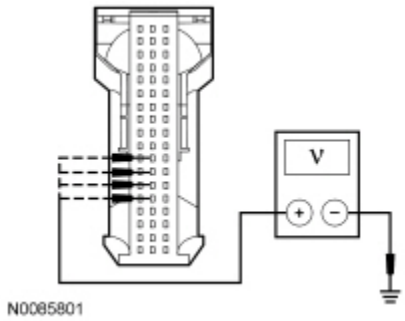
Is there poor quality/distorted/no sound from each SYNC audio source?

Yes	GO to G2.
No	If the concern is only with some (but not all) of the audio sources, GO to Symptom Chart — SYNC System to diagnose the observed symptom. If all audio sources operate correctly, the concern is with the customer device.

G2 CHECK THE CIRCUITS FROM THE APIM FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect: ACM C290A .
- Disconnect: APIM C2383 .
- Measure the voltage between the APIM , harness side and ground as follows:

Connector-Pin	Circuit
C2383 Pin 23	VME53 (VT/GN)
C2383 Pin 24	RME53 (BN/WH)
C2383 Pin 25	VME52 (BU)
C2383 Pin 26	RME52 (GY/OG)



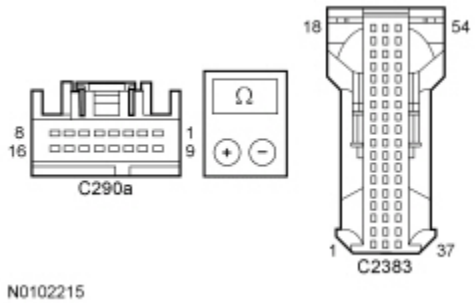
Is any voltage present?

Yes	REPAIR the circuit in question. TEST the system for normal operation.
No	GO to G3.

G3 CHECK THE CIRCUITS FROM THE APIM FOR AN OPEN OR SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between the ACM , harness side, and the APIM , harness side; and between the ACM , harness side and ground as follows:

Positive Meter Lead	Negative Meter Lead	Circuit
C290A Pin 9	C2383 Pin 23, then ground	VME53 (VT/GN)
C290A Pin 10	C2383 Pin 24, then ground	RME53 (BN/WH)
C290A Pin 1	C2383 Pin 25, then ground	VME52 (BU)
C290A Pin 2	C2383 Pin 26, then ground	RME52 (GY/OG)



Is the resistance less than 5 ohms between the ACM and the APIM , and greater than 10,000 ohms between the ACM and ground?

Yes	GO to G4.
No	REPAIR the circuit in question. TEST the system for normal operation.

G4 CHECK FOR CORRECT APIM OPERATION

- Connect: All Disconnected Connectors .
- Disconnect the APIM connector.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect the APIM connector and make sure it seats correctly.
- Wait 2 minutes for the APIM to re-initalize.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	   **VIN required to access Guided Routine (APIM)** If the concern is still present, GO to G5.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

G5 CHECK FOR CORRECT ACM OPERATION

- Disconnect all the ACM connectors.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect all the ACM connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

Is the concern still present?

Yes	INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test H: The Satellite Radio Is Inoperative/Does Not Operate Correctly

Refer to Wiring Diagrams Cell 130, Audio System/Navigation for schematic and connector information.

Normal Operation

Digital signals are received by the satellite radio antenna and sent to the Audio Front Control Module (ACM) through the satellite radio antenna cable. The satellite radio receiver is internal to the ACM .

When a satellite radio subscription is activated, the Electronic Serial Number (ESN) of the built-in satellite radio receiver is associated with the Vehicle Identification Number (VIN) . As a result, the ACM cannot be swapped from one vehicle to another.

When there is an open in the satellite radio antenna circuit, there is no satellite audio. The audio system display indicates a satellite radio antenna concern when the audio system is operated in satellite radio mode. To diagnose an open in the satellite radio antenna circuit, GO to Pinpoint Test B.

- DTC U2014:96 (Control Module Hardware: Component Internal Failure) set by the ACM when a fault is detected in the internal satellite radio receiver. This results in complete loss of satellite radio functionality.

This pinpoint test is intended to diagnose the following:

- Subscription status

- ACM

PINPOINT TEST H : THE SATELLITE RADIO IS INOPERATIVE/DOES NOT OPERATE CORRECTLY

H1 VERIFY AN ACTIVE SUBSCRIPTION

- Operate the audio system in satellite radio mode and observe the FDIM display.

Does the display indicate the subscription has expired?

Yes	The subscription has expired. INFORM the customer to contact Sirius to re-activate the subscription.
No	For vehicles with navigation, GO to H2. For all others, GO to H3.

H2 CHECK THE ACM DTCS

- Retrieve the ACM DTCs.

Is DTC U2014:96 present?

Yes	GO to H4.
No	GO to H3.

H3 CHECK THE SATELLITE SIGNAL PID (SAT_SIG_STR)

- Enter the following diagnostic mode on the scan tool: ACM DataLogger .
- Monitor the ACM PID (SAT_SIG_STR).

Does the PID indicate "No Signal"?

Yes	GO to Pinpoint Test B.
No	GO to H4.

H4 CHECK FOR CORRECT ACM OPERATION

- Ignition OFF.
- Disconnect all the ACM connectors.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect all the ACM connectors and make sure they seat correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new ACM . REFER to Audio Control Module (ACM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test I: The Audio System Does Not Operate Correctly From The Front Controls Interface Module (FCIM)

Normal Operation

When a button is pressed on the Front Controls Interface Module (FCIM) , a signal is broadcast over the Medium Speed Controller Area Network (MS-CAN) to the modules in the audio system. The FCIM is also the customer interface with the HVAC module.

If the FCIM can no longer communicate on the MS-CAN (due to loss of power, ground, etc.), the audio system remains in the operating state it was in prior to the failure. The steering wheel controls continue to operate.

- DTC U2013:63 (Switch Pack: Circuit / Component Protection Time-Out) — set by the FCIM if a switch is detected as active for greater than 3 seconds during the self-test, or for greater than 2 minutes during normal operation. When this occurs, the FCIM disables the switch until it detects it as no longer active.

This pinpoint test is intended to diagnose the following:

- Communication network concern
- FCIM

PINPOINT TEST I : THE AUDIO SYSTEM DOES NOT OPERATE CORRECTLY FROM THE FCIM

I1 RETRIEVE ALL CONTINUOUS DTCS

- Using the scan tool, retrieve all continuous DTCs.

Is DTC U0184:00 or DTC U0255:00 present in any audio system module?

Yes	REFER to DTC Charts in this section.
No	GO to I2.

I2 CHECK FOR DTC U2013:63

- Clear the FCIM DTCs.
- Repeat the FCIM self-test, making sure no FCIM buttons are pressed during the test.

Is DTC U2013:63 present?

Yes	INSTALL a new FCIM . REFER to Front Controls Interface Module (FCIM) in this section. TEST the system for normal operation.
No	GO to I3.

I3 CHECK FOR CORRECT FCIM OPERATION

- Disconnect the FCIM connector.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect the FCIM connector and make sure it seats correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new FCIM . REFER to Front Controls Interface Module (FCIM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. CLEAR any DTCs present.

Pinpoint Test J: An Individual Front Display Interface Module (FDIM) Display Is Inoperative — Vehicles Without Navigation

Normal Operation

The Front Display Interface Module (FDIM) receives inputs via the Medium Speed Controller Area Network (MS-CAN) from the following modules:

- Audio Front Control Module (ACM) : audio system information
- Instrument Panel Cluster (IPC) : compass heading information

- Accessory Protocol Interface Module (APIM) : SYNC system information
- HVAC module: climate control system information

If the FDIM loses the signal from any of these modules, only that specific display is inoperative.

For the compass display, this pinpoint test is intended to diagnose a concern of the compass display being blank. For any other concerns with the compass display, including the compass being inaccurate, refer to Section 413-01.

This pinpoint test is intended to diagnose the following:

- Communication network concern
- FDIM

PINPOINT TEST J : AN INDIVIDUAL FDIM DISPLAY IS INOPERATIVE — VEHICLES WITHOUT NAVIGATION

J1 OBSERVE THE FDIM DISPLAY

- Turn the audio system on and observe the FDIM screen.

Is the FDIM display completely inoperative?

Yes	GO to Pinpoint Test M.
No	GO to J2.

J2 CHECK FOR LOST COMMUNICATION DTCS SET IN THE FDIM

- Using the scan tool, retrieve all continuous DTCs.

Is DTC U0155, U0184, or U0197 present in the FDIM ?

Yes	REFER to DTC Charts in this section.
No	GO to J3.

J3 CHECK THE FDIM DISPLAY SEGMENTS

- Carry out the Audio Display Test. Refer to Audio Control Module (ACM) Self-Diagnostic Mode in this section.

Do all of the FDIM segments illuminate?

Yes	GO to J4.
No	GO to J5.

J4 OBSERVE THE SPECIFIC INOPERATIVE DISPLAY

- Observe the inoperative FDIM display while carrying out the indicated diagnostic method as follows:

Inoperative Display	Diagnostic Method	Expected Results
Compass	Drive the vehicle in an open area while observing the display.	The compass display illuminates, indicating a directional heading or a calibration error.
Audio system	Turn the audio system on, press the AM/FM button, and adjust the volume.	The FDIM display updates to show the change in audio setting.
SYNC system (if equipped)	Turn the audio system on, press the phone button, and observe the display.	The FDIM display shows information relating to the phone.
Climate control system	Turn the climate control system on, adjust the fan to high speed, and set the temperature to various settings.	The FDIM display updates to show the change in climate control setting.

Does the inoperative display confirm the expected results?

Yes	The system is operating correctly at this time. INFORM the customer on the operation of the FDIM display.
No	If the compass heading is inaccurate or indicates a calibration error, REFER to Section 413-01 to diagnose the compass. For all other concerns, GO to J5.

J5 CHECK FOR CORRECT FDIM OPERATION

- Ignition OFF.
- Disconnect the FDIM connector.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect the FDIM connector and make sure it seats correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new FDIM . REFER to Front Display Interface Module (FDIM) in this section. TEST the system for normal operation.
No	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector.

Pinpoint Test K: An Individual FDIM Display Is Inoperative — Vehicles With Navigation

Normal Operation

The Front Display Interface Module (FDIM) display provides information based on the video signal from the Audio Front Control Module (ACM) . In addition to the information that the ACM controls for the navigation and audio system, the ACM receives inputs via the Medium Speed Controller Area Network (MS-CAN) from the following modules:

- Accessory Protocol Interface Module (APIM) : SYNC system information (if equipped)
- HVAC module: climate control system information

If the ACM loses the signal from any of these modules, only that specific display becomes inoperative.

This pinpoint test is intended to diagnose the following:

- Communication network concern
- FDIM
- ACM

PINPOINT TEST K : AN INDIVIDUAL FRONT DISPLAY INTERFACE MODULE (FDIM) DISPLAY IS INOPERATIVE — VEHICLES WITH NAVIGATION

K1 OBSERVE THE FDIM DISPLAY

- Turn the audio system on and observe the FDIM screen.

Is the FDIM display completely inoperative?

Yes	GO to Pinpoint Test N.
No	GO to K2.

K2 CHECK THE FDIM DISPLAY SEGMENTS

- Carry out the Audio Display Test. Refer to Audio Control Module (ACM) Self-Diagnostic Mode in this section.

Do all of the FDIM segments illuminate?

Yes	GO to K3.
No	GO to K5.

K3 OBSERVE THE SPECIFIC INOPERATIVE DISPLAY

- Observe the inoperative FDIM display while carrying out the indicated diagnostic method as follows:

Inoperative Display	Diagnostic Method	Expected Results
Audio system	Turn the audio system on, press the AM/FM button, and adjust the volume.	The FDIM display updates to show the change in audio setting.
SYNC system (if equipped)	Turn the audio system on, press the phone button, and observe the display.	The FDIM display shows information relating to the phone.
Climate control system	Turn the climate control system on, adjust the fan to high speed, and set the temperature to various settings.	The FDIM display updates to show the change in climate control setting.

Does the inoperative display confirm the expected results?

Yes	The system is operating correctly at this time. INFORM the customer on the operation of the FDIM displays.
No	GO to K4.

K4 CHECK FOR LOST COMMUNICATION DTCS

- Ignition ON.
- Clear continuous DTCs from all modules.
- Ignition OFF.
- Ignition ON.
- Wait at least 10 seconds.
- Retrieve all continuous DTCs (from all modules).

Is DTC U0164, U0184, or U0197 (if equipped with the SYNC system) present in any module?

Yes	REFER to DTC Charts in this section.
No	GO to K5.

K5 CHECK FOR CORRECT FDIM OPERATION

- Ignition OFF.
- Disconnect the FDIM connector.
- Check for:
  - corrosion
  - damaged pins
  - pushed-out pins
- Connect the FDIM connector and make sure it seats correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	INSTALL a new FDIM . REFER to Front Display Interface Module (FDIM) in this section. TEST the system for normal operation. If the concern is still present, GO to K6.