Uconnect Media Systems
Phase II

Student Workbook
This publication's purpose is to provide technical training information to individuals in the automotive trade. All test and repair procedures must be performed in accordance with manufacturer’s service and diagnostic manuals. All **warnings**, **cautions**, and **notes** must be observed for safety reasons. The following is a list of general guidelines:

- Proper service and repair is critical to the safe, reliable operation of all motor vehicles.
- The information in this publication has been developed for service personnel, and can help when diagnosing and performing vehicle repairs.
- Some service procedures require the use of special tools. These special tools must be used as recommended throughout this Technical Training Publication, the diagnostic manual, and the service manual.
- Special attention should be exercised when working with spring- or tension-loaded fasteners and devices such as E-Clips, Cir-clips, snap rings, etc. Careless removal may cause personal injury.
- Always wear safety goggles when working on vehicles or vehicle components.
- Improper service methods may damage the vehicle or render it unsafe.
- Observe all **warnings** to avoid the risk of personal injury.
- Observe all **cautions** to avoid damage to equipment and vehicles.
- **Notes** are intended to add clarity and should help make your job easier.

**Cautions** and **warnings** cover only the situations and procedures FCA US LLC has encountered and recommended. Neither FCA US LLC nor its subsidiaries or affiliates cannot know, evaluate, and advise the service trade of all conceivable ways in which service may be performed, or of the possible hazards for each. Consequently, FCA US LLC and its subsidiaries and affiliates have not undertaken any such broad service review. Accordingly, anyone who used a service procedure or tool that is not recommended in this publication, must be certain that neither personal safety, nor vehicle safety, is jeopardized by the service methods they select.
TABLE OF CONTENTS

INTRODUCTION ............................................................................................................. 1

COURSE OBJECTIVES ................................................................................................. 1

ACRONYMS. .................................................................................................................. 2

LESSON 1 UCONNECT MEDIA SYSTEMS .................................................................... 5
   UCONNECT MEDIA SYSTEM RADIOS ..................................................................... 5
   RADIO IDENTIFICATION ............................................................................................... 11
      Single VIN Inquiry ..................................................................................................... 12
   UCONNECT FUNCTIONS AND FEATURES ................................................................. 14
      Media Center Features ............................................................................................... 15
   INTEGRATED CENTER STACK ..................................................................................... 16
   INTEGRATED CENTER STACK CONTROLS ................................................................. 17

ACTIVITY 1 RADIO IDENTIFICATION ........................................................................ 19
   TASK ONE: RADIO IDENTIFICATION. ......................................................................... 19
   TASK TWO: RADIO OPTIONS ....................................................................................... 20

ACTIVITY 2 RADIO FUNCTIONS .................................................................................. 23

LESSON 2 BLUETOOTH CONNECTIVITY ...................................................................... 25
   STEERING WHEEL IDENTIFICATION........................................................................... 25
   MIRROR ASSEMBLY BUTTONS/MICROPHONES ......................................................... 26
   MEDIA CENTER BLUETOOTH SYSTEM AND COMPONENTS .................................. 27
   HANDS-FREE MICROPHONE DIAGNOSIS ................................................................. 28

ACTIVITY 3 PHONE PAIRING ....................................................................................... 31
   TASK ONE: PHONE COMPATIBILITY .......................................................................... 31
   TASK THREE: PHONE PAIRING CONCERN ................................................................. 32

ACTIVITY 4 DIAGNOSE A VOICE RECOGNITION CONCERN ..................................... 35

LESSON 3 UCONNECT ACCESS ..................................................................................... 37
   UCONNECT ACCESS .................................................................................................. 37
      Navigation ................................................................................................................ 39
      Assist/911 ............................................................................................................... 40
      Uconnect Diagnosis ............................................................................................... 42
      Dealer and Engineering Mode .................................................................................. 43

ACTIVITY 5 RADIO DIAGNOSIS .................................................................................. 47
   TASK ONE: SOFTWARE VERSION ............................................................................... 47
   TASK TWO: DEALER MODE ......................................................................................... 48
   TASK THREE: ENGINEERING MODE .......................................................................... 49
   TASK FOUR: FACTORY RESET ................................................................................... 49

LESSON 4 ANTENNAS .................................................................................................... 51
ANTENNAS AND COMPONENTS ................................................................. 51
ANTENNA DIAGNOSIS ........................................................................ 52
ACTIVITY 6 DIAGNOSE AN INOPERATIVE ANTENNA ....................... 55
DEMONSTRATION 1 SATELLITE SIGNAL ................................................. 57
LESSON 5 STEERING WHEEL CONTROLS ............................................. 59
   STEERING WHEEL SWITCH COMPONENTS AND OPERATION ........ 59
   STEERING WHEEL SWITCH DIAGNOSIS ........................................... 61
DEMONSTRATION 2 MUX OPERATION AND DIAGNOSIS ..................... 63
DEMONSTRATION 3 LIN BUS OPERATION .............................................. 65
ACTIVITY 7 DIAGNOSE A STEERING WHEEL SWITCH CONCERN ....... 67
   TASK ONE: VEHICLE ONE - LIN BUS/DISTRIBUTED CIRCUIT DIAGNOSIS ........ 67
   TASK TWO: VEHICLE TWO - MUX CIRCUIT ....................................... 69
LESSON 6 MEDIA HUB ........................................................................... 73
   MEDIA HUB CHARACTERISTICS .......................................................... 73
   MEDIA HUB DIAGNOSIS ................................................................. 75
ACTIVITY 8 MEDIA HUB TESTS .............................................................. 79
   TASK ONE: MIT019 TESTER USER GUIDE ........................................ 79
   WATCH THE VIDEO FOR REFERENCE USING THE MIT019 TESTER .... 80
   TASK THREE: AUXILIARY JACK TEST ............................................. 80
   TASK FOUR: USB TEST ................................................................... 81
   TASK FIVE: BLUETOOTH PAIRING TEST ........................................... 82
LESSON 7 VIDEO ENTERTAINMENT SYSTEM ......................................... 85
   VEHICLE ENTERTAINMENT SYSTEM OPERATION ........................... 85
      Remote Control ............................................................................. 87
      HEADPHONE OPERATION ............................................................ 88
ACTIVITY 9 VES SYSTEM OPERATION ..................................................... 91
INTRODUCTION

The Uconnect Media Systems Phase II instructor-led training course is a follow up to the web-based training course. This course has a hands-on approach and is intended to teach the technician how to properly identify the Uconnect media systems, identify the operational characteristics, and properly diagnose a Uconnect media system concern.

COURSE OBJECTIVES

After completing this course, the technician will be able to:

- Identify the Uconnect media center systems and their features
- Perform the Uconnect Bluetooth connectivity process and diagnose the functionality
- Identify the features of the Uconnect Access system and verify subscriptions
- Diagnose the antennas and components
- Identify the operation and components of the steering wheel controls and diagnose a steering wheel switch concern
- Diagnose the media hub and components
- Identify the video entertainment system and diagnose the functionality
ACRONYMS

The following is a list of acronyms used throughout this publication:

AM Amplitude Modulation
BCM Body Control Module
CD Compact Disc
CTP Chrysler Telematics Platform
CUSW Compact US Wide
DVD Digital Video Disc
FM Frequency Modulation
GPS Global Positioning System
HD High Definition
HFM Hands Free Module
HVAC Heating Ventilation Air Condition
IBS Intelligent Battery Sensor
ICS Integrated Center Stack
IOD Ignition-Off Draw
ITBM Integrated Brake Trailer Module
LIN Local Interconnect Network
MIT Multi-media Interface Tool
MUX MUltipleX
NTG4 Next Telematics Generation 4
PCI Peripheral Component Interconnect
PID Parameter IDentification
PM Partially Multiplexed
RST ReSeT procedure
RTN Return To New
SCCM Steering Column Control Module
SD Secure Digital
SDAR Satellite Digital Audio Radio
UCI Universal Consumer Interface
USB Universal Serial Bus
VES Video Entertainment System
VIN Vehicle Identification Number
VR Voice Recognition
There are several different media center systems in the Uconnect family. The following table gives you a brief look at the appearance and some standard features to identify the radios for quick reference.
Table 1  Uconnect Media Center Line-up

<table>
<thead>
<tr>
<th>Uconnect Media Systems</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>130/RES</strong></td>
<td>This system is identified by the sales code RES in the lower right corner of the head unit, directly below the audio jack. This system does NOT have a Voice Command button or a Phone button in the upper controls.</td>
</tr>
<tr>
<td><strong>130S/RES</strong></td>
<td>This system is identified by the sales code RES in the lower right corner of the head unit, directly below the audio jack. This system includes a Voice Command button and Phone button in the upper controls.</td>
</tr>
<tr>
<td><strong>230/REQ</strong></td>
<td>This system is identified by the sales code REQ in the lower right corner of the head unit, directly below the audio jack.</td>
</tr>
<tr>
<td><strong>430/RBZ</strong></td>
<td>This system is identified by the sales code RBZ at the lower right corner of the head unit, directly below the audio jack.</td>
</tr>
<tr>
<td>Model</td>
<td>Identification and Features</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>430N/RHB</td>
<td>This system is identified by the sales code RHB at the lower right corner of the head unit, directly below the audio jack.</td>
</tr>
<tr>
<td>730N/RHR</td>
<td>This system is identified by the sales code RHR at the lower right corner of the head unit, directly below the audio jack.</td>
</tr>
<tr>
<td>730N/RER</td>
<td>This system is identified by the sales code RER at the lower right corner of the head unit, directly below the audio jack.</td>
</tr>
<tr>
<td>4.3/RHA</td>
<td>This system has a 4.3-inch touchscreen with hard keys on each side. It does NOT have the SAT (Satellite Radio) indication on the band button. <strong>NOTE:</strong> The interface accent color changes based on the make of your vehicle (Dodge model shown).</td>
</tr>
<tr>
<td>Model</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4.3S/REB</td>
<td>This system has a 4.3-inch touchscreen with hard-keys on each side. It has a SAT (Satellite Radio) indication on the band button.</td>
</tr>
<tr>
<td>8.4/RE2</td>
<td>This system has an 8.4-inch touchscreen. It does NOT have a Nav (Navigation) button in the main screen menu.</td>
</tr>
<tr>
<td>8.4N/RB5</td>
<td>This system has an 8.4-inch touchscreen, a NAV (Navigation) button in the main screen menu, and a Travel Link button in the More menu.</td>
</tr>
<tr>
<td>3.0/RA1</td>
<td>This system has a 3-inch, 4-line LCD screen with 2 hard keys on either side of the display. This system does NOT have a Voice Command or a Phone button in the upper controls.</td>
</tr>
<tr>
<td><strong>Uconnect Media Systems</strong></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>200/RAE</strong></td>
<td></td>
</tr>
<tr>
<td>This system has a small 2-line display with a built-in CD/MP3 player, hard keys for radio control, Uconnect Voice Command and Bluetooth Streaming Audio, and SiriusXM Satellite Radio.</td>
<td></td>
</tr>
<tr>
<td><strong>5.0/RA2</strong></td>
<td></td>
</tr>
<tr>
<td>This system has a 5.0-inch touchscreen with hard keys for Radio, Media, and Phone on the left and hard keys for Compass, Settings, and More on the right.</td>
<td></td>
</tr>
<tr>
<td><strong>8.4A/RA3</strong></td>
<td></td>
</tr>
<tr>
<td>This system has an 8.4-inch touchscreen with an Apps icon in the main screen menu. It does not have a SiriusXM® Traffic button in the More menu.</td>
<td></td>
</tr>
<tr>
<td><strong>8.4AN/RA4</strong></td>
<td></td>
</tr>
<tr>
<td>This system has an 8.4-inch touchscreen, a NAV (Navigation) button, and an Apps icon in the main screen menu.</td>
<td></td>
</tr>
</tbody>
</table>
This system has a 6.5-inch touchscreen, Uconnect Access®, Navigation, integrated Uconnect Voice Command and Bluetooth, SiriusXM Satellite Radio, SiriusXM Traffic, and SiriusXM Travel Link.
The first step to identifying the media center system is to look for the presence of a sales code on the lower right corner of the face plate (NTG4 only). If there is no sales code, perform a single VIN inquiry through DealerCONNECT.
The following steps detail the process of performing a single VIN inquiry in DealerCONNECT when there is no sales code on the face plate.

DealerCONNECT is located at: https://dealerconnect.chrysler.com. When you visit the DealerCONNECT website, you will see a login screen. Your Service Manager or Shop Foreman will provide you with a user ID, password, and dealer code. After you have entered the ID and password, click the Submit button.

The DealerCONNECT home page is where you will find announcements and other information. To move to the next page in the process, find the Service tab in the middle of the upper tool bar. When on the Service page of DealerCONNECT, locate the Single VIN Inquiry link in the VEHICLE INFORMATION PLUS (VIP) box and click the link for VIN Inquiry.
The required fields must be filled in to perform a VIN inquiry. Enter the VIN number and the mileage of the vehicle, then click the Submit button.

Next, by clicking on the Options tab, you can view the standard and optional equipment for the selected vehicle. This is where you identify the radio and its sales code. There are some other features listed as well. This screen will not give all the features of the radio, only the options with sales codes.

To locate additional features for the radio, click on the Service tab to return back to DealerCONNECT.
To easily identify all the features available for the media center systems, go to the Uconnect marketing website. This link is located in DealerCONNECT in the Service tab, under Uconnect Information & Utilities. Under the System dropdown, locate and click on the vehicle brand. Then, enter the year and model of the vehicle; thumbnails of the available media center systems for that model and year appear. Click on the media center associated with the vehicle.
Media Center Features

INTEGRATED ACCESS SYSTEM

with 8.4-inch touchscreen, Uconnect®, Access+, Navigation, integrated Voice Command and Bluetooth®+ and SiriusXM® Satellite Radio+.

Included Features

- Uconnect® Access+ (includes 6-months subscription)
- 8.4-inch touchscreen
- AM/FM radio
- Auxiliary, USB+ and SD media hub with iPod® mobile device integration
- Integrated Uconnect® Voice Command and Bluetooth®, hands-free calling+ and voice text reply+ (not compatible with iPhone® mobile devices)
- SiriusXM® Satellite Radio+ — more than 150 channels (includes a 12-month subscription)

On the right of the media center information page, all the included and available features for this radio are displayed. Just below Available Features, there are links for downloading the owner’s manuals, system chart, and how-to videos. Additional information about specific features are found by clicking on the tabs located on the left middle of the webpage.
Vehicles equipped with an integrated center stack include an upper switch bank and may also include a lower switch bank.

The upper switch bank communicates directly on the CAN-IHS bus and is displayed as the ICS. It contains redundant HVAC controls and redundant radio controls. The lower switch bank contains switches for the heated steering wheel and seats, as well as other comfort controls. It communicates with the BCM on a LIN bus.

On vehicles equipped with the integrated trailer brake, the ITBM is connected to the CAN-C bus separately. Some vehicles equipped with a 5.0 media center do not have an external ICS, and all radio and HVAC functions are performed using the touch screen. These systems are identified on the network topology with the ICS module grayed out as not equipped.
INTEGRATED CENTER STACK CONTROLS

Some FCA vehicles have redundant hard key controls for certain soft key functions in the radio display. Not all integrated center stacks (ICS) communicate the same way on the bus. You can identify the network by looking at the vehicle topology in wiTECH.

Certain vehicles, such as the Dodge Charger, use a bus network called PowerNet 1. This was the earlier version of PowerNet and included a CAN-A/T network. A/T stands for audio and telematics and was its own branch of the network. The radio in PowerNet 1 was the gateway, and the ICS was the other dominant node on the network. Each dominant module had 120 ohms of resistance, giving the bus 60 ohms.

After the FCA merger, CAN-A/T was removed and the radio was put back on the CAN-IHS network, giving this version the name PowerNet 2. Now, all audio system components are directly connected to the CAN-IHS bus and do not utilize a telematics gateway. Although the RADIO is shown on both buses’ systems, it is not a gateway. The RADIO only receives information from CAN-C and performs all two-way communication functions on the CAN-IHS bus.
Uconnect Media Systems

Notes:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
ACTIVITY 1 RADIO IDENTIFICATION

TASK ONE: RADIO IDENTIFICATION

Instructions: Using service information along with the vehicle identification number, identify the Uconnect media system of the assigned vehicle.

1. What is the brand, model, and year of your assigned vehicle?

2. Document the VIN of your assigned vehicle.

3. Does your radio have a sales code on the faceplate?

4. If yes, document the sales code. If no, what is the next step?

5. Log into DealerCONNECT and select the SERVICE tab.
6. Locate VEHICLE INFORMATION PLUS (VIP) and select Single VIN Inquiry.
7. Enter the last eight of the VIN documented in step two.
8. Enter the vehicle’s mileage. These are the only two required fields indicated by a red asterisk. When finished, click the Submit button.
9. Locate and click on the Options tab.
10. In the list of options, locate the radio sales code and document it below.
Radio Identification

TASK TWO: RADIO OPTIONS

Instructions: Now that we have a brief overview of the features available from the single VIN inquiry, look at the other features supplied by the radio unit.

1. Go to http://www.driveuconnect.com/features/controls/ and navigate to THE SYSTEMS. Under THE SYSTEMS menu, choose the vehicle brand under SELECT YOUR BRAND.

2. Under FIND YOUR UCONNECT SYSTEM, select the year and model, then choose the Uconnect system of your assigned vehicle.

3. There are thumbnails of the radios available for the assigned vehicle. Click on the correct radio.

4. Review the Included Features bullets on the right side of the screen and document some of the features below.

5. Observe the small arrows at the right of the features. These are instructional videos. Choose a video that interests you, click on the arrow, and view the video.
Notes:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
ACTIVITY 2 RADIO FUNCTIONS

Instructions: For this task, use service information and perform the steps to back up customer information.

1. Log into TechCONNECT and enter the VIN number from Activity 1 for the NTG4 radio platform.

2. Navigate to section 8A and, in Standard Procedure, find and click STANDARD PROCEDURE - RADIO BACKUP AND RESTORE.

3. Follow service information to backup and restore the radio data.
LESSON 2  BLUETOOTH CONNECTIVITY

STEERING WHEEL IDENTIFICATION

Bluetooth is a standard for the short-range wireless interconnection of cellular phones, computers, and other electronic devices.

Newer Uconnect radios (5.0, 6.5, 8.4A, and 8.4AN) are identified by the hands-free control buttons located on the front side of the steering wheel.

The hands-free modules are integral on newer Uconnect radios.

The 5.0, 6.5, 8.4A, and 8.4AN radios have hands-free functions integrated into the head unit. However, the 5.0 is not a Uconnect Access radio.
The mirror assembly contains two separate microphones that sense speech and cabin compartment noise. The radios with Uconnect Access can be identified by the two switches located on the bottom center of the mirror. These buttons are for the US market only and are as follows:

- Assist
- 911
The mirror assembly contains two separate microphones that sense speech and cabin compartment noise. Both microphone signals are sent to either the external hands-free module (HFM) or integrated HFM, where signals are analyzed by software in the module. After the signals are processed, the best sound possible is sent to the person receiving the call or processed as a voice command. Besides call clarity, processing signals this way helps reduce errors in the voice recognition system.

The external HFM is used with RES, REQ, and REN radios and contains voice recognition software for hands-free calling and hands-free radio commands. Both of the microphones, located in the mirror, and the universal consumer interface (UCI) harness, if equipped, plug directly into the module. Module location varies on different models. Always use the latest service information to determine the correct location.

The external HFM receives power from the battery ignition-off draw (IOD) circuit, grounds to the chassis, and communicates on the CAN bus. One significant piece of information received over the CAN bus is ignition status. The module monitors ignition status in order to power up and allow connection to a phone if the ignition is turned ON or to switch in-progress phone calls to a handset if the ignition is turned OFF.
HANDS-FREE MICROPHONE DIAGNOSIS

28 _ DTC_ Based Diagnostics/RADIO/Diagnosis and Testing

**U0197-LOST COMMUNICATION WITH HANDS FREE PHONE MODULE**

For a complete wiring diagram, refer to the Wiring Information.

- **When Monitored:**
  - Continuously when the ignition is on.
  - The battery voltage is between 10 and 16 volts.
  - ignition Off Draw (IOD) fused installed.
  - totally Integrated Power Module (TIPM) is configured correctly.

- **Set Condition:**
  - Bus messages no received from the Hands Free Module (HFM) for approximately two to five seconds.

---

**Figure 11  Bluetooth Diagnosis**

A quick diagnostic test for vehicles with external HFM is to press the Uconnect phone hard key. If the radio screen does not respond, there is an issue with communication between the radio and external module. The message "Uconnect not available" also displays on screen if the hands-free option is not available. The module power, ground, and communication circuits should also be checked.

If the radio screen responds to pressing the hard key, but there is no sound, isolate and check audio lines between the radio and external module with a resistance test.

On all configurations, if pressing the hard key results in appropriate radio and audio responses, but the system does not react to a customer’s voice commands, the microphone circuits need to be checked.

The microphone circuits convert sound into electrical signals that are interpreted by the HFM. The module tests circuits for opens or shorts and stores appropriate fault codes in the module to aid in diagnostics.

Connect the scan tool and check for any codes related to microphone circuits. Always follow the latest service information procedure for any codes that are found.
Bluetooth Connectivity

Notes:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Bluetooth Connectivity

Notes:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
ACTIVITY 3 PHONE PAIRING

Instructions: For this activity, using a cell phone, check for phone compatibility with the Uconnect system using Consumer Device Compatibility in TechCONNECT. Once phone compatibility is established, pair the phone to the system.

TASK ONE: PHONE COMPATIBILITY
1. Sign into TechConnect and select the service home page.
2. Locate UCONNECT INFORMATION & UTILITIES and select Consumer Device Compatibility.
3. Enter the information needed to check compatibility of the phone being paired.
4. List the information required to verify a compatible phone.
5. After entering the information required, have we located the phone that is being paired?

TASK TWO: PAIR A PHONE
1. Select the link for General Phone Pairing Instructions.
2. Follow the phone pairing procedure.
3. Did the selected phone pair to the vehicle?
Phone Pairing

TASK THREE: PHONE PAIRING CONCERN

Instructions: For this task, the customer concern is that the phone music does not play automatically when in the vehicle and the phone has a Bluetooth connection.

1. Navigate to the screen to play music from a Bluetooth source.
2. Does the music play automatically with your device?
3. Does the phone have a Bluetooth connection with the vehicle?
4. How do you know if the phone has a Bluetooth connection at the radio?
5. What could be the cause if there is a connection with the vehicle, but the music does not play?
6. Does the phone/app have a setting to play Bluetooth audio automatically when a connection is established?
ACTIVITY 4  DIAGNOSE A VOICE RECOGNITION CONCERN

Instructions: For this activity, the customer is able to pair their phone, but voice recognition commands are not recognized and the caller cannot hear the customer during phone calls.

Step 1: Verify the concern
1. Pair a phone to the vehicle.
2. Were you successful in pairing a phone to the vehicle?
3. Do all features of the vehicle system function properly?

Step 2: Check for related symptoms
1. Are there any other Bluetooth/phone features not functioning properly?

Step 3: Analyze the symptoms
1. Connect a scan tool and check for DTCs.
2. Are there DTCs?
3. If yes, are there any SBs, RRTs, TechTips, or Recalls related to this concern or the media system? If yes, record them.

Based on the information gathered and the wiring diagrams, isolate the concern.

Were you able to isolate the concern?

After completing this task go through the steps to delete the paired phone from the vehicle.
A major feature of the 6.5 (only Renegade vehicles), 8.4A, and 8.4AN media center systems is Uconnect Access. Uconnect Access allows the vehicle to be connected to the internet to provide these features:

- Wi-Fi/hotspot 3G (Extra cost option)
- Free-form voice SMS dictation (Android Only - Apple only works with incoming texts)
- 911 Call/ASSIST mirror controls
- YELP
- Via Mobile - Pandora, Slacker, iHeart, Aha (except Renegade models)

Via Mobile uses the customer’s cell phone and data plan. The applications are installed on the radio from the factory, but the application also needs to be installed on the customer’s phone and have an active account.
The vehicle can access these services through the customer’s smartphone or through an integrated cellular system on the 6.5, 8.4A, and 8.4AN media center units.

**NOTE:** Uconnect Access is currently not available in Canada. Refer to Tech Tip #13-002 for more information.

To activate and unlock the full potential of Uconnect® Access, you must first register with Uconnect Access. Registration starts in the vehicle and is completed online at Mopar® Owner Connect. The customer visits the Uconnect Access registration page for step-by-step instructions.

An application is not needed to connect a radio to the Cloud. An application is needed to perform remote operations and link/connect via mobile.

There are two methods to register:

- The customer can send a tokenized email through the radio and complete the steps through the internet.
- The customer can press the ASSIST button and select Uconnect Care, and an agent can complete the registration.

Customers utilizing the Uconnect Access via a mobile connection should know the system uses the cellular data plan and usage is dependent upon the customer’s data limits and cellular service connectivity.

Verify cellular connectivity when diagnosing a loss of connection.

**NOTE:** Renegade 6.5 radios do not include Via Mobile, and the button press sequence for Dealer or Engineering Mode is different than the Uconnect 8.4A and 8.4AN radios.
Navigation

Customer-activated Navigation is only available for the 8.4A head unit. This allows a less expensive, embedded navigation solution that can be activated at the customer's leisure through the owners’ website or call-center.

Navigation is standard on the 6.5 and 8.4AN head units; no subscription is required if Navigation is on the head unit.

Normal dealer diagnosis is needed for a non-working unit.

Figure 13  GPS Navigation
Uconnect Access systems offer an assistance and 911 call feature that allows the vehicle to contact a help desk or 911 representative when triggered.

The buttons are located in the rear-view mirror or the overhead console and connect directly to the head unit.

If a customer-activated assistance call is made, the help desk will give advice on a vehicle concern or send help if needed.
Selections are:

- Uconnect Care for connected vehicle concerns
- Vehicle Care for general vehicle inquiries and concerns
- Roadside Assistance, if assistance is needed at the vehicle, such as a flat tire, vehicle stopped running, or dead battery

If a 911 call is initiated through the mirror button, the system will contact the 911 service nearest the vehicle’s location and send the GPS coordinates for the vehicle; the 911 operator will contact the vehicle to check on the occupants and send help if no response is given.
Uconnect Access

Uconnect Diagnosis

When diagnosing the Uconnect systems, be sure to get all of the information possible to make an accurate assessment for an appropriate repair.

If the unit does not power up, check power, ground, and communication circuits.

If the customer expresses concern about a connectivity issue, or a feature that does not work with a phone, check the Uconnect website for compatibility first.

Remember that cell signal and strength are just as important for the Uconnect system as they are for the cell phone during a call or data session. Therefore, applications being used to stream audio from the web may intermittently cut out if the signal is lost.
Dealer and Engineering Mode

Dealer and Engineering Modes are accessed through button pushes at the center stack.

8.4A and 8.4AN - Enter the Dealer Mode function by a simultaneous three button press (hard button only).

- Press driver's temperature up button.
- Press driver's temperature down button.
- Press front defrost button.

Enter Engineering Mode by a simultaneous two button press.

- Press driver's temperature up button.
- Press driver's temperature down button.

Take a screenshot with a simultaneous three button press.

- Press driver's temperature up button.
- Press driver's temperature down button.
- Press rear defrost button.
Options for Renegade:

- Press Radio, Media, and Browse at the same time for Dealer Mode.
- Press Radio, More, and Browse for the Engineering menu.
- Press Radio, Navigation, and Browse for a screenshot.

Performing a factory reset takes the radio back to its as-built state, reloading base level (Jar and KIM files). After the factory reset, the SRT logo is displayed for the splash screen (default). After the radio learns the VIN and some time is given for a Cloud update, the radio, on the next ignition OFF/bus sleep, ignition ON cycle, begins to resemble the radio the vehicle previously had. In addition to the SRT splash logo, settings are displayed at the far right soft key as compared to Apps. After the DRM process completes and a few ignition/bus cycles occur, the radio is fully functional and ready for use. A reset does not affect the firmware in the radio. If the firmware is up to date, no other update is necessary. The factory reset wipes out all customer settings (phone pairing, for example) and all have to be reprogrammed as if the vehicle was picked up for the first time.

Return to new (RTN), is used to disassociate the customer’s Uconnect account from the vehicle and should be completed if the vehicle is sold and occasionally as a diagnostic step. This can only be done through Uconnect Care or the Mopar Owner Connect site under the user’s profile.
Uconnect Access

Notes:
ACTIVITY 5 RADIO DIAGNOSIS

TASK ONE: SOFTWARE VERSION

Instructions: For this activity, using service information and radio system settings, identify the different diagnostic options available.

1. Log into DealerCONNECT and select the SERVICE tab.
2. Scroll down to locate UCONNECT INFORMATION & UTILITIES.
3. Click on Uconnect Dealer software downloads.
4. Enter the last 8 digits of the VIN.
5. Is there a software update version available?

6. Is there more than one update available?

7. Document the available Software Version Number(s).

8. Next, go to the radio and select the Controls button.
9. From the controls menu, select Settings and then System Information.
10. Record the Software Version.

11. Is the number in Question 10 lower than the number(s) in Question 7? If yes, an update needs to be performed. If no, then no update is needed.
Radio Diagnosis

TASK TWO: DEALER MODE

1. Hold down the driver's side temperature up, temperature down, and defrost buttons at the same time to place the vehicle in Dealer Mode.

2. Were you able to place the vehicle in Dealer Mode?

3. While in Dealer Mode, click on System Information and then Radio Part Identification. Identify and document the following information:
   a. Hardware Part Number:
   b. Software Version:
   c. Serial Number:

4. Navigate back to System Information and click on Satellite Digital Audio Radio Information. Identify and document the following:
   a. SDAR Hardware Version:
   b. SDAR Software Version:


**TASK THREE: ENGINEERING MODE**

1. Hold down the driver’s side temperature up and temperature down buttons at the same time to navigate to the engineering menu. To navigate to the engineering menu on the Renegade, hold down the Radio, More, and Browse buttons at the same time.

2. Were you able to go to the engineering menu?

---

**TASK FOUR: FACTORY RESET**

1. With the key in the ON position, push and hold the temperature up and down buttons at the same time until the engineering menu appears.

2. In the engineering menu, use the scroll bar to locate the Reset to Factory Default tab and click on it.

3. The screen will give you Yes or No options. Click Yes to confirm. The notes states that once you click Yes, it will take 30 seconds to reset. This is a minimum and it may take longer.

4. Did the radio reset and display the SRT logo?

---

5. Once the radio resets, it will take several key cycles and time for the features of the radio to return. It is important that there is connectivity for this to happen.

6. How do you know the radio is back to normal operation?
Depending on the application, the antennas used on media center systems can be fender-, glass-(AM/FM/HD), or roof-mounted in a combined unit that also houses the satellite audio, cellular, and global positioning system (GPS) antennas. Antennas that support cellular services are identified by a shark fin-style appearance. For systems that use the combo antenna, the assembly contains active circuitry to amplify incoming signals. A 5- or 9-volt signal is transmitted over the center coaxial cable from the radio to the antenna.

Antennas are designed in different sizes and shapes and specifically tuned to pick up radio waves based on frequency and direction of waves being transmitted. In some cases, to make a smaller antenna work as efficiently as possible, power is applied to a low noise amplifier in the base of the antenna to boost the signal and overcome disadvantages of the length of the mast and distance from the radio.
After the message signal and the broadcasting signal are combined, the new signal is amplified by the transmitter and sent to the antenna, where it is transmitted into the air. The direction and the distance the signal travels depend on several factors, such as the height of the broadcasting antenna and the power applied to the signal.

**ANTENNA DIAGNOSIS**

Antenna concerns can be diagnosed using special tool #9977-6 or #9977B, Antenna Test Kit. The Antenna Test Kit contains substitute antennas and cables, along with test connectors, that assist in checking the resistance of cables on the vehicle. Always begin antenna diagnosis by retrieving any related DTCs and referencing the most current service information. Many antenna shorted or open DTCs are caused by pinched cables or loose connections. A visual inspection of cable ends, connection points, and antenna connection points are essential when diagnosing an antenna concern.
When the radio is turned on, the radio supplies the amplified antenna power circuit with voltage. A 5-volt (GPS/SDARs) or 9-volt (AM/FM) signal is transmitted over the center coaxial cable from the radio to the antenna. If poor reception is an issue, always check the power circuit for appropriate voltage.

When diagnosing roof-mounted antenna systems, after verifying the power circuit voltage, leave the DMM positive lead in place and move the DMM negative lead to the underside of the antenna. An amplified antenna grounds through the base to the vehicle sheet metal. If the voltage is not the same as the positive circuit test, a ground problem exists. Make sure the antenna base contact point is clean before replacing the antenna.

When diagnosing glass-mounted antenna systems, use the body sheet metal or battery negative lead as the ground for testing.

If a customer is concerned that satellite radio function is not working correctly when no DTCs are present, try isolating satellite radio circuits by using service information and special tools to isolate concerns with the satellite radio antenna.

If a customer is concerned that the Navigation function is not working properly, move the vehicle outside and check the Navigation settings screen for the number of satellite signals being received. If at least four satellite signals are present, disconnect the GPS antenna from the radio. The radio reading should reflect the antenna disconnection and change to zero satellites. If the radio does not change, the radio is likely the cause of the concern. If the radio does change, the antenna is likely the cause of the concern. Try to verify diagnosis by connecting a known good antenna, using the special tool, before replacing any parts.
Antennas

Notes:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
ACTIVITY 6  DIAGNOSE AN INOPERATIVE ANTENNA

Instructions: For this task, use the Six-step Troubleshooting Procedure to diagnose an inoperable antenna concern. The customer states that satellite radio is trying to find a signal.

Step 1: Verify the concern
1. Check for satellite signal.
2. Were you able to verify the concern?

Step 2: Check for related symptoms
1. Are there any related symptoms?
2. Connect the scan tool and check for DTCs.
3. Document any DTCs.
4. Look up any SBs, RRTs, TechTips, or recalls related to the DTCs or the media system.
5. Are there any documented related concerns?

Step 3: Analyze the concern
1. Using wiring diagrams, are there any shared circuits or connectors?

Step 4: Isolate the concern
1. Using the information gathered and the antenna test kit as per service information, isolate the concern.
2. Were you able to isolate the concern? If yes, document it below.
Notes:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
DEMONSTRATION 1 SATELLITE SIGNAL

Instructions: For this demonstration, the instructor will walk the students through a customer concern of a faulty satellite signal.
LESSON 5 STEERING WHEEL CONTROLS

STEERING WHEEL SWITCH COMPONENTS AND OPERATION

For the customer’s convenience, the Uconnect media systems have redundant steering wheel controls. The controls, which are also considered switches, can be found on the back side of the steering wheel and accessed by the touch of a finger. On some models, the Uconnect touch and voice recognition switches can be found on the left of the steering wheel.

The steering wheel controls use the LIN bus communication networks and MUX switches (based on resistance).
Steering Wheel Controls

The six switches in the two remote radio switch units are normally-open, resistor-multiplexed, momentary switches. The switches are hard-wired to a controlled module that communicates via the LIN bus through the clock spring to a main module that transmits switch position on a CAN bus. The right side front switches (cruise control switches) are the controlled LIN bus modules. A scan tool can be used to monitor the operation of the switches through this network.

The module that monitors the switches sends a 5-volt reference signal to the switches on one circuit. The module senses the status of the switches by reading the voltage drop on a second circuit for most vehicles.

On vehicles built prior to 2008 with a PCI bus, the switches are monitored by the BCM.
When diagnosing a steering wheel concern, be sure to follow the airbag safety warnings and cautions in service information prior to hands-on diagnosis.

The right steering wheel control switch (speed control switch) communicates to the steering column control module (SCCM) via the LIN bus. The SCCM is located near the top of the steering column below the steering wheel and includes the clockspring, the multi-function switch, and a LIN/CAN-C gateway. LIN bus messages received by the LIN/CAN-C gateway are broadcast over the CAN-C bus to the appropriate modules.

Communication can be monitored using a scan tool connected to the SCCM.

**NOTE:** Before proceeding with the diagnostic procedure, verify the connections are properly made and seated, and verify proper pin terminal tension. A loose connection at any of the SCCM connectors may cause the DTC to set.
Steering Wheel Controls

Notes:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Uconnect Media Systems Phase II
DEMOnstration 2  MUX OPERAtion And DIAGNOSIS

Instructions: For this demonstration, the instructor will demonstrate MUX operation and diagnosis.
DEMONSTRATION 3 LIN BUS OPERATION

Instructions: The purpose of this demonstration is to exhibit proper LIN bus diagnosis by taking measurements and asking questions.
ACTIVITY 7  DIAGNOSE A STEERING WHEEL SWITCH CONCERN

TASK ONE: VEHICLE ONE - LIN BUS/DISTRIBUTED CIRCUIT DIAGNOSIS

Instructions: For this activity, use the Six-step Troubleshooting Procedure to diagnose a LIN bus concern. The customer concern is that the horn sounds constantly for 20 to 30 seconds and then does not operate at all.

Step 1: Verify the concern

1. Describe the symptoms exhibited by the vehicle.

Step 2: Determine related symptoms

1. Are there any other systems affected by the concern? Refer to wiring diagrams as a reference. If yes, describe them.

Step 3: Analyze the symptoms

1. Connect the scan tool and check for DTCs. Document any DTCs below.

2. Look up service information for correct operation of the affected system and any SBs, RRTs, TechTips, or recalls related to the DTCs.

3. Are there any documented related concerns? If yes, describe them.

Step 4: Isolate the concern

1. Using the gathered information and wiring diagrams, formulate a plan of action to begin diagnosis and isolate the concern.

NOTE: Remember to follow all the Warnings and Cautions.
Diagnose a Steering Wheel Switch Concern

2. In the table below, list the diagnostic steps a thru f in the order that you would use them to begin isolating the concern.

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Check power to horn fuse.</td>
<td>d</td>
<td>Check power to horn switch.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Swap horn relay with known good relay.</td>
<td>e</td>
<td>Check horn grounds.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Actuate horn with scan tool.</td>
<td>f</td>
<td>Check horn switch data with scan tool.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Explain why you would follow these steps in the order you placed them.

4. Where do the diagnostic steps indicate the concern is located?
TASK TWO: VEHICLE TWO - MUX CIRCUIT

Instructions: For this task, diagnose an inoperable steering wheel switch on a MUX circuit. The customer concern is the steering wheel switches are not working correctly.

Step 1: Verify the concern.
1. Describe the symptoms exhibited by the vehicle.

Step 2: Determine related symptoms
1. Are there any other systems affected by the concern? Refer to wiring diagrams as a reference. If yes, describe them.

Step 3: Analyze the symptoms
1. Connect the scan tool and check for DTCs. Document any DTCs below.

2. Look up service information for the correct operation of the affected system and any SBs, RRTs, TechTips, or recalls related to the DTCs or the media system.

3. Are there any documented related concerns? If yes, describe them.

Step 4: Isolate the concern
1. Using the gathered information and wiring diagrams, formulate a plan of action to begin diagnosis and isolate the concern.

NOTE: Remember to follow the Warnings and Cautions.
Diagnose a Steering Wheel Switch Concern

2. In the table below, list the diagnostic steps a thru f in the order that you would use them to begin isolating the concern.

<table>
<thead>
<tr>
<th>1.</th>
<th>2.</th>
<th>3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
<td>c</td>
</tr>
<tr>
<td>d</td>
<td>e</td>
<td>f</td>
</tr>
<tr>
<td>g</td>
<td>h</td>
<td>i</td>
</tr>
<tr>
<td>j</td>
<td>k</td>
<td>l</td>
</tr>
<tr>
<td>m</td>
<td>n</td>
<td>o</td>
</tr>
<tr>
<td>p</td>
<td>q</td>
<td>r</td>
</tr>
<tr>
<td>s</td>
<td>t</td>
<td>u</td>
</tr>
<tr>
<td>v</td>
<td>w</td>
<td>x</td>
</tr>
<tr>
<td>y</td>
<td>z</td>
<td></td>
</tr>
</tbody>
</table>

### Diagnostic Steps

<table>
<thead>
<tr>
<th>a.</th>
<th>b.</th>
<th>c.</th>
<th>d.</th>
<th>e.</th>
<th>f.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check switches for resistance.</td>
<td>Check 5V reference from switch module.</td>
<td>Check LIN bus communication.</td>
<td>Check power to switch module.</td>
<td>Check switch data with scan tool.</td>
<td>Check CAN bus voltages.</td>
</tr>
</tbody>
</table>

3. Explain why you would follow these steps in the order you placed them.

4. Where do the diagnostic steps indicate the concern is located?
The media hub is a centralized connection point on the vehicle that contains a USB interface, a 3.5-mm auxiliary input jack, and a secure digital (SD) card slot. The media hub location varies from vehicle to vehicle, but the center console is the most popular.

An SD is located in the media hub on some vehicles. It allows you to play your favorite music stored on an SD card, and the auxiliary input jack lets customers play music from any device with an audio out port.
The USB port allows you to connect your compatible media device and play your favorite music (MP3 and WMA files). You can also operate your device in multiple ways with controls on your radio or steering wheel.

Some vehicles have second row USB ports that can be used for charging purposes only. Use the connection cable to connect an iPod® or external USB device to the vehicle's USB charging ports, which are located either on the rear of the front center console and/or in the second row center console.

With a 3.5-mm audio cable, you can plug an iPhone® mobile device, or another fully compatible device, into the AUX jack and share your favorite music through the sound system.

**NOTE:** Only the volume can be controlled through the vehicle's sound system or the mobile device.

Some vehicle radios may have an optional single external CD or DVD player, typically located in the center console or instrument panel center stack.

The CD/DVD player communicates on the CAN-IHS bus. An audio output is sent to the head unit through dedicated circuits, not over the bus. The communication bus is used for the control of the CD/DVD player and for disc information.
MEDIA HUB DIAGNOSIS

A multimedia interface tool (MIT019) is used to validate the operation of the Uconnect system inputs.

The MIT019 confirms, through the vehicle’s audio system, that the USB, auxiliary jack, and Bluetooth inputs operate correctly.

This tool specifically provides the following functionality:

- AUX input
- USB input
- Bluetooth communication
- Streaming audio via Bluetooth
- Phone call via Bluetooth
- Phonebook push via Bluetooth
- Text reader via Bluetooth
- PC file field update capable
- Language Support: English, Spanish, and French Canadian
Media Hub

The MIT019 is designed to confirm proper functioning of a vehicle's audio inputs and Bluetooth connections. This tool outputs unique audio files for each specific function, allowing you to verify the system's operation.

The MIT019 is the first step in getting to the source of a potential issue. If the MIT019 performs properly with a suspect function, the issue may be with the pairing procedure or the customer's device. If any or all of the MIT019 tests do not perform properly, DO NOT REPLACE any of the audio system components. Go to the appropriate diagnostic procedure to continue troubleshooting.
Media Hub

Notes:

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
ACTIVITY 8 MEDIA HUB TESTS

TASK ONE: MIT019 TESTER USER GUIDE

Instructions: For this task, locate the user guide and software update version in DealerCONNECT.

1. Plug the MIT019 tester into the USB port of the assigned laptop.
2. Document the software version.

4. Under the documentation tab, choose the MIT019 User Guide.
5. Document the seven functions of the MIT019 tester (you may abbreviate).

6. Click on the Release Notes tab and identify any releases for the MIT019.

7. Click on the Software Downloads tab and document any software updates available.
Media Hub Tests

TASK TWO: MIT019 TESTER

Instructions: For this task, we will locate and review the MIT019 multimedia video.

1. Enter the VIN of one of the classroom vehicles in TechCONNECT.
2. Navigate to section 29 Non-DTC Diagnostics and click on audio/Video
3. Under Audio/Video find and click MIT019 MULTI-MEDIA TESTER.

Watch the video for reference using the MIT019 tester.

TASK THREE: AUXILIARY JACK TEST

Instructions: Now that we have located the user guide and software version, use the supplied flash cards to test the media hub inputs.

1. Locate the media port(s) of the assigned vehicle.
2. Follow step two of the MIT019 User Guide flash cards to test the auxiliary input jack.
3. If the flash cards are not available, follow the steps below.
   a. Connect the USB and auxiliary cables to the vehicle's audio ports.
   b. Verify the MIT019 is in AUX Mode.
   c. Using the vehicle controls, place the audio system into AUX (Line In) Mode (audio system may automatically enter into AUX Mode).
   d. Audio playback confirms if the auxiliary input is working correctly.
   e. Did the audio playback confirm the auxiliary input is working correctly?
TASK FOUR: USB TEST

Instructions: For this task, using the MIT019 User Guide flash cards, test the USB port of the media hub. If the cards are not available, the steps are located below.

1. Connect the USB cable to the vehicle's audio port.
2. Place the MIT019 into USB Mode (press the 1 button).
3. Using the vehicle controls, place the audio system into USB Mode (audio system may automatically enter into USB Mode).
4. Audio playback confirms if the USB input is working correctly.
5. Did the audio playback confirm that the USB input is working correctly?
Media Hub Tests

TASK FIVE: BLUETOOTH PAIRING TEST

Instructions: For this task, perform a Bluetooth pairing test.

1. First, connect the 12V power adapter to the vehicle’s 12V receptacle and verify the red power LED is on. Then, connect the MIT019 USB cable to the 12V adapter.
2. What does using the 12V adapter show the customer?

3. Place the MIT019 into Bluetooth Mode (press the 2 button).
4. Using vehicle audio controls, place the audio system into ready to PAIR Mode. Press PAIR (the 1 button) on the MIT019; the unit searches Bluetooth signals in the vicinity (may take 1–2 minutes).
5. Scroll through the list with NEXT and PREV; press OK to select when the resident audio system is displayed.
6. The MIT019 pairs and connects to the vehicle’s audio system.
7. Were you able to pair with the MIT019?
Optional on some models is the video entertainment system (VES™).

The minivan uses a two-screen VES, consisting of an additional overhead video monitor for the third row, a second AUX port, and an additional DVD or Blu-ray player.

On the 2015 Durango and Grand Cherokee, the screens are located in the rear of the front seats. Open the LCD screen by lifting up on the cover. The second AUX port is located on the side of each front seat back.
Video Entertainment System

Currently, there are two different types of VES modules on FCA vehicles. The first module type is called partially multiplexed (PM) and can have up to three sets of inputs: the radio, a single AUX port, and the satellite video tuner. The single-screen VES uses a PM module in the second row. In a single-screen VES, the PM module contains the infrared receiver and transmitter for the remote control and headsets.

The second VES module type is called fully multiplexed (FM) and contains two additional inputs: a second AUX port and the DVD player. The FM module is used on a two-screen VES in the second row location, while the PM module is moved from the second row to the third row. On a two-screen VES, the third row module receives the input from the satellite video tuner, if equipped. The third row module also turns off the infrared receiver and transmitter. Instead, the FM module in the second row handles the infrared receiving and transmitting.

The front head unit controls all master functions and parental controls. In order for the rear remote control to work, the front head unit must be out of the rear media controls.

The front head unit video screen is fed via analog signal from the driver side screen. Due to the analog signal, the video quality is slightly different than the upper and lower selection bars on the screen, which are digital.

The front head unit has a listen-in feature that allows listening of the channel one and channel two audio.

- Channel one - Driver side (smart screen, all video functions feed through this screen)
- Channel two - Passenger side (standard screen)

The digital audio and video are shared. This system does not have software updates.

When diagnosing a VES, think in terms of what each occupant is requesting the appropriate unit to do. This is easier than trying to remember all of the circuits involved on every piece of the VES at once. When following this approach, entire segments of the system can be isolated during diagnosis.

NOTE: Do not test any port with a DMM. Using a DMM to check a port can be misleading because several different designs are used. For instance, one design uses shorting bars that open when a device is plugged in. The other design does not use shorting bars and will result in a different DMM reading.
Remote Control

The remote control operates similarly to any DVD remote you may have used before and allows the rear seat passengers to change stations, tracks, discs, and audio/video modes.

The remote control is designed to control either channel by using the selector switch located on the right side of the remote.

Connect the video game or other external media device to the AUX jacks following the color coding for the VES jacks.

Pushing the Power button turns the VES system on or off.

Pushing the Mode button causes the MODE SELECTION menu to appear on the VES screen. Use the remote control arrow buttons to scroll through the available modes, then push OK to select the desired mode.
All configurations of VES come with two wireless headsets and a remote control that operate by battery power and infrared signals. Each headset contains a channel selector switch that allows the user to choose between two channels, which allows different audio and video sources to be used at the same time without interfering with each other.

**NOTE:** Warranty is covered by the headphone manufacturer, not the FCA dealer.

To use the headphones, push the power button located on the right ear cup. Select the channel on the headphones (one or two) that corresponds to the channel selected on the desired video screen.
Video Entertainment System

Notes:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
ACTIVITY 9 VES SYSTEM OPERATION

Instructions: For this task, navigate through some of the functions of the system to identify normal operation. Have the group split up into separate seats: front, middle, and back.

1. Load one of the supplied DVDs into the radio head unit DVD slot.
2. Load the other supplied DVD into the DVD/Blu-ray player.
3. Students in the front row seats navigate the front head unit to satellite radio and play through the vehicle’s speakers.
4. Students in the second row seats, using the remote control, set the video to play from the head unit source and set the headphones to channel one.
5. Students in the third row seats, using the remote control, set the video to the DVD/Blu-ray with audio going through channel two of the headphones.
6. Now, reverse the order. The third row should change the video to satellite radio. The second row should change the video from the head unit to the DVD/Blu-ray player. The front row should play the video from the head unit on the head unit display.
7. Continue discovery of all the different options and configurations the video entertainment system has to offer.
8. Connect each set of headphones to its selected video screen.
9. Does the front media center head unit play AM/FM through the compartment speakers?
10. Is rear video one playing through the head phones?
11. Is rear video two playing music through the head phones?
VES System Operation

12. While wearing the headset and sitting in the rear seats, toggle through the different media functions using the remote control for video screen two.

13. Were you able to listen to different audio channels without disturbing video screen one?

14. While wearing the headset and sitting in the middle seats, toggle through the different media functions using the remote control for video screen one.

15. Were you able to listen to different audio channels without disturbing video screen two?
Notes:

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________

__________________________________________________________________________________
The special service tools referred to herein are required for certain service operations. These special service tools or their equivalent, if not obtainable through a local source, are available through the following outlet:

Mopar Essential Tools and Service Equipment
Snap-on Business Solutions

Telephone 1-855-298-2687          2801-80th Street Kenosha, WI 53143, U.S.A.          FAX 1-855-303-8985

www.mopaessentialtools.com