NAVIGATION/TELECOMMUNICATION

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NAVIGATION/TELECOMMUNICATION - ELECTRICAL DIAGNOSTICS

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NAVIGATION/TELECOMMUNICATION - ELECTRICAL DIAGNOSTICS

DIAGNOSIS AND TESTING

AMP MESSAGE NOT RECEIVED

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module does not receive the PCI Bus message from the Amplifier.

Possible Causes
LOST COMMUNICATION WITH AMPLIFIER
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE AMPLIFIER

Turn the ignition on.
With the DRB, attempt to communicate with the Amplifier.

Was the DRB able to communicate with the Amplifier?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. ERASE DTC AND ATTEMPT TO RESET

With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

AUDIO HARDWARE MESSAGE NOT RECEIVED

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module does not receive the PCI Bus message from the radio indicating what kind of radio the vehicle is equipped with.

Possible Causes
LOST COMMUNICATION WITH RADIO
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE RADIO

Turn the ignition on.
Turn the radio on.
With the DRB, attempt to communicate with the radio.

Was the DRB able to communicate with the radio?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. ERASE DTC AND ATTEMPT TO RESET

With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

BLUETOOTH ERROR

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a fault during an internal diagnostic check.

Possible Causes
HANDS FREE MODULE

Diagnostic Test

1. ERASE DTC AND ATTEMPT TO RESET

Turn the ignition on.
With the DRB, read and record the HFM DTC's and then erase the DTC's.
Perform 5 ignition key cycles, leaving the ignition key on for a minimum of 90 seconds per cycle.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

BODY STYLE MESSAGE NOT RECEIVED

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module does not receive the body style message from the PCM.

Possible Causes
LOST COMMUNICATION WITH PCM
PCM NOT ACTIVE ON THE PCI BUS
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE PCM

Turn the ignition on.
With the DRB, attempt to communicate with the PCM.

Was the DRB able to communicate with the PCM?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. CHECK PCM ACTIVITY ON THE PCI BUS

With the DRB, select System Monitors then J1850 Module Scan.

Does the DRB indicated that the PCM is present or active on the PCI Bus?

Yes >> Go To 3

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

3. ERASE DTC AND ATTEMPT TO RESET

With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

FLASH CHECKSUM ERROR

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a fault during an internal diagnostic check.

Possible Causes
HANDS FREE MODULE

Diagnostic Test

1. ERASE DTC AND ATTEMPT TO RESET

Turn the ignition on.
With the DRB, read and record the HFM DTC's and then erase the DTC's.
Perform 5 ignition key cycles, leaving the ignition key on for a minimum of 90 seconds per cycle.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

FLASH WRITE ERROR

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a fault during an internal diagnostic check.

Possible Causes
HANDS FREE MODULE

Diagnostic Test

1. ERASE DTC AND ATTEMPT TO RESET

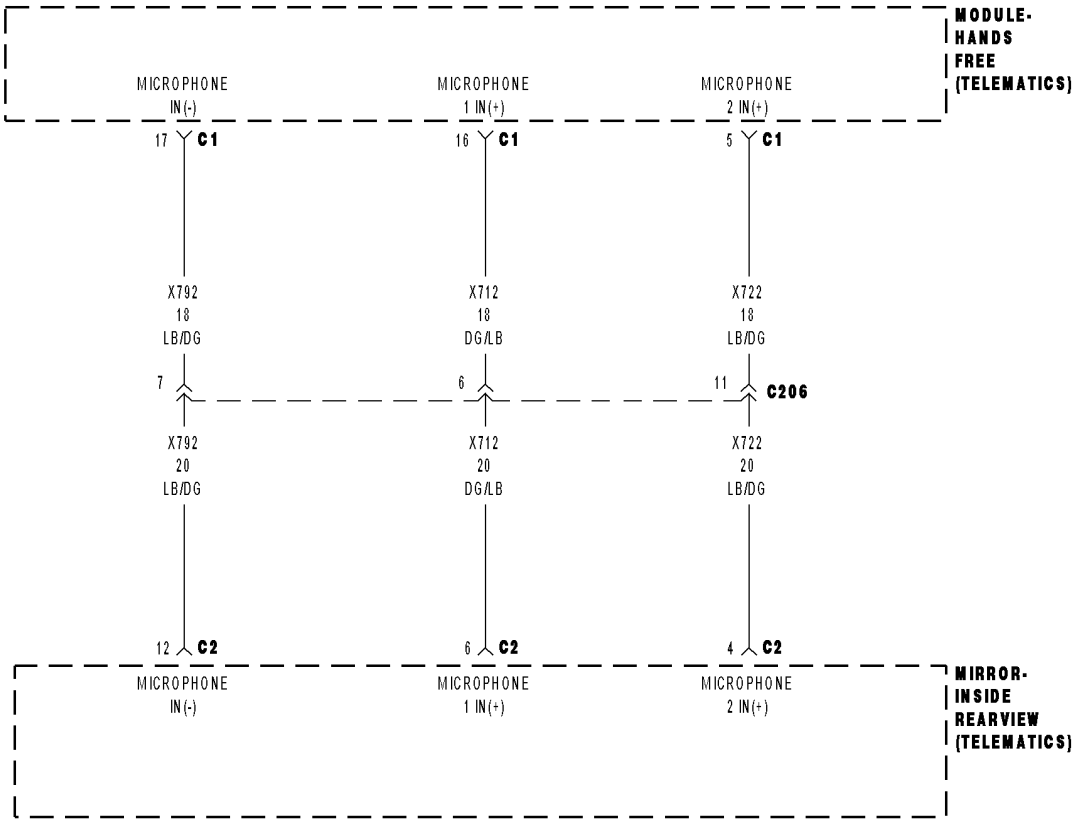
Turn the ignition on.
With the DRB, read and record the HFM DTC's and then erase the DTC's.
Perform 5 ignition key cycles, leaving the ignition key on for a minimum of 90 seconds per cycle.
With the DRB, read the HFM DTC's.

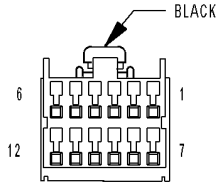
Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

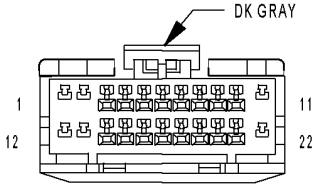
No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

GENERAL MICROPHONE FAULT





MIRROR-
INSIDE
REARVIEW C2
(TELEMATICS)



MODULE-
HANDS FREE C1
(TELEMATICS)

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GENERAL MICROPHONE FAULT (CONTINUED)
For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a fault in any of the microphone circuits.

Possible Causes
(X712) MICROPHONE 1 IN (+) CIRCUIT OPEN
(X722) MICROPHONE 2 IN (+) CIRCUIT OPEN
(X792) MICROPHONE IN (-) CIRCUIT OPEN
(X712) (X722) (X792) MICROPHONE CIRCUITS SHORTED TO GROUND
(X712) (X722) (X792) MICROPHONE CIRCUITS SHORTED TO VOLTAGE
(X712) (X722) (X792) MICROPHONE CIRCUITS SHORTED TOGETHER
INSIDE REARVIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.
With the DRB, read and record the HFM DTC's and then erase the DTC's.
Attempt to make a phone call with the system.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

GENERAL MICROPHONE FAULT (CONTINUED)

2. (X712) MICROPHONE 1 IN (+) CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

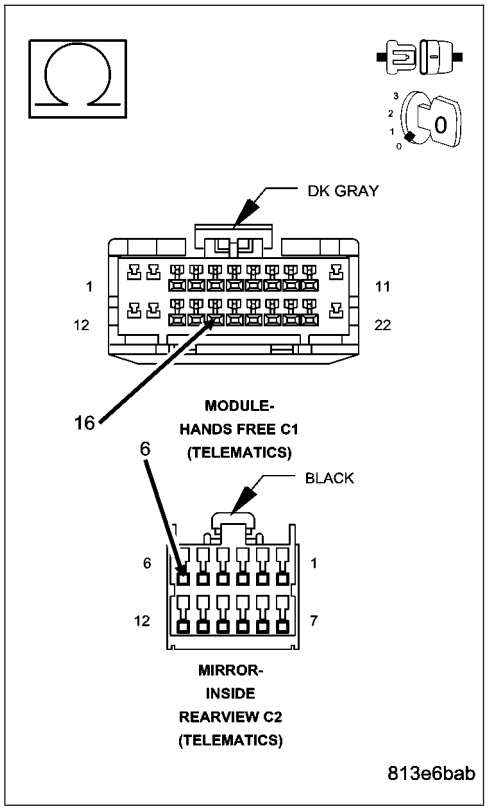
Disconnect the Inside Rearview Mirror C2 harness connector.

Measure the resistance of the (X712) Microphone 1 IN (+) circuit between the HFM connector and the Inside Rearview Mirror connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X712) Microphone 1 IN (+) circuit for an open. Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



GENERAL MICROPHONE FAULT (CONTINUED)

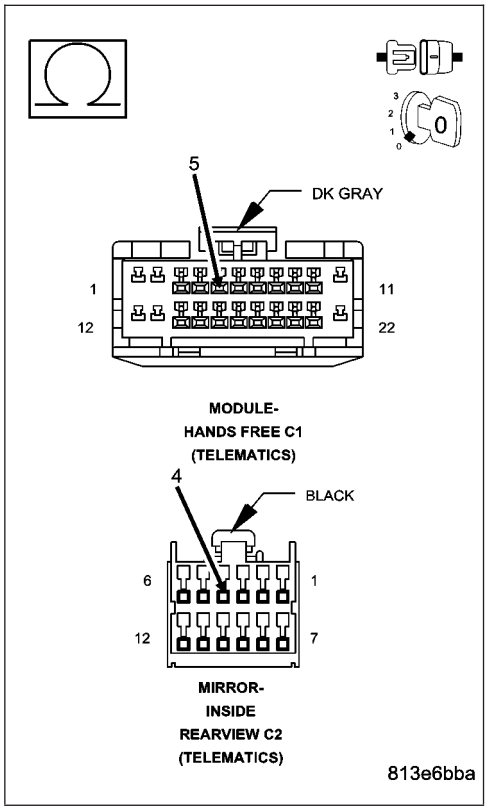
3. (X722) MICROPHONE 2 IN (+) CIRCUIT OPEN

Measure the resistance of the (X722) Microphone 2 IN (+) circuit between the HFM connector and the Inside Rearview Mirror connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 4

No >> Repair the (X722) Microphone 2 IN (+) circuit for an open. Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



GENERAL MICROPHONE FAULT (CONTINUED)

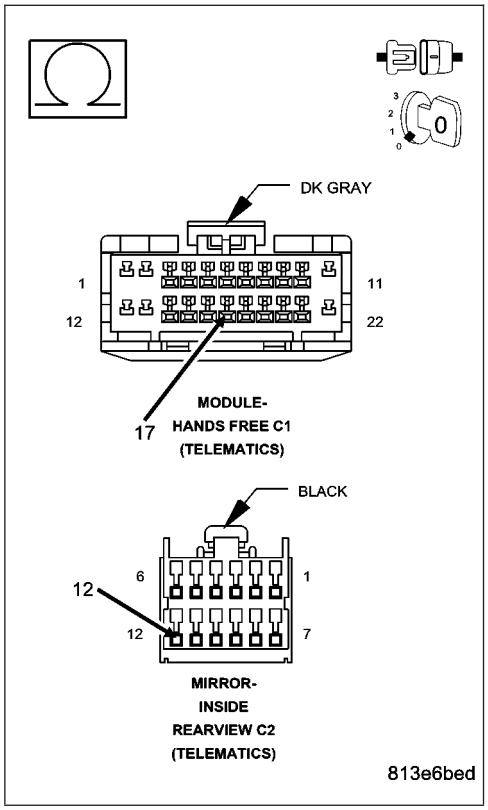
4. (X792) MICROPHONE IN (-) CIRCUIT OPEN

Measure the resistance of the (X792) Microphone IN (-) circuit between the HFM connector and the Inside Rearview Mirror connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 5

No >> Repair the (X792) Microphone IN (-) circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



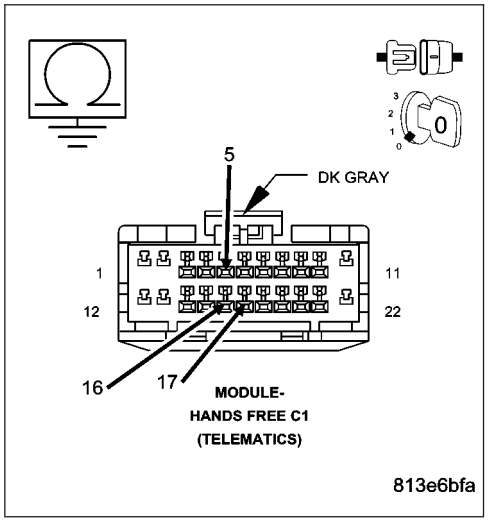
5. (X712) (X722) (X792) MICROPHONE CIRCUITS SHORTED TO GROUND

Measure the resistance between ground and each (X712) (X722) (X792) Microphone circuit.

Is the resistance below 100.0 ohms?

Yes >> Repair the Microphone circuit that measured below 100.0 ohms for short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 6

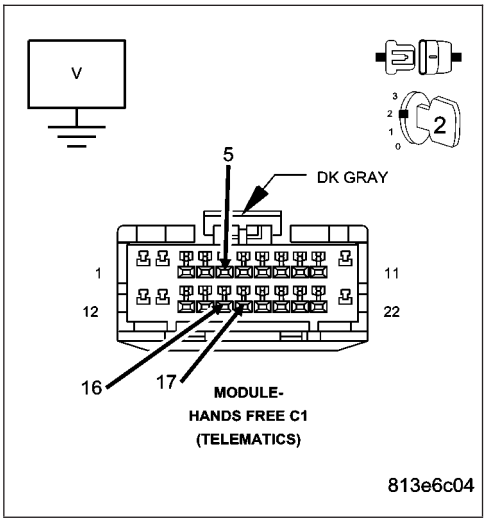


GENERAL MICROPHONE FAULT (CONTINUED)

6. (X712) (X722) (X792) MICROPHONE CIRCUITS SHORTED TO VOLTAGE

Turn the ignition on.

Measure the voltage of each (X712) (X722) (X792) Microphone circuit.



Is the voltage above 1.0 volt?

Yes >> Repair the Microphone circuit that measured above 1.0 volt for short to voltage.

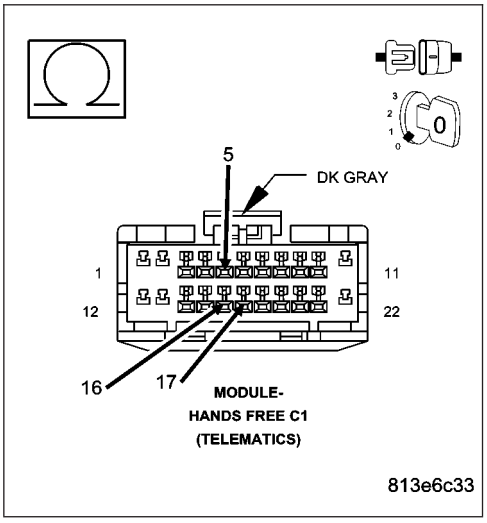
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 7

7. (X712) (X722) (X792) MICROPHONE CIRCUITS SHORTED TOGETHER

Turn the ignition off.

Measure the resistance between each (X712) (X722) (X792) Microphone circuit.



Is the resistance below 100.0 ohms?

Yes >> Repair the Microphone circuit that measured below 100.0 ohms for a short together.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 8

GENERAL MICROPHONE FAULT (CONTINUED)

8. INSIDE REARVIEW MIRROR

Replace the Inside Rearview Mirror in accordance with the service information.

Cycle the ignition switch from off to on at least 5 times, leaving the ignition on for a minimum of 90 seconds per cycle.

Attempt to make a phone call with the system.

With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Repair is complete.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

IGNITION POWER MESSAGE NOT RECEIVED

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module does not receive an ignition power status message from the Instrument Cluster (MIC).

Possible Causes
LOST COMMUNICATION WITH INSTRUMENT CLUSTER (MIC)
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE INSTRUMENT CLUSTER (MIC)

Turn the ignition on.
With the DRB, attempt to communicate with the MIC.

Was the DRB able to communicate with the MIC?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. ERASE DTC AND ATTEMPT TO RESET

With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

INVALID BODY STYLE

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module receives an invalid body style message from the PCM.

Possible Causes
LOST COMMUNICATION WITH PCM
PCM NOT ACTIVE ON THE PCI BUS
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE PCM

Turn the ignition on.
With the DRB, attempt to communicate with the PCM.

Was the DRB able to communicate with the PCM?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. CHECK PCM ACTIVITY ON THE PCI BUS

With the DRB, select System Monitors then J1850 Module Scan.

Does the DRB indicated that the PCM is present or active on the PCI Bus?

Yes >> Go To 3

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

3. ERASE DTC AND ATTEMPT TO RESET

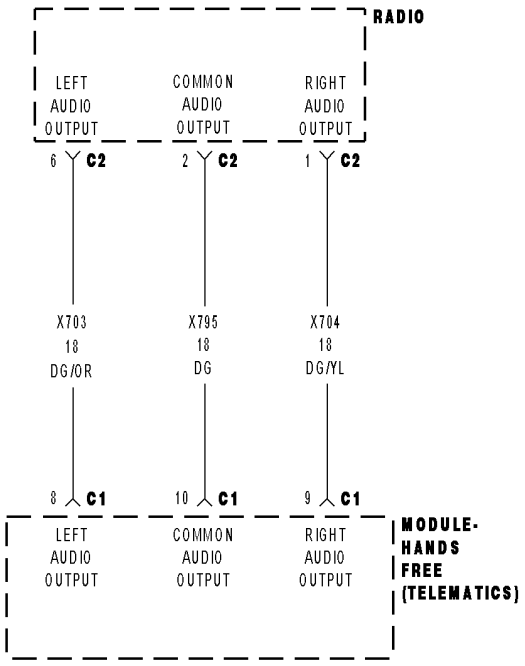
With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

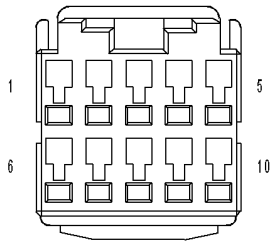
Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

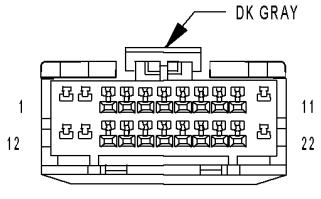
No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

LEFT AUDIO INPUT SHORT TO GROUND





RADIO C2



MODULE-HANDS FREE C1 (TELEMATICS)

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LEFT AUDIO INPUT SHORT TO GROUND (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects low voltage on the (X703) Left Audio Output circuit.

Possible Causes
(X703) LEFT AUDIO OUTPUT CIRCUIT OPEN
(X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO GROUND
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

LEFT AUDIO INPUT SHORT TO GROUND (CONTINUED)

2. (X703) LEFT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

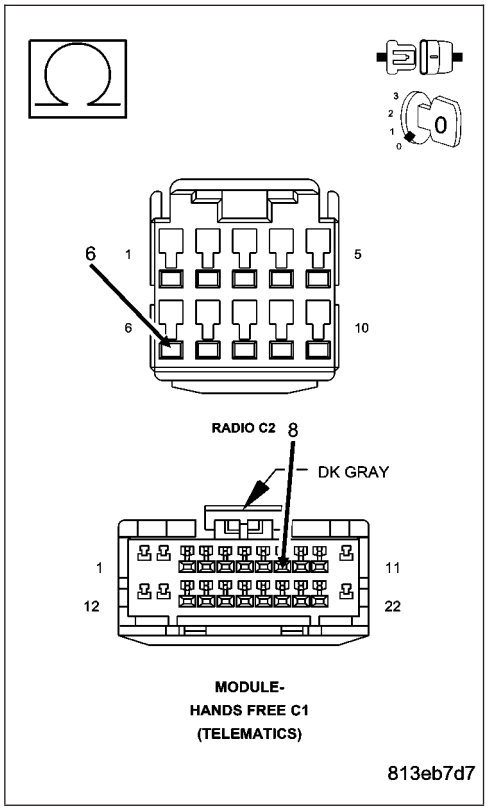
Disconnect the Radio C2 harness connector.

Measure the resistance of the (X703) Left Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X703) Left Audio Output circuit for an open
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



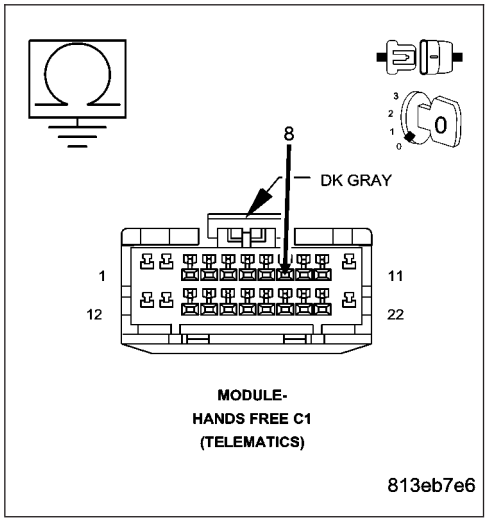
3. (X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO GROUND

Measure the resistance between ground and the (X703) Left Audio Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Repair the (X703) Left Audio Output circuit for short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 4



LEFT AUDIO INPUT SHORT TO GROUND (CONTINUED)

4. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

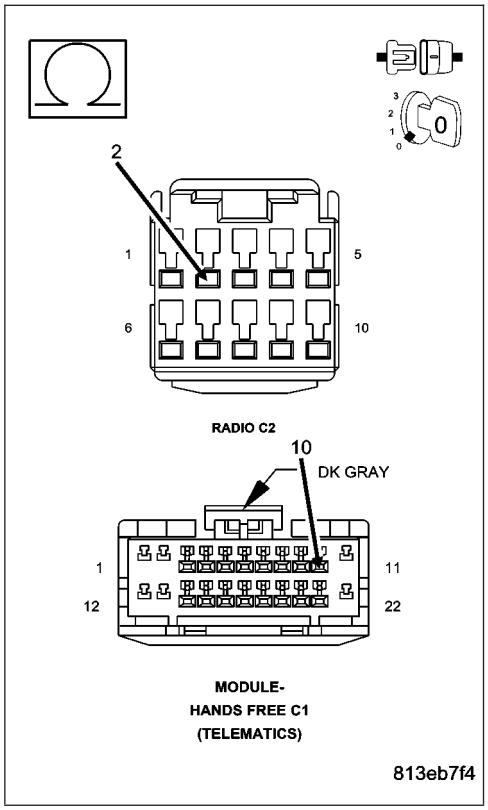
Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 5

No >> Repair the (X795) Common Audio Output circuit for an open.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



5. (X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT

Measure the resistance between the (X703) Left Audio Output circuit and the (X795) Common Audio Output circuit.

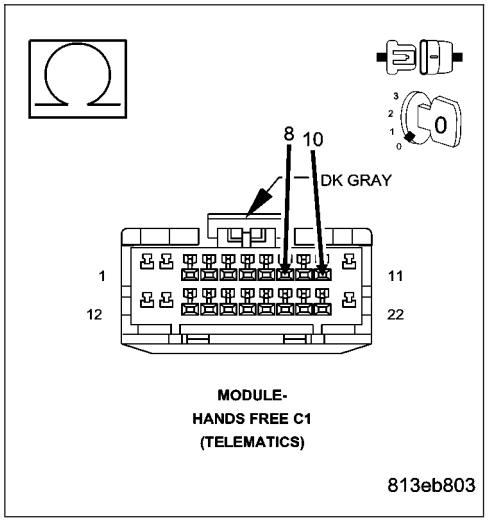
Is the resistance below 5.0 ohms?

Yes >> Repair the (X703) Left Audio Output circuit for a short to the (X795) Common Audio Output circuit.

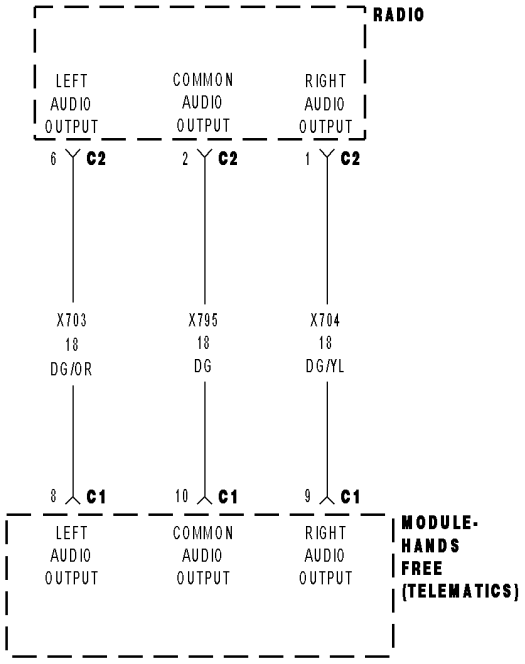
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

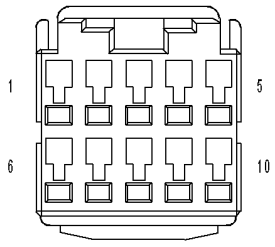
No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

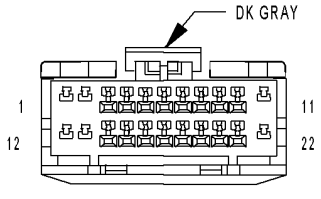


LEFT AUDIO INPUT SHORT TO VOLTAGE





RADIO C2



MODULE-HANDS FREE C1 (TELEMATICS)

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LEFT AUDIO INPUT SHORT TO VOLTAGE (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects high voltage on the (X703) Left Audio Output circuit.

Possible Causes
(X703) LEFT AUDIO OUTPUT CIRCUIT OPEN
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

LEFT AUDIO INPUT SHORT TO VOLTAGE (CONTINUED)

2. (X703) LEFT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

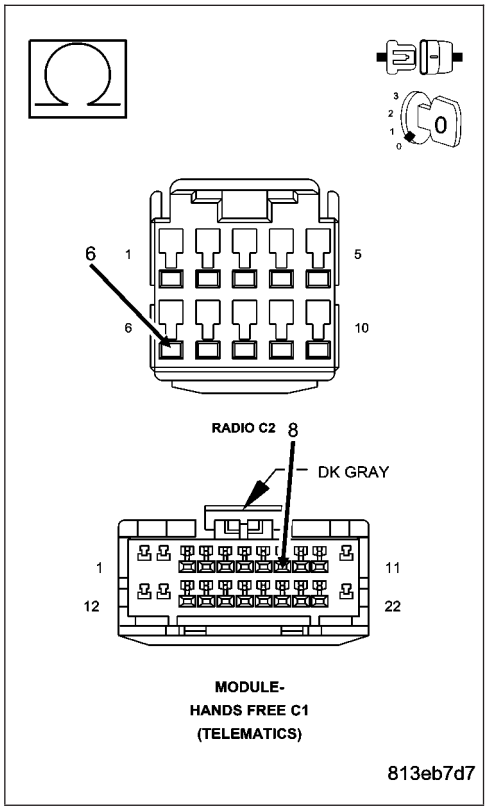
Disconnect the Radio C2 harness connector.

Measure the resistance of the (X703) Left Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X703) Left Audio Output circuit for an open
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



LEFT AUDIO INPUT SHORT TO VOLTAGE (CONTINUED)

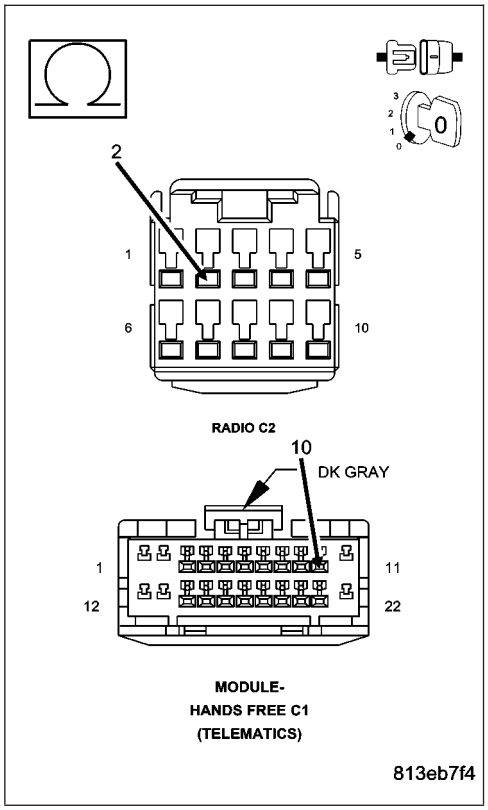
3. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 4

No >> Repair the (X795) Common Audio Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



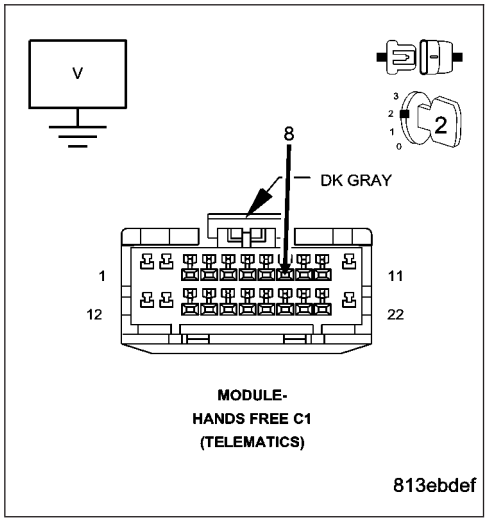
4. (X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE

Turn the ignition on.
Measure the voltage of the (X703) Left Audio Output circuit.

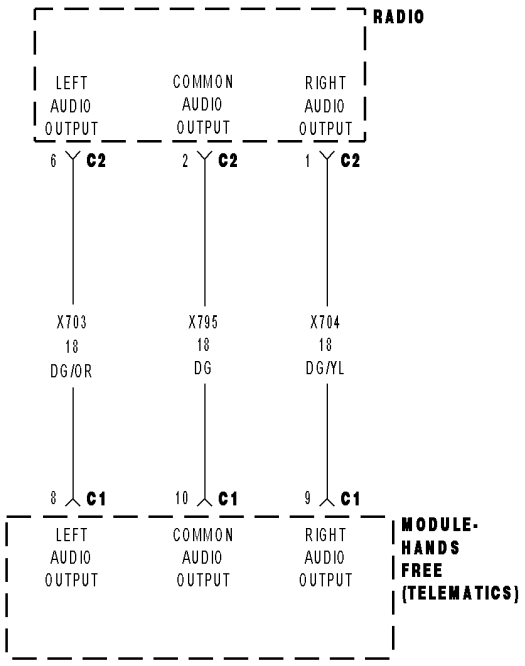
Is the voltage above 1.0 volts?

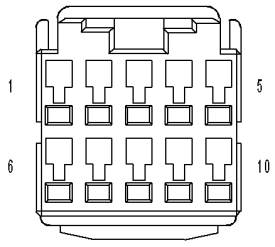
Yes >> Repair the (X703) Left Audio Output circuit for a short to voltage.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

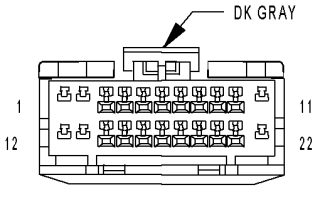


LEFT AUDIO OUTPUT 1 SHORT TO GROUND





RADIO C2



MODULE-HANDS FREE C1 (TELEMATICS)

813eb7cd

LEFT AUDIO OUTPUT 1 SHORT TO GROUND (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a short to ground on the (X703) Left Audio Output circuit.

Possible Causes
(X703) LEFT AUDIO OUTPUT CIRCUIT OPEN
(X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO GROUND
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

LEFT AUDIO OUTPUT 1 SHORT TO GROUND (CONTINUED)

2. (X703) LEFT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

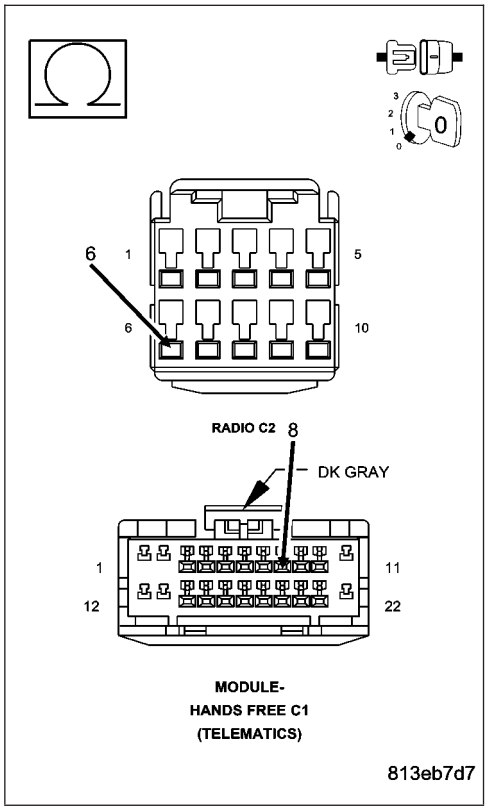
Disconnect the Radio C2 harness connector.

Measure the resistance of the (X703) Left Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X703) Left Audio Output circuit for an open
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



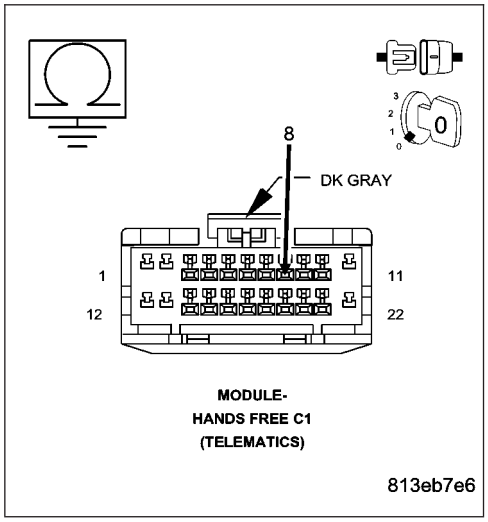
3. (X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO GROUND

Measure the resistance between ground and the (X703) Left Audio Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Repair the (X703) Left Audio Output circuit for short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 4



LEFT AUDIO OUTPUT 1 SHORT TO GROUND (CONTINUED)

4. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

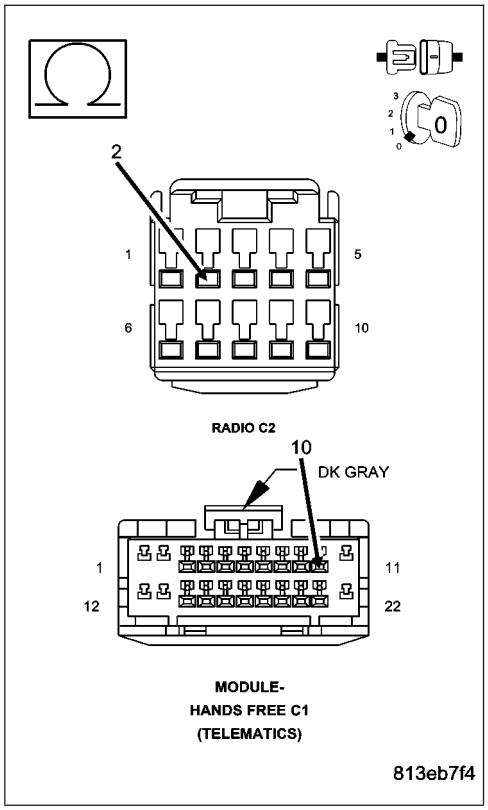
Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 5

No >> Repair the (X795) Common Audio Output circuit for an open.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



5. (X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT

Measure the resistance between the (X703) Left Audio Output circuit and the (X795) Common Audio Output circuit.

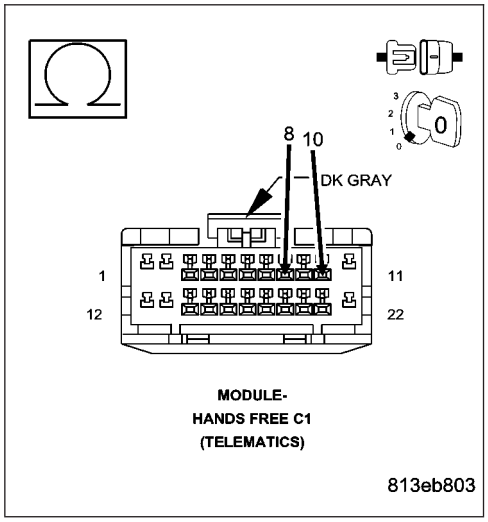
Is the resistance below 5.0 ohms?

Yes >> Repair the (X703) Left Audio Output circuit for a short to the (X795) Common Audio Output circuit.

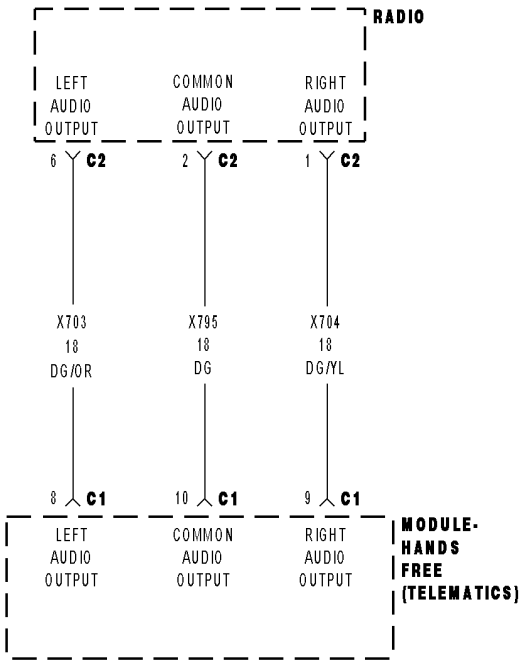
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

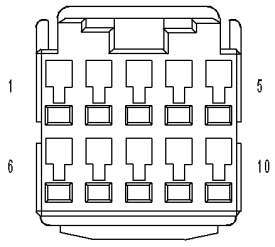
No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

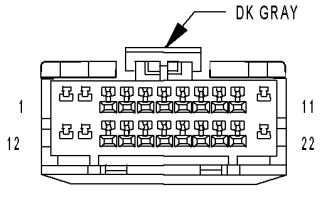


LEFT AUDIO OUTPUT 1 SHORT TO VOLTAGE





RADIO C2



MODULE-HANDS FREE C1 (TELEMATICS)

813eb7cd

LEFT AUDIO OUTPUT 1 SHORT TO VOLTAGE (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a short to voltage on the (X703) Left Audio Output circuit.

Possible Causes
(X703) LEFT AUDIO OUTPUT CIRCUIT OPEN
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

LEFT AUDIO OUTPUT 1 SHORT TO VOLTAGE (CONTINUED)

2. (X703) LEFT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

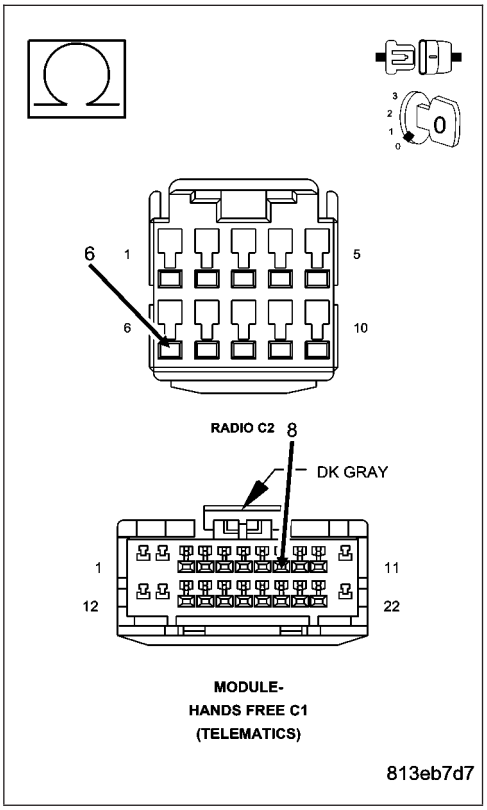
Disconnect the Radio C2 harness connector.

Measure the resistance of the (X703) Left Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X703) Left Audio Output circuit for an open
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



LEFT AUDIO OUTPUT 1 SHORT TO VOLTAGE (CONTINUED)

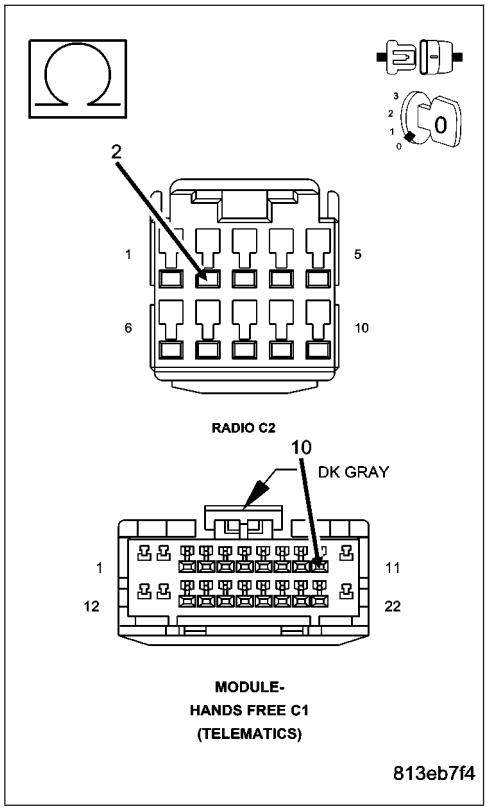
3. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 4

No >> Repair the (X795) Common Audio Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



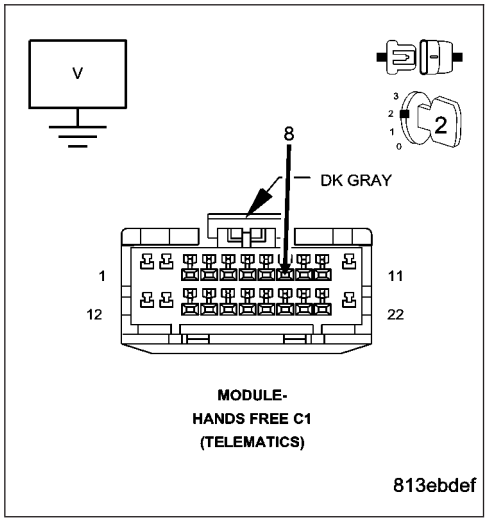
4. (X703) LEFT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE

Turn the ignition on.
Measure the voltage of the (X703) Left Audio Output circuit.

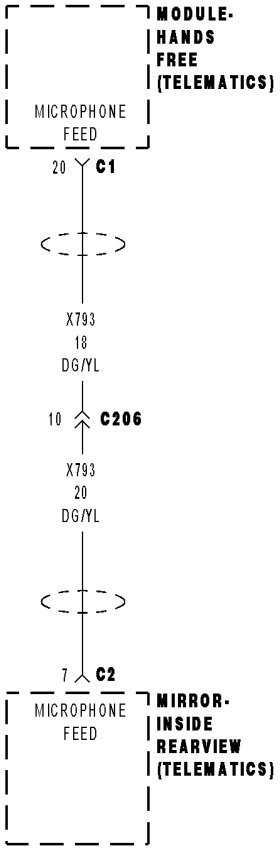
Is the voltage above 1.0 volts?

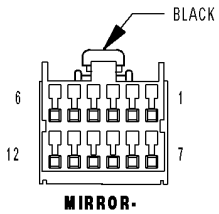
Yes >> Repair the (X703) Left Audio Output circuit for a short to voltage.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

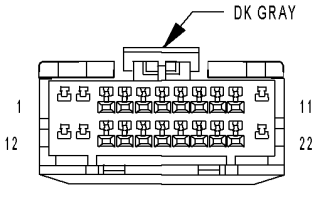


MIRROR POWER CIRCUIT SHORT TO GROUND





MIRROR-
INSIDE
REARVIEW C2
(TELEMATICS)



MODULE-
HANDS FREE C1
(TELEMATICS)

813ef5b1

MIRROR POWER CIRCUIT SHORT TO GROUND (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects low voltage on the (X793) Microphone Feed circuit.

Possible Causes
(X793) MICROPHONE FEED CIRCUIT OPEN
(X793) MICROPHONE FEED CIRCUIT SHORT TO GROUND
INSIDE REARVIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

MIRROR POWER CIRCUIT SHORT TO GROUND (CONTINUED)

2. (X793) MICROPHONE FEED CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

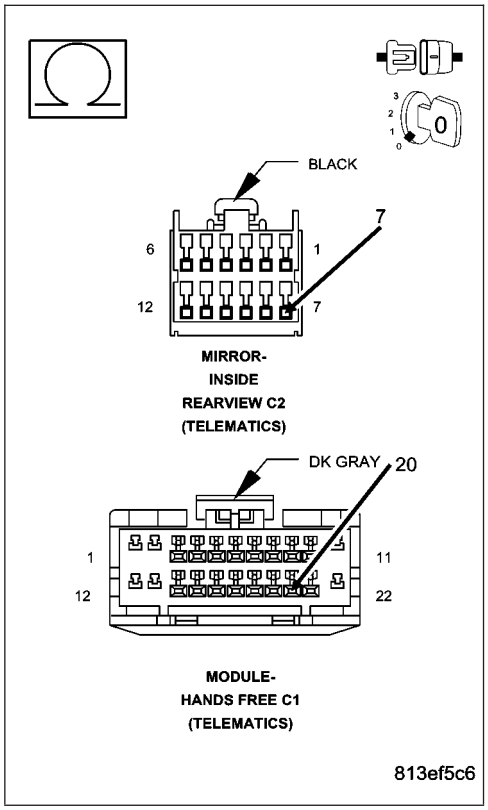
Disconnect the Inside Rearview Mirror C2 harness connector.

Measure the resistance of the (X793) Microphone Feed circuit between the HFM connector and the Inside Rearview Mirror connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X793) Microphone Feed circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



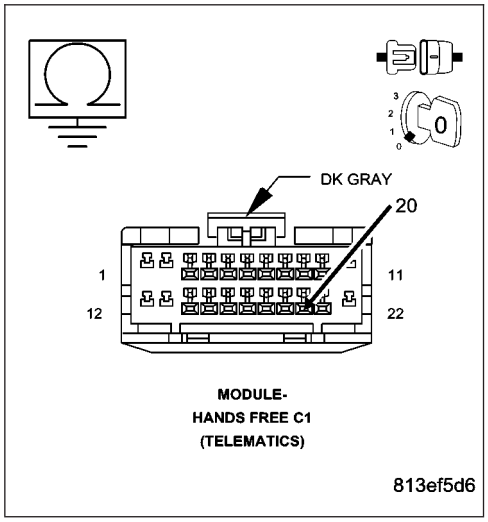
3. (X793) MICROPHONE FEED CIRCUIT SHORT TO GROUND

Measure the resistance between ground and the (X793) Microphone Feed circuit

Is the resistance below 100.0 ohms?

Yes >> Repair the (X793) Microphone Feed circuit for short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 4



MIRROR POWER CIRCUIT SHORT TO GROUND (CONTINUED)

4. INSIDE REARVIEW MIRROR

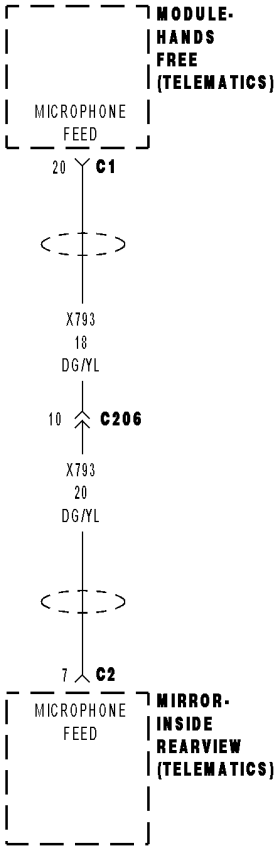
Replace the Inside Rearview Mirror in accordance with the service information.
Turn the ignition on.
With the DRB, erase the HFM DTCs.
Attempt to make a phone call using the system.
With the DRB, read the HFM DTCs.

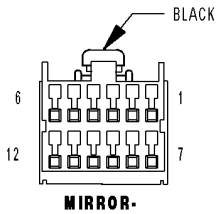
Did this DTC reset?

Yes >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

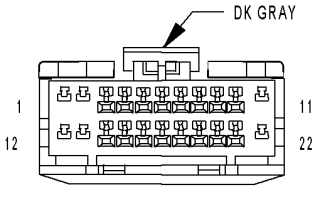
No >> Repair is complete.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

MIRROR POWER CIRCUIT SHORT TO VOLTAGE





MIRROR-
INSIDE
REARVIEW C2
(TELEMATICS)



MODULE-
HANDS FREE C1
(TELEMATICS)

813ef5b1

MIRROR POWER CIRCUIT SHORT TO VOLTAGE (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects high voltage on the (X793) Microphone Feed circuit.

Possible Causes
(X793) MICROPHONE FEED CIRCUIT OPEN
(X793) MICROPHONE FEED CIRCUIT SHORT TO VOLTAGE
INSIDE REARVIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

MIRROR POWER CIRCUIT SHORT TO VOLTAGE (CONTINUED)

2. (X793) MICROPHONE FEED CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

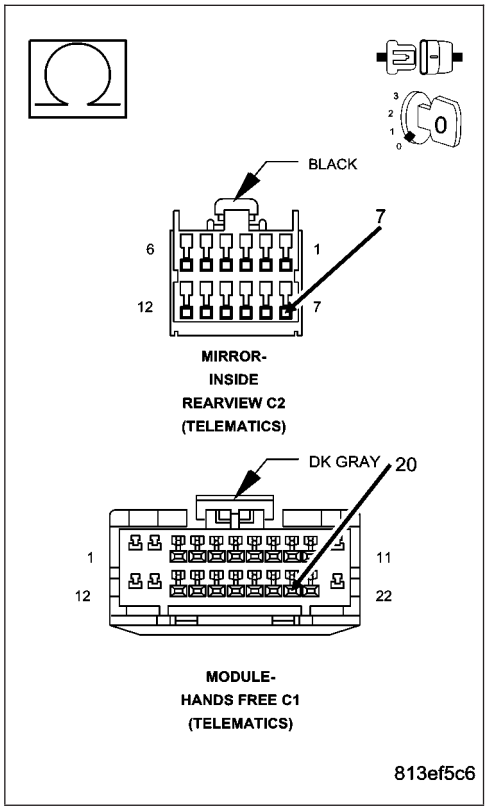
Disconnect the Inside Rearview Mirror C2 harness connector.

Measure the resistance of the (X793) Microphone Feed circuit between the HFM connector and the Inside Rearview Mirror connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X793) Microphone Feed circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



3. (X793) MICROPHONE FEED CIRCUIT SHORT TO VOLTAGE

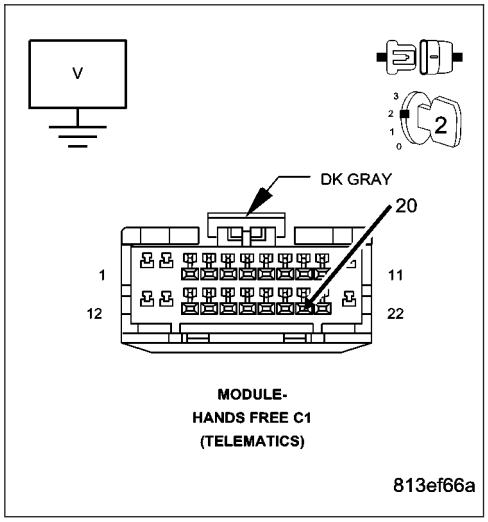
Turn the ignition on.

Measure the voltage of the (X793) Microphone Feed circuit.

Is the voltage above 1.0 volt?

Yes >> Repair the (X793) Microphone Feed circuit for short to voltage.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 4



MIRROR POWER CIRCUIT SHORT TO VOLTAGE (CONTINUED)

4. INSIDE REARVIEW MIRROR

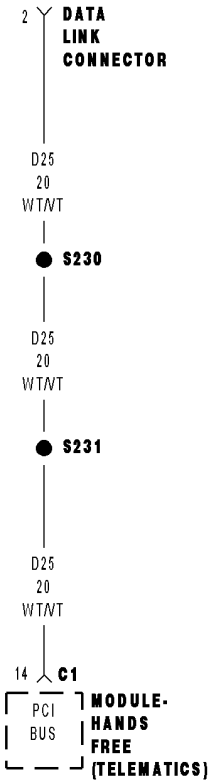
Replace the Inside Rearview Mirror in accordance with the service information.
Turn the ignition on.
With the DRB, erase the HFM DTCs.
Attempt to make a phone call using the system.
With the DRB, read the HFM DTCs.

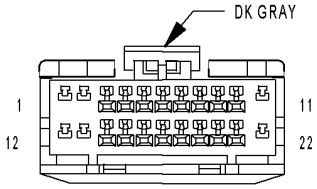
Did this DTC reset?

Yes >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

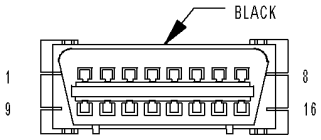
No >> Repair is complete.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

PCI BUS BUSY





MODULE- HANDS FREE C1 (TELEMATICS)



DATA LINK CONNECTOR

813c9046

PCI BUS BUSY (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detected a fault on the (D25) PCI Bus circuit.

Possible Causes
(D25) PCI BUS CIRCUIT FAULT
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR AN INTERMITTENT CONDITION

NOTE: For this code to be active, the DRBIII® will not be able to communicate with any modules on the vehicle (except the PCM/ECM).

NOTE: Clear the DTC. If this DTC continues to set and the DRBIII® can still communicate with the module, it will be necessary to replace the module.

NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.

With the engine running at normal operating temperature, wiggle the wiring harnesses. This is to try and duplicate the complete bus failure condition.

Refer to any Technical Service Bulletins (TSB) that may apply.

Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.

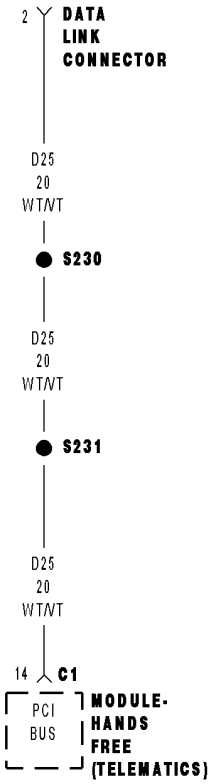
Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

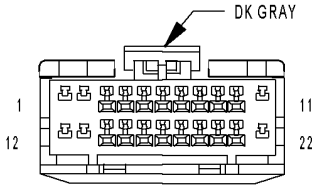
Were any of the above conditions present?

Yes >> Repair as necessary.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

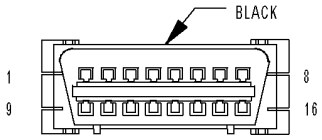
No >> Test complete.

PCI BUS CIRCUIT OPEN





MODULE-HANDS FREE C1 (TELEMATICS)



DATA LINK CONNECTOR

813c9046

PCI BUS CIRCUIT OPEN (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detected an open on the (D25) PCI Bus circuit.

Possible Causes
(D25) PCI BUS CIRCUIT OPEN
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR AN INTERMITTENT CONDITION

NOTE: For this code to be active, the DRBIII® will not be able to communicate with any modules on the vehicle (except the PCM/ECM).

NOTE: Clear the DTC. If this DTC continues to set and the DRBIII® can still communicate with the module, it will be necessary to replace the module.

NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.

With the engine running at normal operating temperature, wiggle the wiring harnesses. This is to try and duplicate the complete bus failure condition.

Refer to any Technical Service Bulletins (TSB) that may apply.

Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.

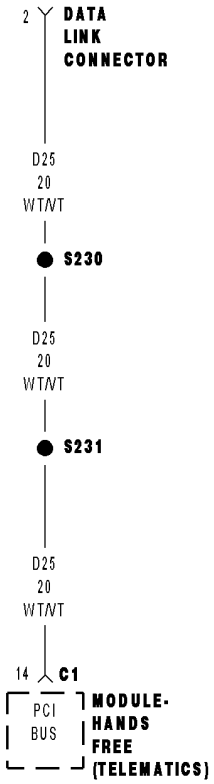
Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

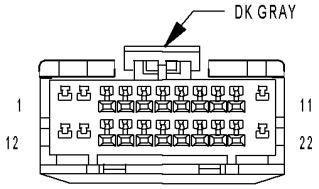
Were any of the above conditions present?

Yes >> Repair as necessary.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

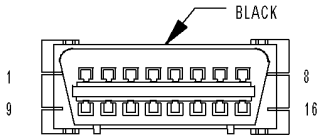
No >> Test complete.

PCI BUS CIRCUIT SHORT TO GROUND





MODULE-
HANDS FREE C1
(TELEMATICS)



DATA LINK
CONNECTOR

813e9046

PCI BUS CIRCUIT SHORT TO GROUND (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detected a short to ground on the (D25) PCI Bus circuit.

Possible Causes
(D25) PCI BUS CIRCUIT SHORTED TO GROUND
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR AN INTERMITTENT CONDITION

NOTE: For this code to be active, the DRBIII® will not be able to communicate with any modules on the vehicle (except the PCM/ECM).

NOTE: Clear the DTC. If this DTC continues to set and the DRBIII® can still communicate with the module, it will be necessary to replace the module.

NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.

With the engine running at normal operating temperature, wiggle the wiring harnesses. This is to try and duplicate the complete bus failure condition.

Refer to any Technical Service Bulletins (TSB) that may apply.

Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.

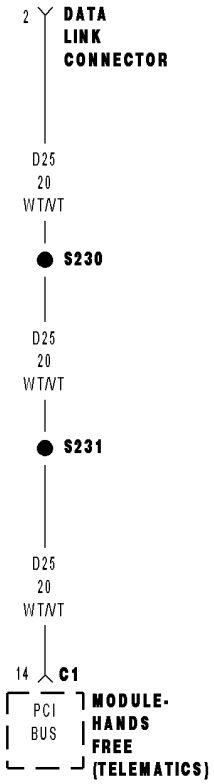
Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

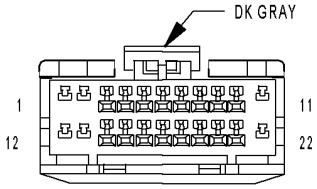
Were any of the above conditions present?

Yes >> Repair as necessary.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

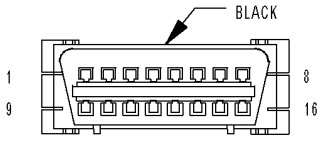
No >> Test complete.

PCI BUS CIRCUIT SHORT TO VOLTAGE





MODULE-
HANDS FREE C1
(TELEMATICS)



DATA LINK
CONNECTOR

813c9046

PCI BUS CIRCUIT SHORT TO VOLTAGE (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detected a short to voltage on the (D25) PCI Bus circuit.

Possible Causes
(D25) PCI BUS CIRCUIT SHORTED TO VOLTAGE
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR AN INTERMITTENT CONDITION

NOTE: For this code to be active, the DRBIII® will not be able to communicate with any modules on the vehicle (except the PCM/ECM).

NOTE: Clear the DTC. If this DTC continues to set and the DRBIII® can still communicate with the module, it will be necessary to replace the module.

NOTE: The conditions that set the DTC are not present at this time. The following list may help in identifying the intermittent condition.

With the engine running at normal operating temperature, wiggle the wiring harnesses. This is to try and duplicate the complete bus failure condition.

Refer to any Technical Service Bulletins (TSB) that may apply.

Visually inspect the related wiring harness. Look for any chafed, pierced, pinched, or partially broken wires.

Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

Were any of the above conditions present?

Yes >> Repair as necessary.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Test complete.

PCI BUS INTERNAL ERROR

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a fault during an internal diagnostic check.

Possible Causes
HANDS FREE MODULE

Diagnostic Test

1. ERASE DTC AND ATTEMPT TO RESET

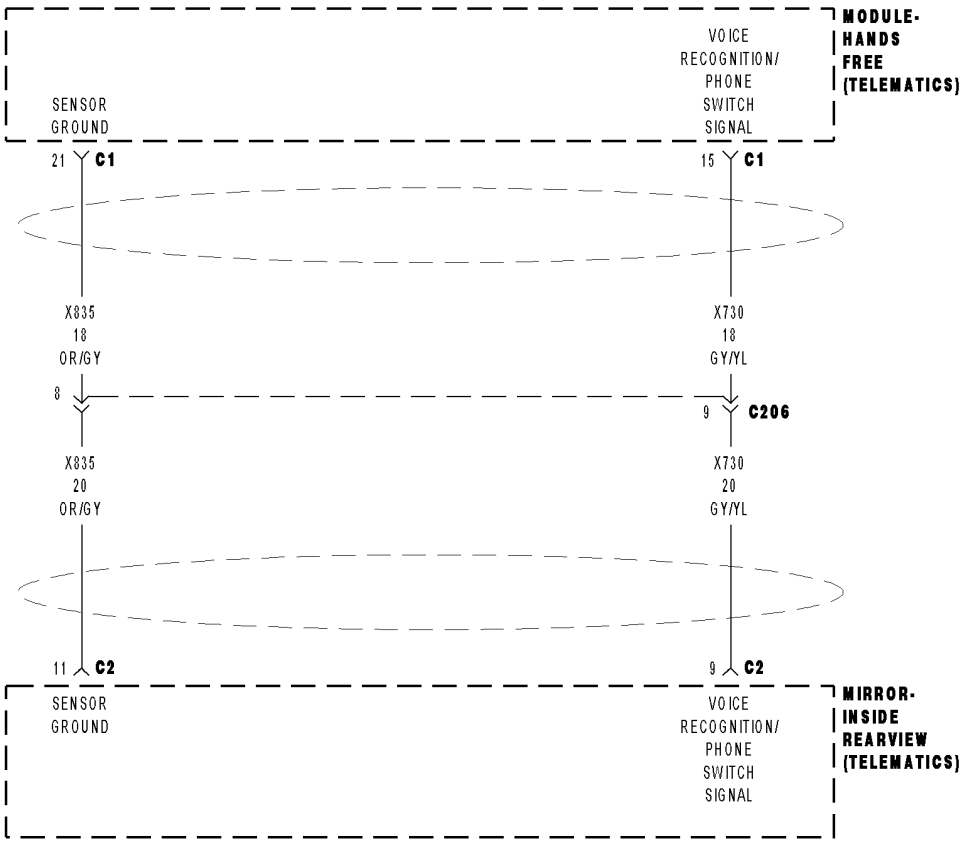
Turn the ignition on.
With the DRB, read and record the HFM DTC's and then erase the DTC's.
Perform 5 ignition key cycles, leaving the ignition key on for a minimum of 90 seconds per cycle.
With the DRB, read the HFM DTC's.

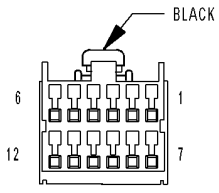
Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

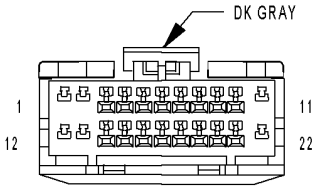
No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

PHONE SWITCH STUCK





MIRROR-
INSIDE
REARVIEW C2
(TELEMATICS)



MODULE-
HANDS FREE C1
(TELEMATICS)

81310da8

PHONE SWITCH STUCK (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects voltage between 2.8 volts and 3.3 volts on the (X730) Voice Recognition/ Phone Switch Signal circuit for more than 30 seconds.

Possible Causes
INSIDE REARVIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTCS

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

---

2. CHECK THE VOLTAGE OF THE (X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL

Turn the ignition off.

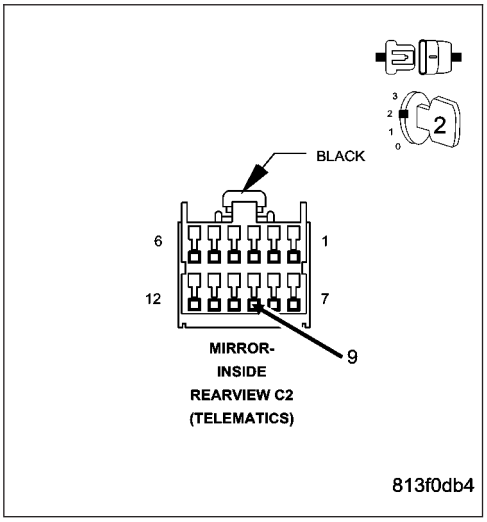
Disconnect the Inside Rearview Mirror C2 harness connector.

Turn the ignition on.

With the DRB, monitor the VR Phone Switch voltage.

While monitoring the VR Phone Switch voltage, momentarily connect a jumper wire between (X730) Voice Recognition/Phone Switch Signal circuit and ground.

NOTE: The sensor voltage should switch from above 4.7 volts when the jumper is not connected to below 0.6 volts when the jumper is connected.



Does the sensor voltage switch from above 4.7 volts to below 0.6 volt as described?

Yes >> Replace the Inside Rearview Mirror in accordance with the service information.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

PRNDL MESSAGE NOT RECEIVED

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module does not receive a gear selector message from the TCM

Possible Causes
LOST COMMUNICATION WITH TCM
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE TCM

Turn the ignition on.
Turn the radio on.
With the DRB, attempt to communicate with the TCM.

Was the DRB able to communicate with the TCM?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. ERASE DTC AND ATTEMPT TO RESET

With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

RADIO MESSAGE NOT RECEIVED

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module does not receive a message from the radio.

Possible Causes
LOST COMMUNICATION WITH RADIO
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE RADIO

Turn the ignition on.
Turn the radio on.
With the DRB, attempt to communicate with the radio.

Was the DRB able to communicate with the radio?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. ERASE DTC AND ATTEMPT TO RESET

With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

RAM WRITE ERROR

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a fault during an internal diagnostic check.

Possible Causes
HANDS FREE MODULE

Diagnostic Test

1. ERASE DTC AND ATTEMPT TO RESET

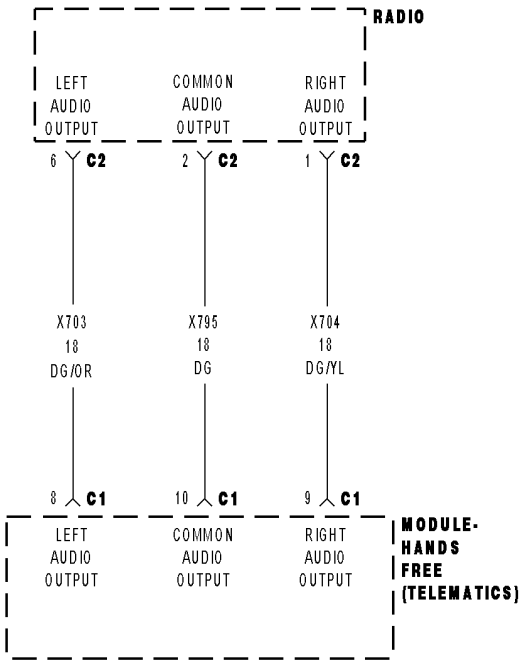
Turn the ignition on.
With the DRB, read and record the HFM DTC's and then erase the DTC's.
Perform 5 ignition key cycles, leaving the ignition key on for a minimum of 90 seconds per cycle.
With the DRB, read the HFM DTC's.

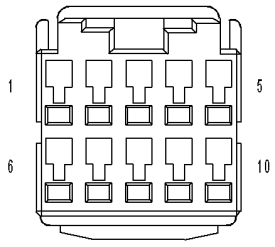
Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

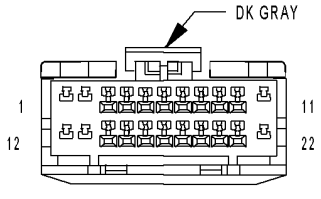
No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

RIGHT AUDIO INPUT SHORT TO GROUND





RADIO C2



MODULE-HANDS FREE C1 (TELEMATICS)

813eb7cd

RIGHT AUDIO INPUT SHORT TO GROUND (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects low voltage on the (X704) Right Audio Output circuit.

Possible Causes
(X704) RIGHT AUDIO OUTPUT CIRCUIT OPEN
(X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO GROUND
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

RIGHT AUDIO INPUT SHORT TO GROUND (CONTINUED)

2. (X704) RIGHT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

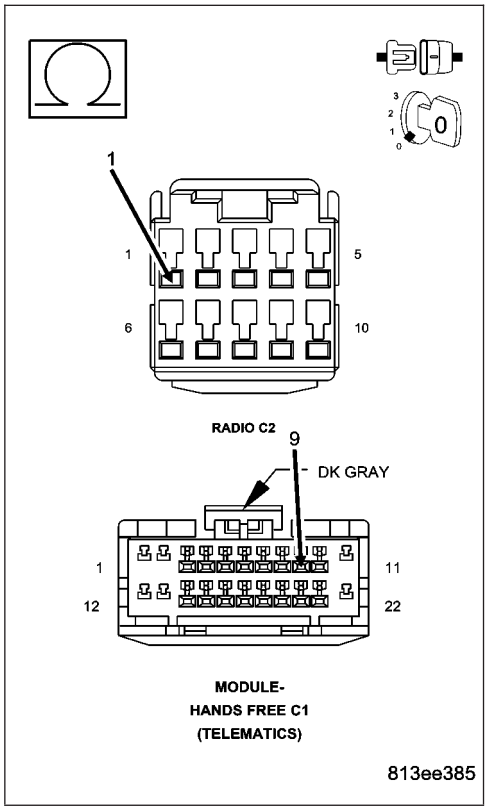
Disconnect the Radio C2 harness connector.

Measure the resistance of the (X704) Right Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X704) Right Audio Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



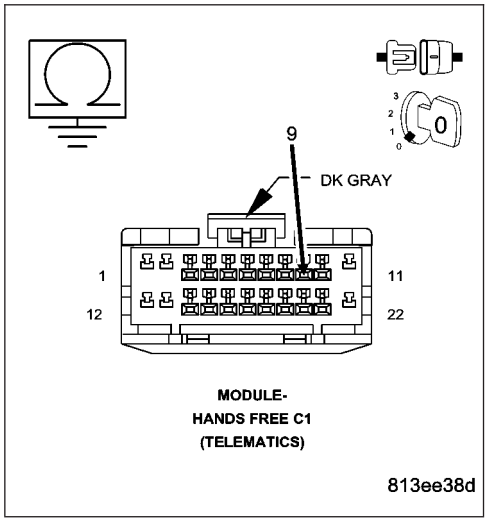
3. (X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO GROUND

Measure the resistance between ground and the (X704) Right Audio Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Repair the (X704) Right Audio Output circuit for short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 4



RIGHT AUDIO INPUT SHORT TO GROUND (CONTINUED)

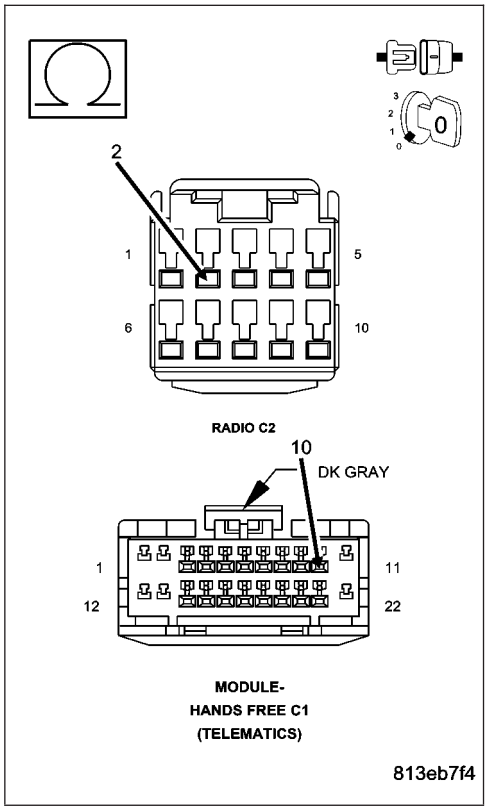
4. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 5

No >> Repair the (X795) Common Audio Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



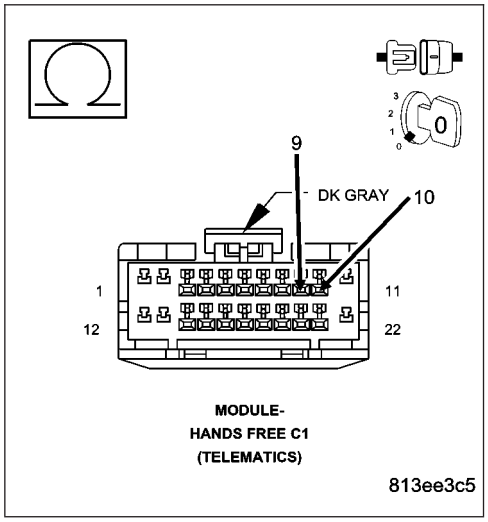
5. (X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT

Measure the resistance between the (X704) Right Audio Output circuit and the (X795) Common Audio Output circuit.

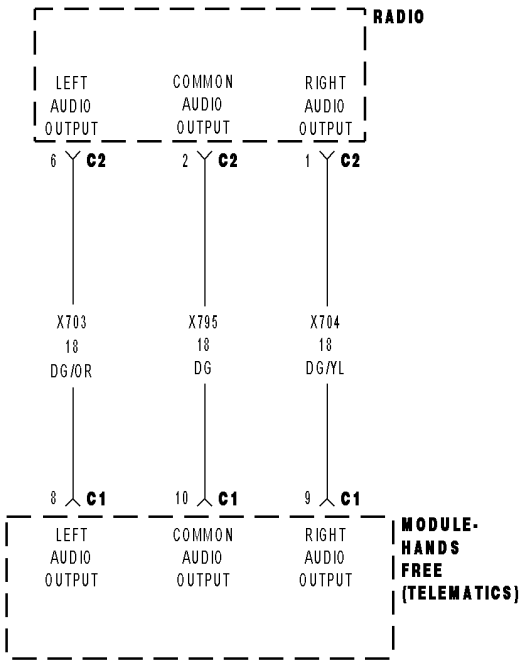
Is the resistance below 5.0 ohms?

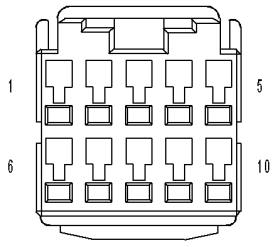
Yes >> Repair the (X704) Right Audio Output circuit for a short to the (X795) Common Audio Output circuit.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

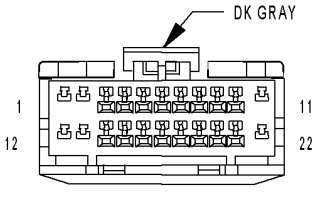


RIGHT AUDIO INPUT SHORT TO VOLTAGE





RADIO C2



MODULE-HANDS FREE C1 (TELEMATICS)

813eb7cd

RIGHT AUDIO INPUT SHORT TO VOLTAGE (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects high voltage on the (X704) Right Audio Output circuit.

Possible Causes
(X704) RIGHT AUDIO OUTPUT CIRCUIT OPEN
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

RIGHT AUDIO INPUT SHORT TO VOLTAGE (CONTINUED)

2. (X704) RIGHT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

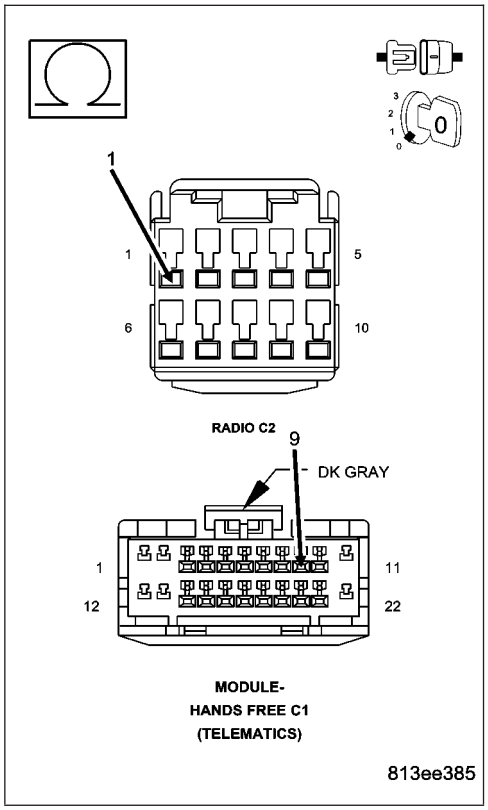
Disconnect the Radio C2 harness connector.

Measure the resistance of the (X704) Right Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X704) Right Audio Output circuit for an open
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



RIGHT AUDIO INPUT SHORT TO VOLTAGE (CONTINUED)

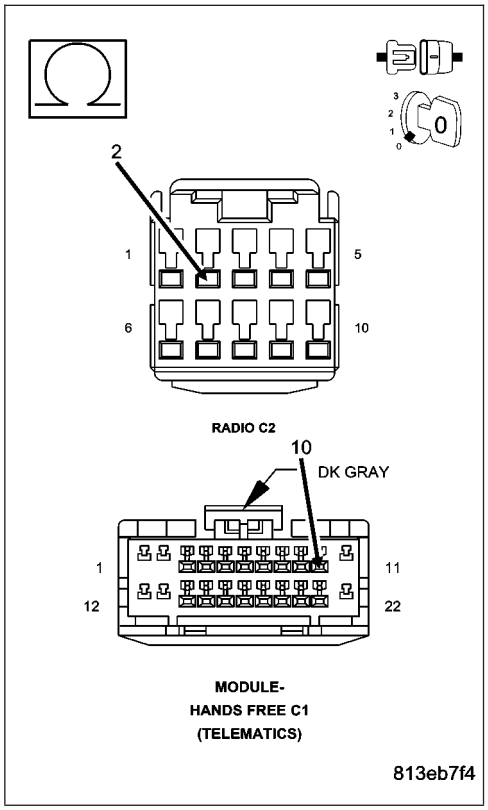
3. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 4

No >> Repair the (X795) Common Audio Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



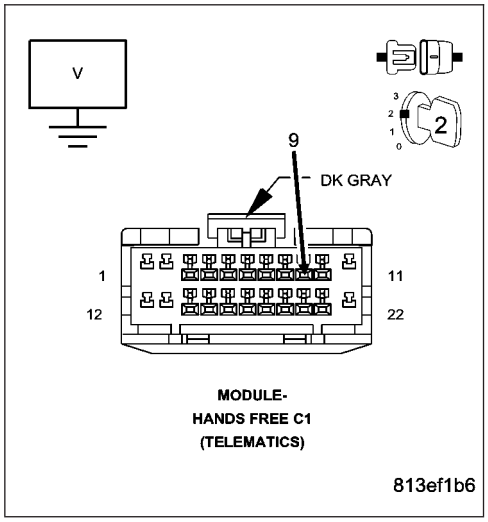
4. (X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE

Turn the ignition on.
Measure the voltage of the (X704) Right Audio Output circuit.

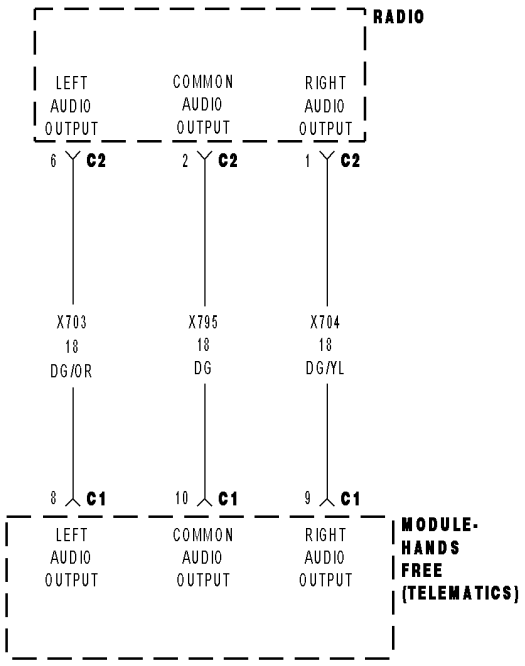
Is the voltage above 1.0 volts?

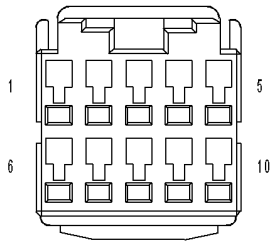
Yes >> Repair the (X704) Right Audio Output circuit for a short to voltage.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

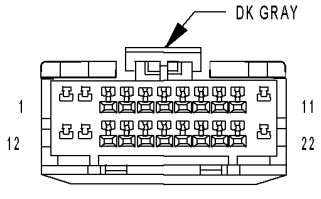


RIGHT AUDIO OUTPUT 1 SHORT TO GROUND





RADIO C2



MODULE-HANDS FREE C1 (TELEMATICS)

813eb7cd

RIGHT AUDIO OUTPUT 1 SHORT TO GROUND (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a short to ground on the (X704) Right Audio Output circuit.

Possible Causes
(X704) RIGHT AUDIO OUTPUT CIRCUIT OPEN
(X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO GROUND
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

RIGHT AUDIO OUTPUT 1 SHORT TO GROUND (CONTINUED)

2. (X704) RIGHT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

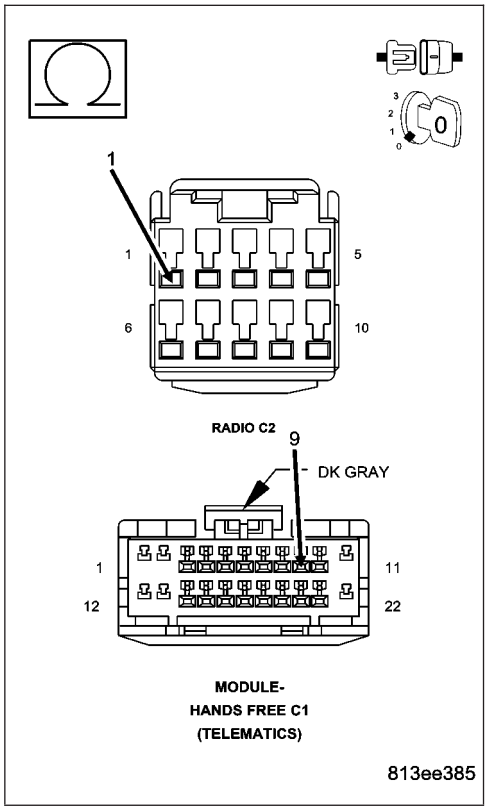
Disconnect the Radio C2 harness connector.

Measure the resistance of the (X704) Right Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X704) Right Audio Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



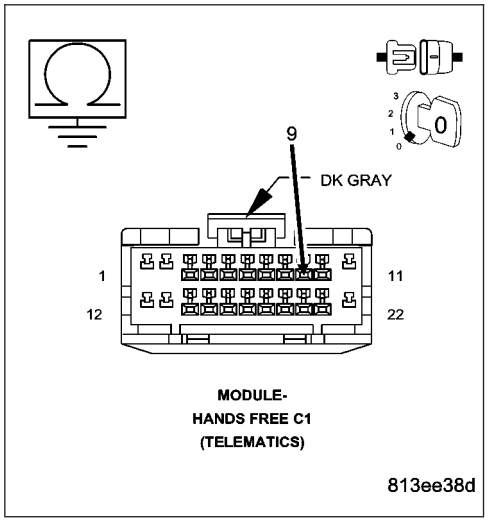
3. (X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO GROUND

Measure the resistance between ground and the (X704) Right Audio Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Repair the (X704) Right Audio Output circuit for short to ground.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 4



RIGHT AUDIO OUTPUT 1 SHORT TO GROUND (CONTINUED)

4. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

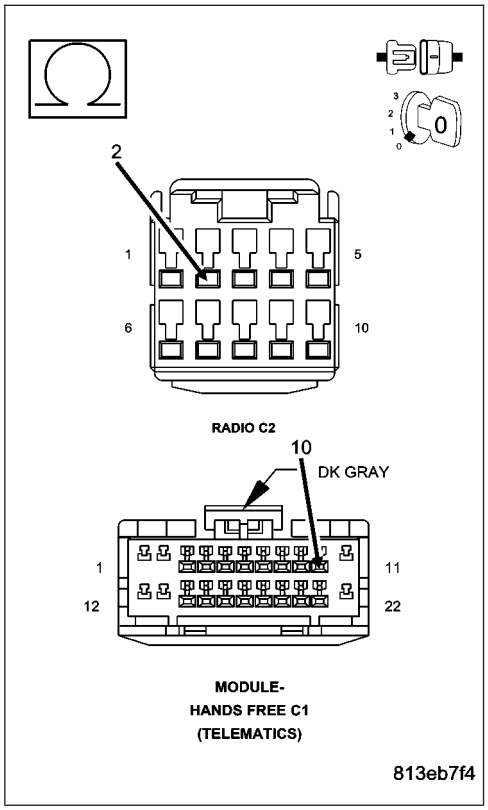
Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 5

No >> Repair the (X795) Common Audio Output circuit for an open.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



5. (X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT

Measure the resistance between the (X704) Right Audio Output circuit and the (X795) Common Audio Output circuit.

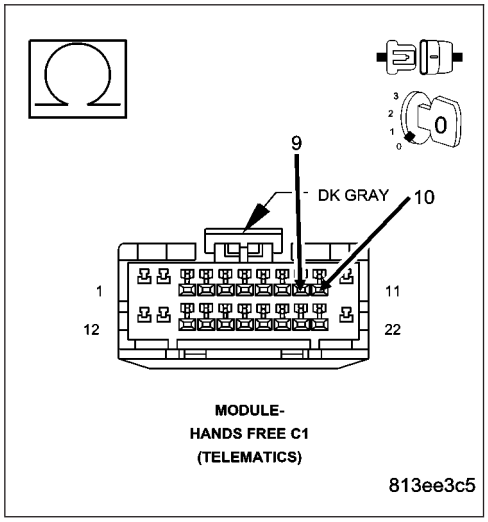
Is the resistance below 5.0 ohms?

Yes >> Repair the (X704) Right Audio Output circuit for a short to the (X795) Common Audio Output circuit.

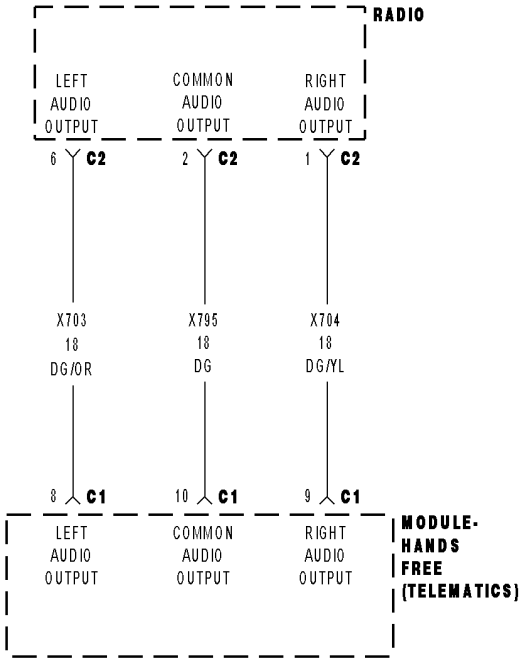
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

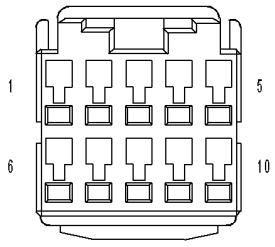
No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

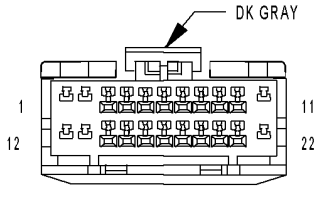


RIGHT AUDIO OUTPUT 1 SHORT TO VOLTAGE





RADIO C2



MODULE-HANDS FREE C1 (TELEMATICS)

813eb7cd

RIGHT AUDIO OUTPUT 1 SHORT TO VOLTAGE (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a short to voltage on the (X704) Right Audio Output circuit.

Possible Causes
(X704) RIGHT AUDIO OUTPUT CIRCUIT OPEN
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

RIGHT AUDIO OUTPUT 1 SHORT TO VOLTAGE (CONTINUED)

2. (X704) RIGHT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

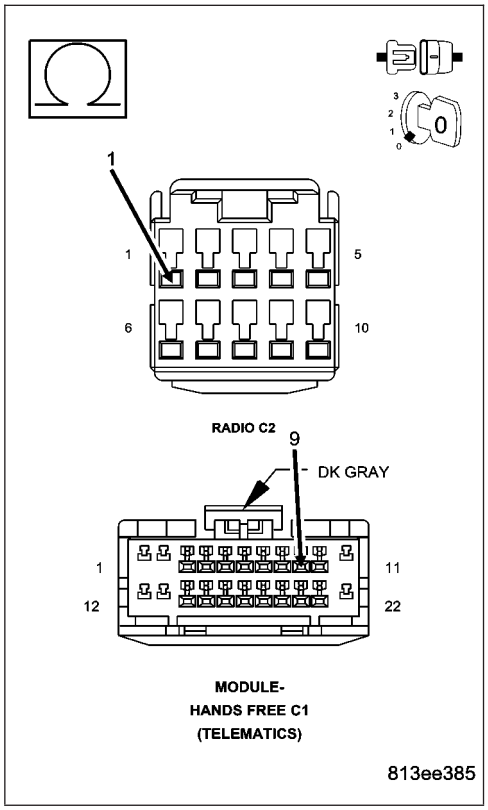
Disconnect the Radio C2 harness connector.

Measure the resistance of the (X704) Right Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 3

No >> Repair the (X704) Right Audio Output circuit for an open
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



RIGHT AUDIO OUTPUT 1 SHORT TO VOLTAGE (CONTINUED)

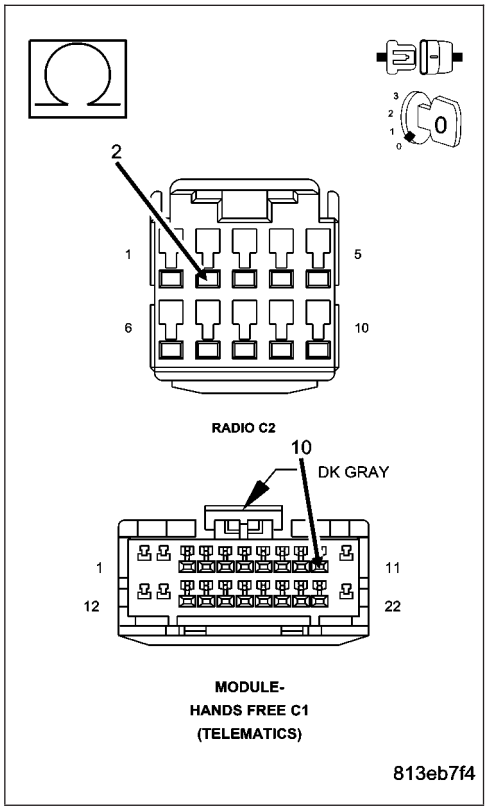
3. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 4

No >> Repair the (X795) Common Audio Output circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



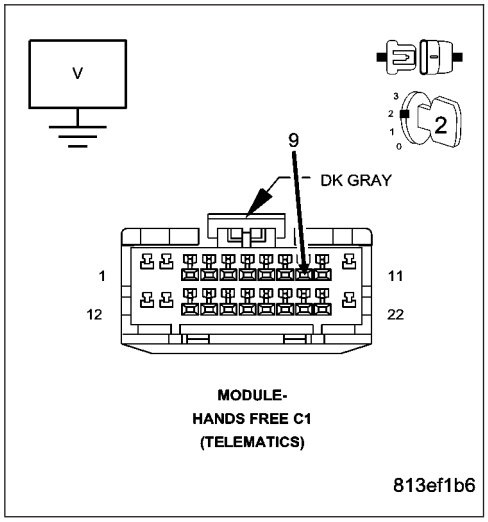
4. (X704) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE

Turn the ignition on.
Measure the voltage of the (X704) Right Audio Output circuit.

Is the voltage above 1.0 volts?

Yes >> Repair the (X704) Right Audio Output circuit for a short to voltage.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



ROM CHECKSUM ERROR

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects a fault during an internal diagnostic check.

Possible Causes
HANDS FREE MODULE

Diagnostic Test

1. ERASE DTC AND ATTEMPT TO RESET

Turn the ignition on.
With the DRB, read and record the HFM DTC's and then erase the DTC's.
Perform 5 ignition key cycles, leaving the ignition key on for a minimum of 90 seconds per cycle.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

RPM MESSAGE NOT RECEIVED

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module does not detect a PCI Bus message indicating current engine RPM.

Possible Causes
LOST COMMUNICATION WITH PCM
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE PCM

Start and idle the engine.
With the DRB, select Engine and read the Engine RPM.

Was the DRB able to communicate with the PCM and read engine RPM?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. ERASE DTC AND ATTEMPT TO RESET

With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

VIN MESSAGE NOT RECEIVED

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module does not receive the VIN message from the PCM.

Possible Causes
LOST COMMUNICATION WITH PCM
PCM NOT ACTIVE ON THE PCI BUS
HANDS FREE MODULE

Diagnostic Test

1. ATTEMPT TO COMMUNICATE WITH THE PCM

Turn the ignition on.
With the DRB, attempt to communicate with the PCM.

Was the DRB able to communicate with the PCM?

Yes >> Go To 2

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

2. CHECK PCM ACTIVITY ON THE PCI BUS

With the DRB, select System Monitors then J1850 Module Scan.

Does the DRB indicated that the PCM is present or active on the PCI Bus?

Yes >> Go To 3

No >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) and perform the related symptom.

---

3. ERASE DTC AND ATTEMPT TO RESET

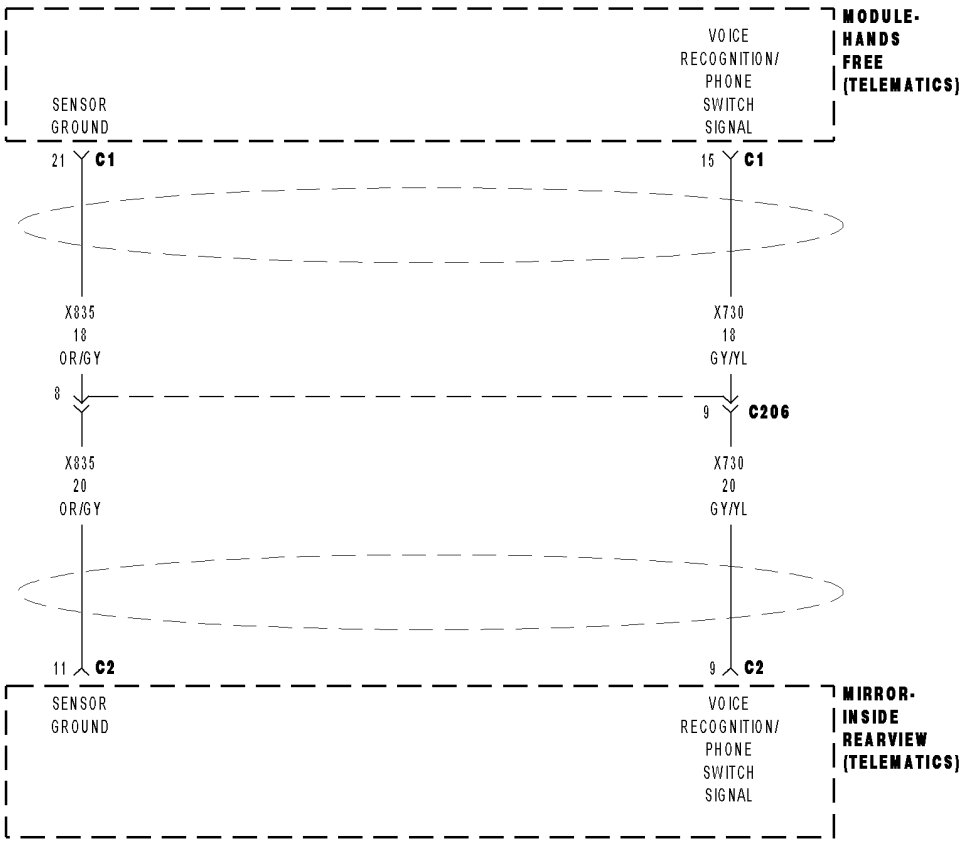
With the DRB, erase the HFM DTC's.
Cycle the ignition switch from off to on and wait approximately 1 minute.
With the DRB, read the HFM DTC's.

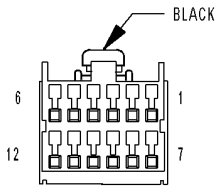
Did this DTC reset?

Yes >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

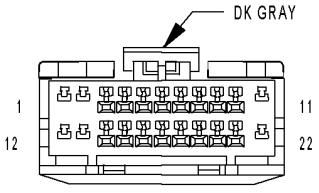
No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

VOICE RECOGNITION SWITCH STUCK





MIRROR-
INSIDE
REARVIEW C2
(TELEMATICS)



MODULE-
HANDS FREE C1
(TELEMATICS)

81310da8

VOICE RECOGNITION SWITCH STUCK (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects voltage between 3.5 volts and 4.0 volts on the (X730) Voice Recognition/ Phone Switch Signal circuit for more than 30 seconds.

Possible Causes
INSIDE REARVIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTCS

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

---

2. CHECK THE VOLTAGE OF THE (X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL

Turn the ignition off.

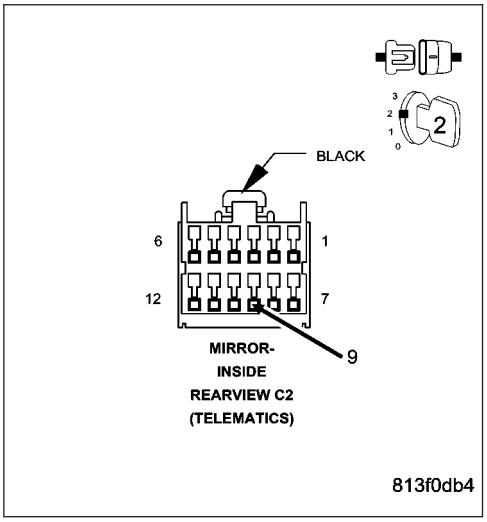
Disconnect the Inside Rearview Mirror C2 harness connector.

Turn the ignition on.

With the DRB, monitor the VR Phone Switch voltage.

While monitoring the VR Phone Switch voltage, momentarily connect a jumper wire between (X730) Voice Recognition/Phone Switch Signal circuit and ground.

NOTE: The sensor voltage should switch from above 4.7 volts when the jumper is not connected to below 0.6 volts when the jumper is connected.



Does the sensor voltage switch from above 4.7 volts to below 0.6 volt as described?

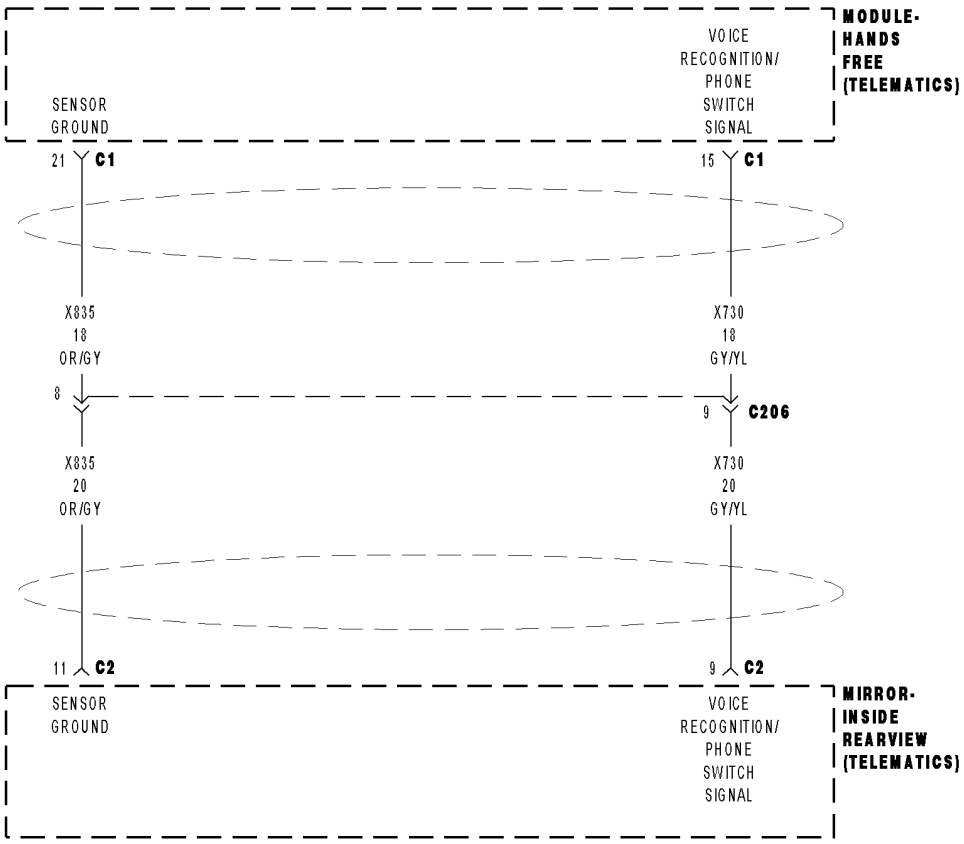
Yes >> Replace the Inside Rearview Mirror in accordance with the service information.

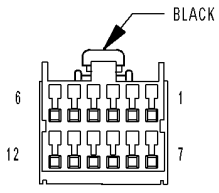
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

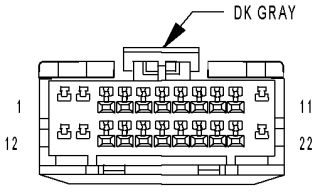
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

VOICE RECOGNITION/PHONE SWITCH CIRCUIT RATIONALITY





MIRROR-
INSIDE
REARVIEW C2
(TELEMATICS)



MODULE-
HANDS FREE C1
(TELEMATICS)

81310da8

VOICE RECOGNITION/PHONE SWITCH CIRCUIT RATIONALITY (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects an invalid voltage signal on the (X730) Voice Recognition/Phone Switch Signal circuit.

Possible Causes
INSIDE REARVIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

---

2. CHECK THE VOLTAGE OF THE (X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL

Turn the ignition off.

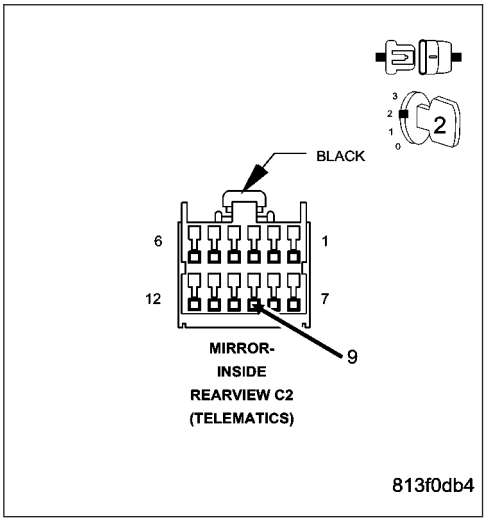
Disconnect the Inside Rearview Mirror C2 harness connector.

Turn the ignition on.

With the DRB, monitor the VR Phone Switch voltage.

While monitoring the VR Phone Switch voltage, momentarily connect a jumper wire between the (X730) Voice Recognition/Phone Switch Signal circuit and ground.

NOTE: The sensor voltage should switch from above 4.7 volts when the jumper is not connected to below 0.6 volts when the jumper is connected.



Does the sensor voltage switch from above 4.7 volts to below 0.6 volt as described?

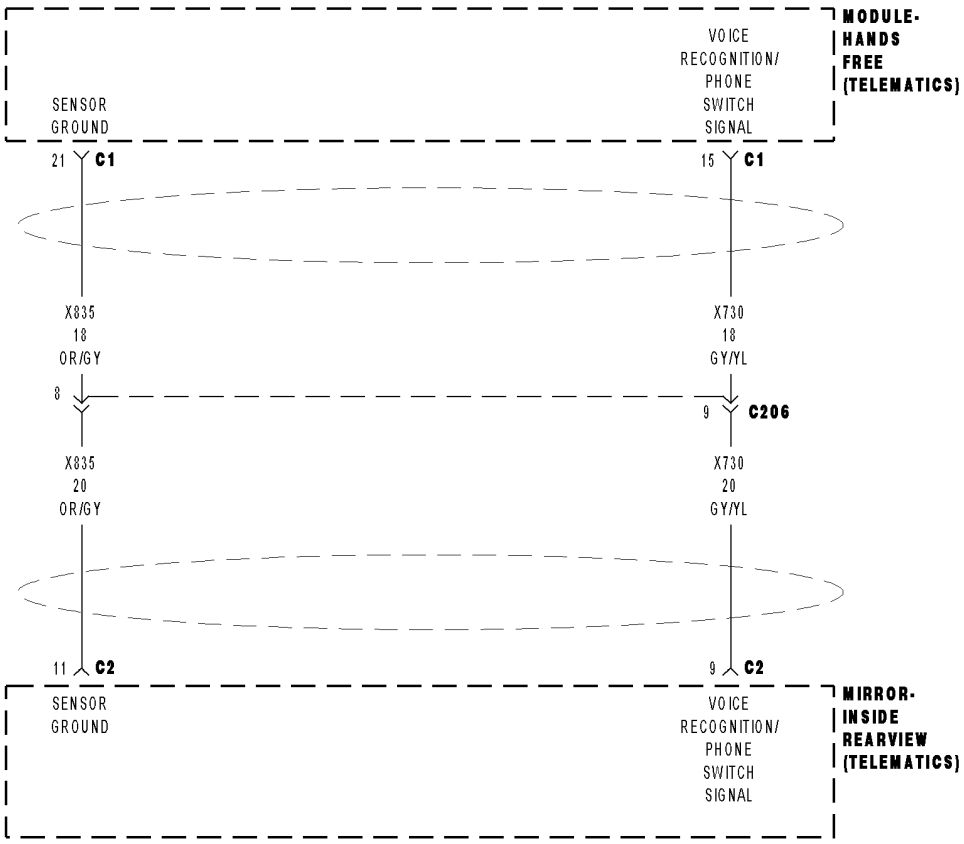
Yes >> Replace the Inside Rearview Mirror in accordance with the service information.

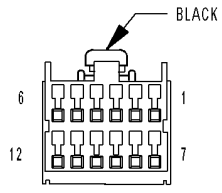
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

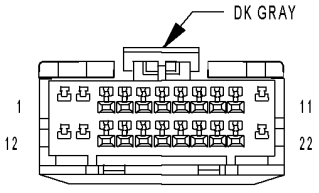
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

VOICE RECOGNITION/PHONE SWITCH CIRCUIT SHORT TO GROUND





MIRROR-
INSIDE
REARVIEW C2
(TELEMATICS)



MODULE-
HANDS FREE C1
(TELEMATICS)

81310da8

VOICE RECOGNITION/PHONE SWITCH CIRCUIT SHORT TO GROUND (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects voltage below 0.6 volts on the (X730) Voice Recognition/Phone Switch Signal circuit.

Possible Causes
(X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT SHORT TO (X835) SENSOR GROUND CIRCUIT
(X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT SHORT TO GROUND
INSIDE REARVIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

2. CHECK THE VOLTAGE OF THE (X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL

Turn the ignition off.

Disconnect the Inside Rearview Mirror C2 harness connector.

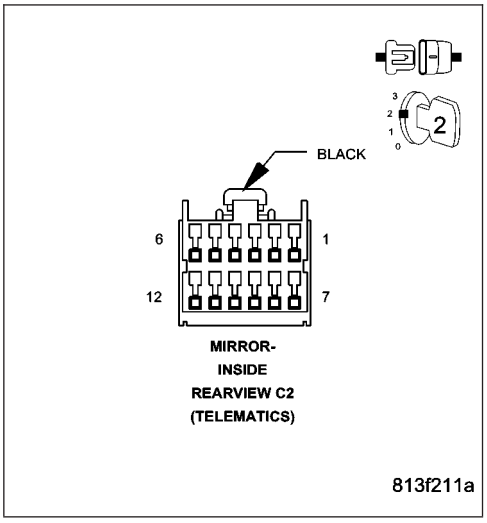
Turn the ignition on.

With the DRB, monitor the VR Phone Switch voltage.

Is the voltage above 4.7 volts?

Yes >> Replace the Inside Rearview Mirror in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 3



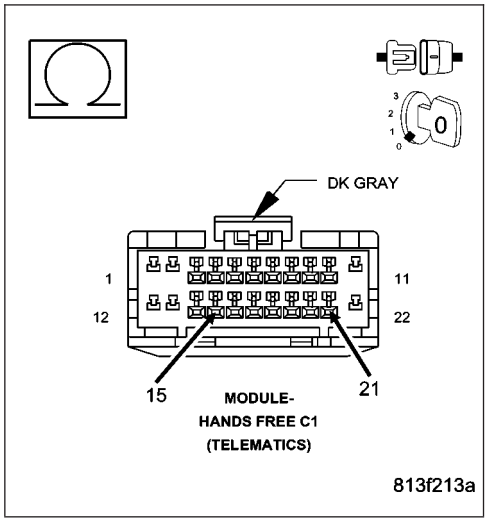
VOICE RECOGNITION/PHONE SWITCH CIRCUIT SHORT TO GROUND (CONTINUED)

3. (X730) VOICE/RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT SHORTED TO THE (X835) SENSOR GROUND CIRCUIT

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

Measure the resistance between the (X730) Voice Recognition/Phone Switch Signal circuit and the (X835) Sensor Ground circuit.



Is the resistance below 100.0 ohms?

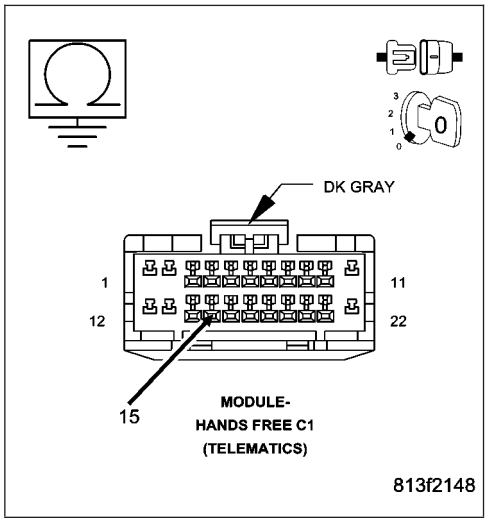
Yes >> Repair the (X730) Voice Recognition/Phone Switch Signal circuit for a short to the (X835) Sensor Ground circuit.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 4

4. (X730) VOICE/RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT SHORTED TO GROUND

Measure the resistance between ground and the (X730) Voice Recognition/Phone Switch Signal circuit.



Is the resistance below 100.0 ohms?

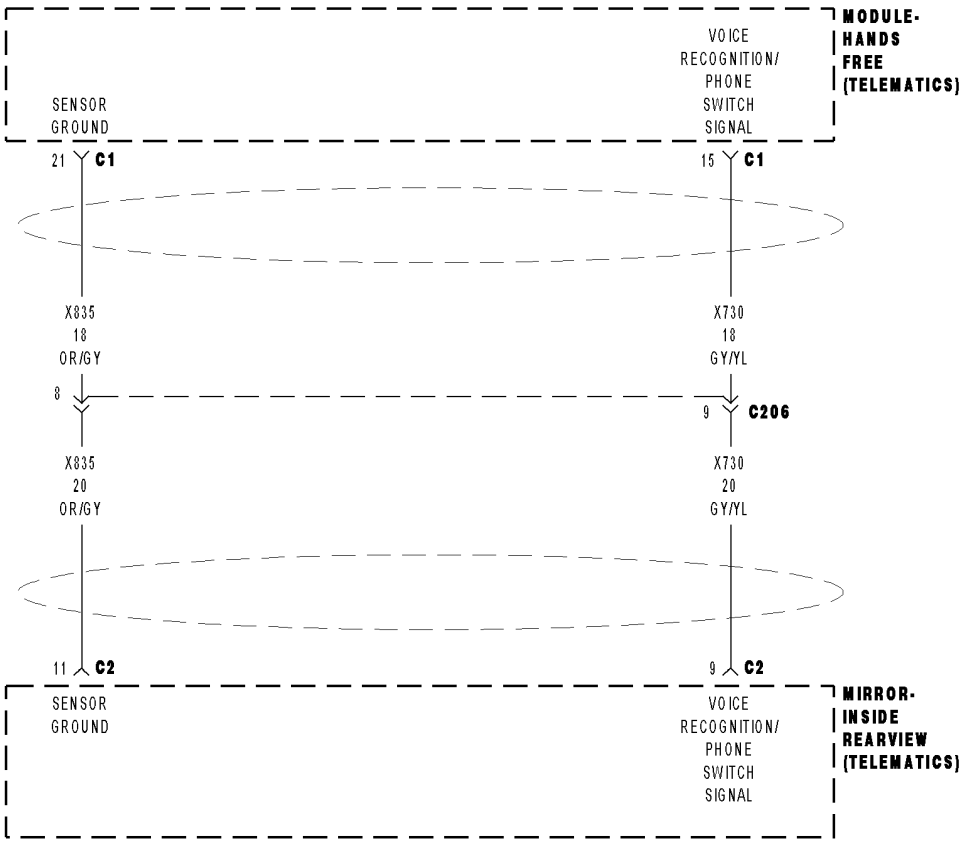
Yes >> Repair the (X730) Voice Recognition/Phone Switch Signal circuit for a short to ground.

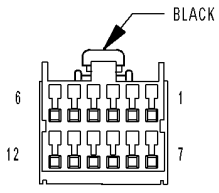
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

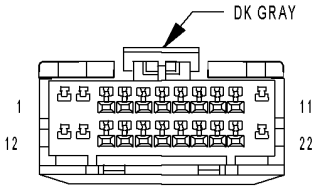
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

VOICE RECOGNITION/PHONE SWITCH CIRCUIT SHORT TO VOLTAGE





MIRROR-
INSIDE
REARVIEW C2
(TELEMATICS)



MODULE-
HANDS FREE C1
(TELEMATICS)

81310da8

VOICE RECOGNITION/PHONE SWITCH CIRCUIT SHORT TO VOLTAGE (CONTINUED)

For a complete wiring diagram **Refer to Section 8W**.

- **When Monitored:**
  With the ignition on.
- **Set Condition:**
  The Hands Free Module detects voltage above 4.7 volts on the (X730) Voice Recognition/Phone Switch Signal circuit.

Possible Causes
(X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT SHORT TO VOLTAGE
(X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT OPEN
(X835) SENSOR GROUND CIRCUIT OPEN
INSIDE REARVIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

Turn the ignition on.

With the DRB, erase the HFM DTCs.

Attempt to make a phone call using the system.

With the DRB, read the HFM DTCs.

Did this DTC reset?

Yes >> Go To 2

No >> The condition that set this DTC is no longer present. Using the wiring diagram/schematic as a guide, inspect the wiring for chafed, pierced, pinched, and partially broken wires and the wiring harness connectors for broken, bent, pushed out, and corroded terminals.

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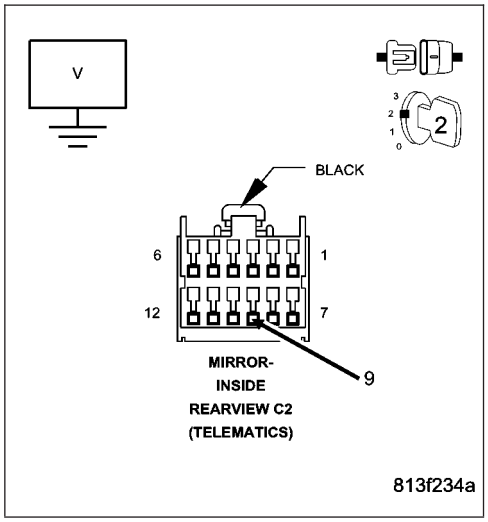
2. CHECK THE VOLTAGE OF THE (X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL

Turn the ignition off.

Disconnect the Inside Rearview Mirror C2 harness connector.

Turn the ignition on.

Measure the voltage of the (X730) Voice Recognition/Phone Switch Signal circuit.



Is the voltage above 5.3 volts?

Yes >> Repair the (X730) Voice Recognition/Phone Switch Signal circuit for a short to voltage.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 3

VOICE RECOGNITION/PHONE SWITCH CIRCUIT SHORT TO VOLTAGE (CONTINUED)

3. INSIDE REARVIEW MIRROR

Turn the ignition off.

Connect a jumper wire between (X730) Voice Recognition/Phone Switch Signal circuit and the (X835) Sensor Ground circuit.

Turn the ignition on.

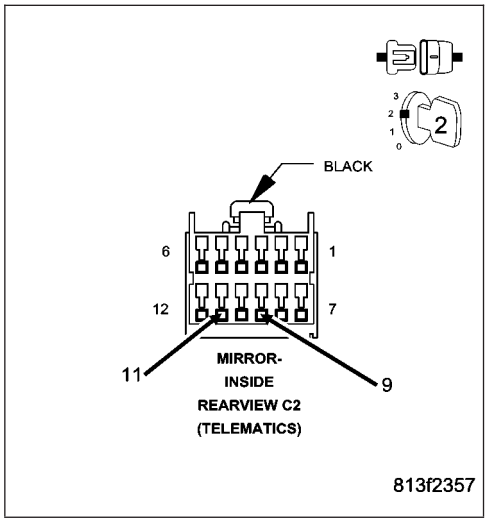
With the DRB, monitor the VR Phone Switch Voltage.

Is the voltage approximately 0 volts?

Yes >> Replace the Inside Rearview Mirror in accordance with the service information.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Go To 4



4. (X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

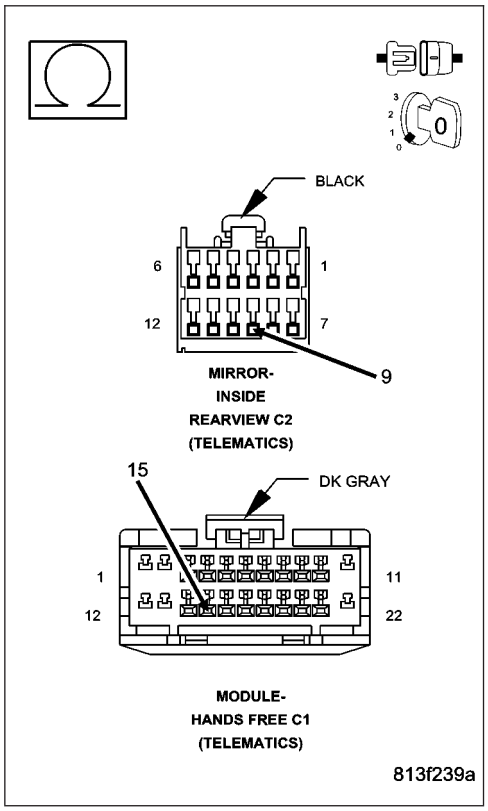
Measure the resistance of the (X730) Voice Recognition/Phone Switch Signal circuit between the HFM connector and the Inside Rearview Mirror connector.

Is the resistance below 5.0 ohms?

Yes >> Go To 5

No >> Repair the (X730) Voice Recognition/Phone Switch Signal circuit for an open.

Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



VOICE RECOGNITION/PHONE SWITCH CIRCUIT SHORT TO VOLTAGE (CONTINUED)

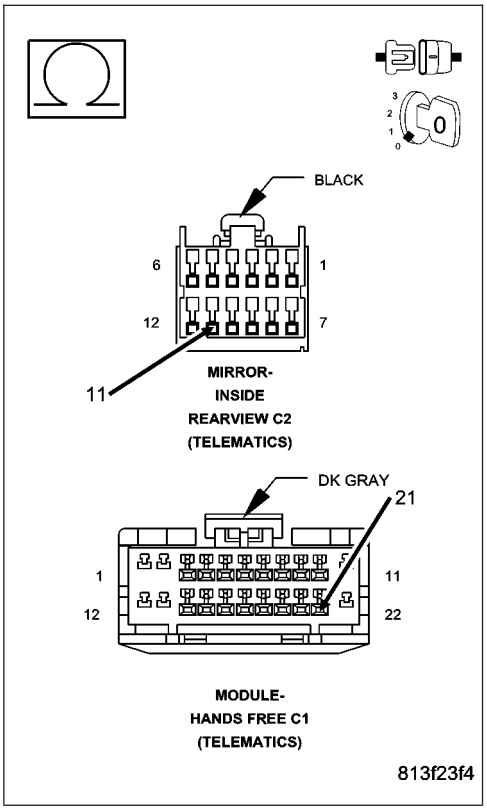
5. (X835) SENSOR GROUND CIRCUIT OPEN

Measure the resistance of the (X835) Sensor Ground circuit between the HFM connector and the Inside Rearview Mirror connector.

Is the resistance below 5.0 ohms?

Yes >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)

No >> Repair the (X835) Sensor Ground circuit for an open.
Perform BODY VERIFICATION TEST - VER 1. (Refer to BODY VERIFICATION TEST - VER 1.)



NAVIGATION/TELECOMMUNICATION - SERVICE INFORMATION

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NAVIGATION/TELECOMMUNICATION - SERVICE INFORMATION

DESCRIPTION

TELECOMMUNICATIONS

The hands-free cellular system on this vehicle uses Bluetooth™ technology to provide wireless communication between the operator's compatible cellular telephone and the vehicle's on-board receiver.

The system uses voice recognition technology to control operation. The incoming voice is broadcast through the vehicle's radio speakers, automatically overriding any other audio signals on the front speakers when the hands-free system is in use. A microphone in the rearview mirror picks up vehicle occupant's voices. If a call is in progress when the ignition is switched off, the hands-free system will continue to operate for up to 45 seconds as part of the Accessory Relay Delay function. Thereafter, the call can continue on the hand-held telephone.

The system will communicate with a telephone that is anywhere within the vehicle. However, covering the hand held phone or the hands-free phone module with a metal object may block the signal. The system will recognize up to seven telephones, each of which is given a spoken identification by the user during the setup process. The system includes Spanish and French voice recognition in addition to English.

Two buttons on the rearview mirror, identified with ISO icons, control the system: A ″phone″ button turns the system on and off; a ″voice recognition″ (or voice command) button prompts the hands-free system to listen for a voice command.

OPERATION

TELECOMMUNICATION

Two buttons on the rearview mirror, identified with ISO icons, control the system: A ″phone″ button turns the system on and off; a ″voice recognition″ (or voice command) button prompts the hands-free system to listen for a voice command. The system includes the following features:

- Phone book - Stores telephone numbers for later recall by name or other verbal identification, called a voice tag, and memory location.
- Four memory locations - Home, Work, Cellular and Pager. A maximum of 32 unique names or voice tags may be stored at the same time, with a different number in each of the four memory locations.
- Voice tag dialing - Dials the number associated with a voice tag and memory location.
- Digit dialing - Dials the telephone number by recognizing the names of the digits as they are spoken.
- Receiving calls - A voice prompt notifies the user of an incoming call. A voice response accepts or rejects the call without manual intervention.
- Privacy Mode - Switches the call to the handheld telephone and the hands-free system and back again using the "voice recognition" (or "voice command") button and a voice command, if desired.

DIAGNOSIS AND TESTING

TELECOMMUNICATION

Any diagnosis of the Telecommunication system should begin with the use of scan tool. For information on the use of the scan tool, refer to the appropriate Diagnostic Service information.

For complete circuit diagrams, refer to the appropriate wiring information.

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO ELECTRICAL, RESTRAINTS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

TELECOMMUNICATION SYSTEM DIAGNOSIS

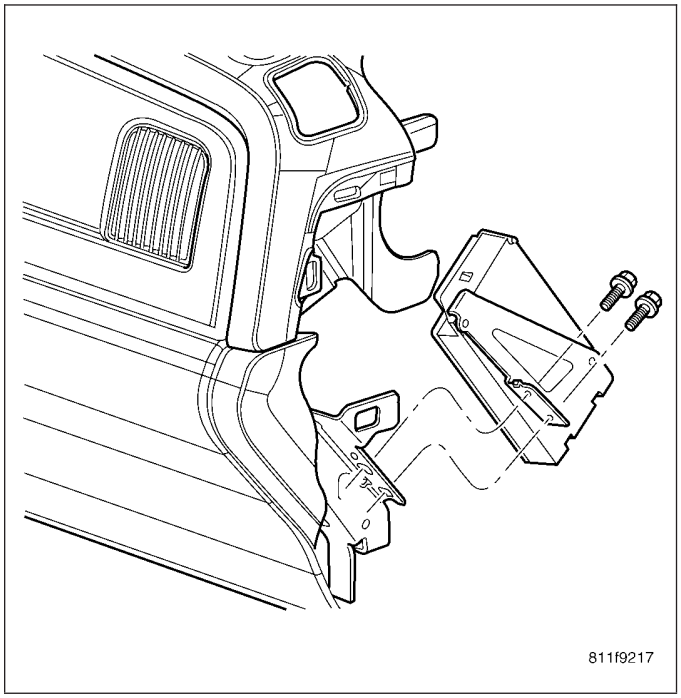
CONDITION	POSSIBLE CAUSE	CORRECTION
Phone Not Available	1. Bluetooth phone not paired to the system.	1. Ensure that phone(s) are paired to the system.
	2. Bluetooth phone not present or turned OFF.	2. Make sure paired phone is present, turned ON and that the Bluetooth option is enabled on the phone.
	3. Bluetooth phone has low battery.	3. At low battery levels, some phones will turn off Bluetooth functionality. Ensure cellular phone is charged to an adequate level.
Phone Pairing Failed	1. Phone does not support Hands Free Profile	1. The Telecommunication system requires the cellular phone to be Bluetooth™ enabled, as well as supporting the Hands Free Profile. The customer will have to upgrade their phone to one supporting Hands Free Profile. A list of suggested phones is available at: http://www.chrysler.com/uconnect.
	2. Phone not Bluetooth enabled.	2. The Telecommunication system requires the cellular phone to be Bluetooth™ enabled. A list of suggested phones is available at: http://www.chrysler.com/uconnect.
	3. PIN entered on the phone is not the same as PIN spoken to the system.	3. The PIN spoken to the system must be the same PIN entered into the phone.
	4. Phone has reached maximum number of allowed devices paired.	4. Remove one of the previously paired devices from it's list.
Poor Voice Recognition	1. Microphone failure	1. Using a scan tool, check for microphone fault codes.
	2. Customer not waiting for the beep before speaking.	2. Ensure customer is waiting for the system ″beep″ prior to beginning the speech to be recognized.
	3. Customer not speaking in a smooth normal manner.	3. Verify that the customer is attempting to use the system with a smooth consistent voice. The system is designed to accept normal speech spoken at a normal tone, some people tend to speak to a computer loud and slow, which results in reduced performance.
	4. Rear view mirror not properly attached to mounting.	4. Mirror must be firmly mounted to the mounting location. Ensure that mirror is tightened to the specified torque.
	5. High levels of noise in vehicle compartment	5. System performance is increased when noise conditions in the vehicle are lowered. Ideal conditions include windows closed.

CONDITION	POSSIBLE CAUSE	CORRECTION
	6. Object interfering with microphone input	6. Verify that there is no object, hanging from the mirror, that could be obstructing the microphone.
	7. User not saying ″send″ after a pager dialing request	7. User must say ″send″ at the end of a Pager Dialing request.
	8. Other passengers talking while customer is attempting to use the system	8. Although designed for primary use by the driver, the microphone will pick up passengers in any seat of the vehicle. System performance is increased in low noise environments.
Phonebook names not recognized consistently	1. Phonebook names recorded in high noise conditions	1. For increased system performance, it is recommended that the phone book entries are recorded in a low noise environment. That is, vehicle in park, with windows up.
	2. Phonebook name(s) short	2. For increased performance it is recommended that the user use both first and last name as a phonebook entry. Example: ″Daniel Johnson″ as opposed to ″Dan″.
	3. Phonebook names recorded by another user	3. It is recommended that each user of the system record their own phonebook entries. This will increase the recognition performance.
	4. Similar names in phonebook	4. For increased system performance it is recommended that the user do not enter similar sounding names in the phonebook.
	5. Object interfering with microphone input	5. Object interfering with microphone input.
Poor Phone audio quality.	1. Microphone failure	1. Use a scan tool, and check for Microphone faults.
	2. Rear view mirror not properly fixed to mounting button	2. Mirror must be firmly mounted to the mounting location. Tighten mirror to the specified torque.
	3. System being used in high noise conditions	3. System performance is increased when noise conditions in the vehicle are lowered. Ideal conditions include windows closed.
No Phone Audio	1. Phone setting cause phone audio to be routed to handset.	1. Route audio to ″Hands free″ device.

MODULE-HANDS FREE

REMOVAL

1. Disconnect and isolate the battery negative cable.
2. Remove the instrument panel right side end cap.
3. Remove the mounting fasteners.
4. Disconnect the electrical harness connector and remove module.



INSTALLATION

1. Connect the electrical harness connector and position module.
2. Install and tighten the mounting fasteners.
3. Install the instrument panel right side end cap.
4. Connect battery negative cable.