

NAVIGATION/TELECOMMUNICATION

TABLE OF CONTENTS

	page		page
NAVIGATION/TELECOMMUNICATION - ELECTRICAL DIAGNOSTICS.....	1	NAVIGATION/TELECOMMUNICATION - SERVICE INFORMATION	54

NAVIGATION/TELECOMMUNICATION - ELECTRICAL DIAGNOSTICS

TABLE OF CONTENTS

	page		page
NAVIGATION/TELECOMMUNICATION - ELECTRICAL DIAGNOSTICS			
DIAGNOSIS AND TESTING		U0141-LOST COMMUNICATION WITH FRONT CONTROL MODULE.....	50
B1411-HFM LEFT AUDIO OUTPUT CIRCUIT LOW.....	4	U0151-LOST COMMUNICATION WITH OCCUPANT RESTRAINT CONTROLLER.....	51
B1412-HFM LEFT AUDIO OUTPUT CIRCUIT HIGH.....	8	U0154-LOST COMMUNICATION WITH OCCUPANT CLASSIFICATION MODULE.....	51
B1415-HFM RIGHT AUDIO OUTPUT CIRCUIT LOW.....	11	U0155-LOST COMMUNICATION WITH CLUSTER/CCN.....	51
B1416-HFM RIGHT AUDIO OUTPUT CIRCUIT HIGH.....	15	U0156-LOST COMMUNICATION WITH EOM ...	51
B1435-VOICE RECOGNITION/PHONE SWITCH INPUT CIRCUIT PERFORMANCE... ..	18	U0159-LOST COMMUNICATION WITH PARKING ASSIST CONTROL MODULE.....	51
B1436-VOICE RECOGNITION/PHONE SWITCH INPUT CIRCUIT LOW.....	20	U0164-LOST COMMUNICATION WITH HVAC CONTROL MODULE.....	51
B1437-VOICE RECOGNITION/PHONE SWITCH INPUT CIRCUIT HIGH.....	23	U0167-LOST COMMUNICATION WITH INTRUSION TRANSCEIVER CONTROL MODULE.....	51
B1438-VOICE RECOGNITION SWITCH STUCK.....	27	U0168-LOST COMMUNICATION WITH VEHICLE SECURITY CONTROL MODULE (SKREEM/WCM).....	51
B1439-PHONE SWITCH STUCK	29	U0169-LOST COMMUNICATION WITH SUNROOF CONTROL MODULE.....	52
B145A-TELEMATICS MIRROR CONTROL CIRCUIT HIGH.....	31	U0184-LOST COMMUNICATION WITH RADIO.....	52
B1459-TELEMATICS MIRROR CONTROL CIRCUIT LOW.....	34	U0186-LOST COMMUNICATION WITH AUDIO AMPLIFIER.....	52
B1492-GENERAL MICROPHONE PERFORMANCE.....	37	U0195-LOST COMMUNICATION WITH SDARS.....	52
B2203-ROM CHECKSUM PERFORMANCE ...	42	U0196-LOST COMMUNICATION WITH VEHICLE ENTERTAINMENT CONTROL MODULE.....	52
B222A-VEHICLE LINE MISMATCH	43	U0199-LOST COMMUNICATION WITH DRIVER DOOR MODULE.....	52
B222E-FLASH CHECKSUM PERFORMANCE .	44	U0200-LOST COMMUNICATION WITH PASSENGER DOOR MODULE.....	52
B222F-FLASH WRITE PERFORMANCE	45		
B2223-(HFM) HANDS FREE PHONE INTERNAL.....	46		
B2230-RAM WRITE PERFORMANCE	47		
U0019-CAN B BUS	48		

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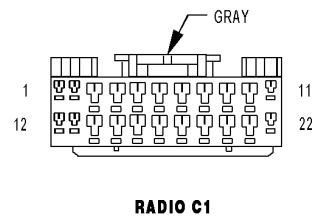
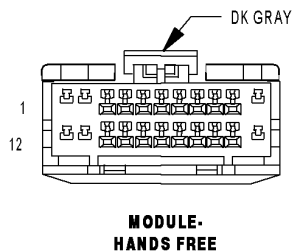
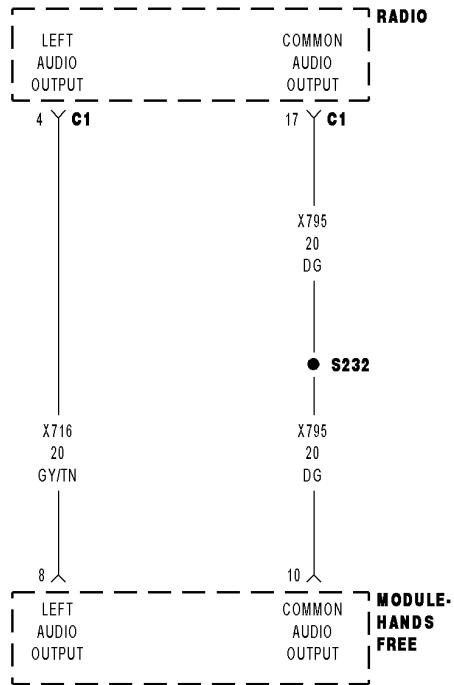
U0208-LOST COMMUNICATION WITH HEATED SEAT CONTROL MODULE	52
U0209-LOST COMMUNICATION WITH MEMORY SEAT CONTROL MODULE	53
U0212-LOST COMMUNICATION WITH SCCM - CAN B	53

U0231-LOST COMMUNICATION WITH RAIN SENSING MODULE	53
U0241-LOST COMMUNICATION WITH AUTO HIGHBEAM HEADLAMP CONTROL MODULE.....	53

NAVIGATION/TELECOMMUNICATION - ELECTRICAL DIAGNOSTICS

DIAGNOSIS AND TESTING

B1411-HFM LEFT AUDIO OUTPUT CIRCUIT LOW



- **When Monitored:**

With the ignition on.

- **Set Condition:**

The Hands Free Module detects low voltage on the (X716) Left Audio Output circuit.

Possible Causes
(X716) LEFT AUDIO OUTPUT CIRCUIT OPEN
(X716) LEFT AUDIO OUTPUT CIRCUIT SHORT TO GROUND
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X716) LEFT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTCs

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

2. (X716) LEFT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

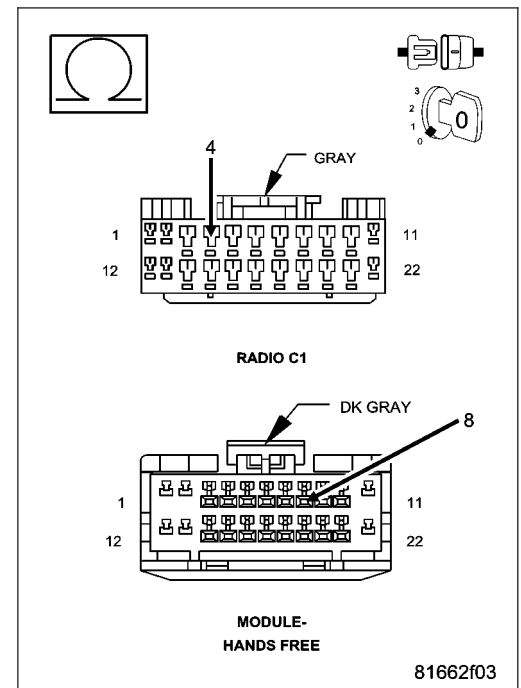
Disconnect the Radio C1 harness connector.

Measure the resistance of the (X716) 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 (X716) Left Audio Output circuit for an open
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).



3. (X716) LEFT AUDIO OUTPUT CIRCUIT SHORT TO GROUND

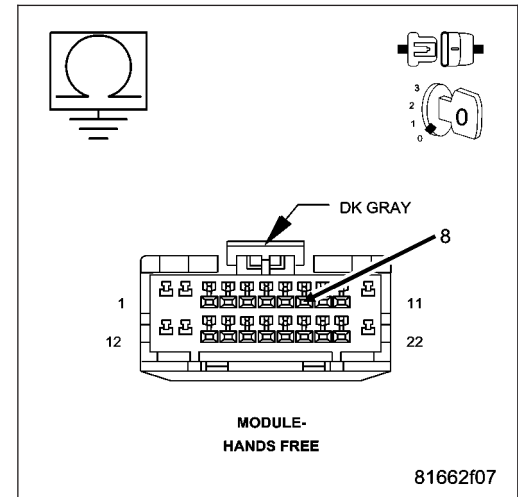
Measure the resistance between ground and the (X716) Left Audio Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Repair the (X716) Left Audio Output circuit for short to ground.

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Go To 4



4. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

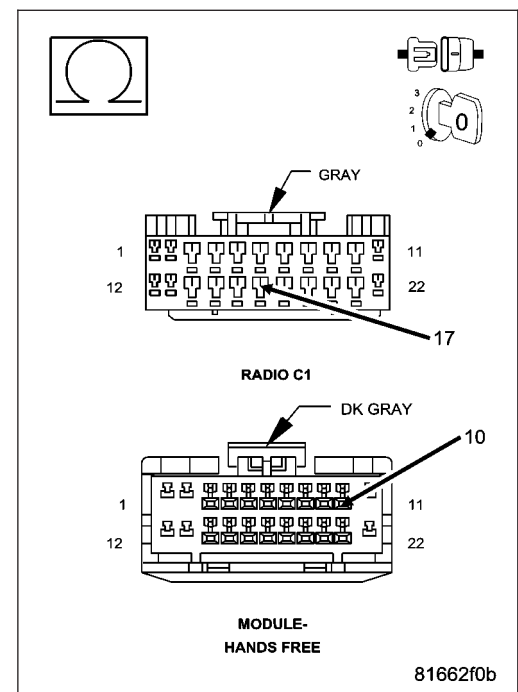
Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



5. (X716) LEFT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT

Measure the resistance between the (X716) Left Audio Output circuit and the (X795) Common Audio Output circuit.

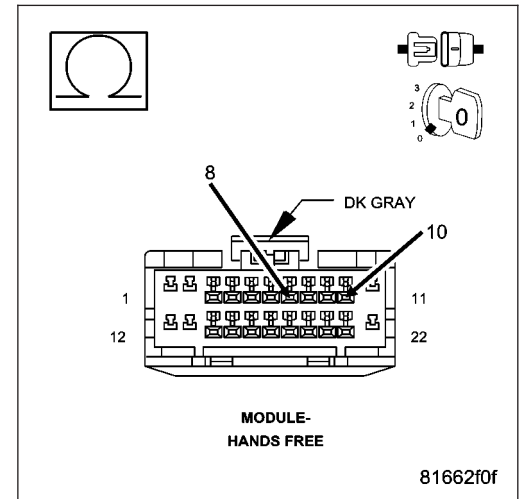
Is the resistance below 5.0 ohms?

Yes >> Repair the (X716) Left Audio Output circuit for a short to the (X795) Common Audio Output circuit.

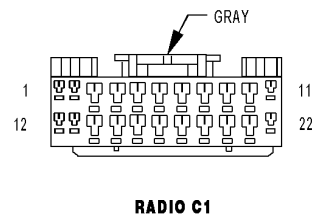
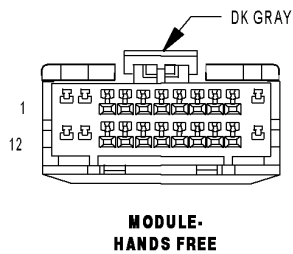
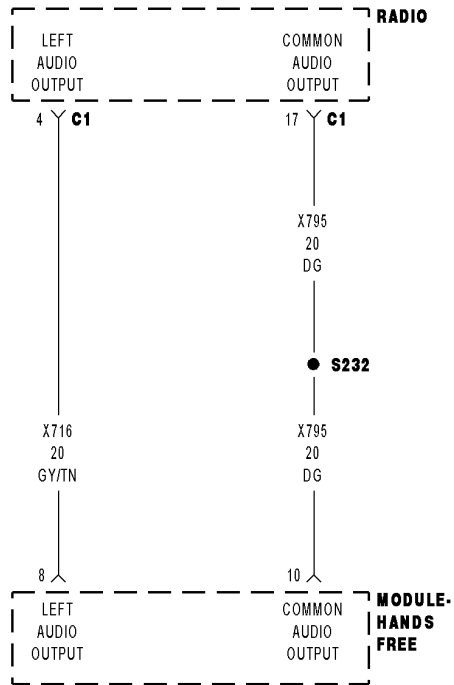
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B1412-HFM LEFT AUDIO OUTPUT CIRCUIT HIGH



- **When Monitored:**

With the ignition on.

- **Set Condition:**

The Hands Free Module detects high voltage on the (X716) Left Audio Output circuit.

Possible Causes
(X716) LEFT AUDIO OUTPUT CIRCUIT OPEN
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X716) LEFT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

2. (X716) LEFT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

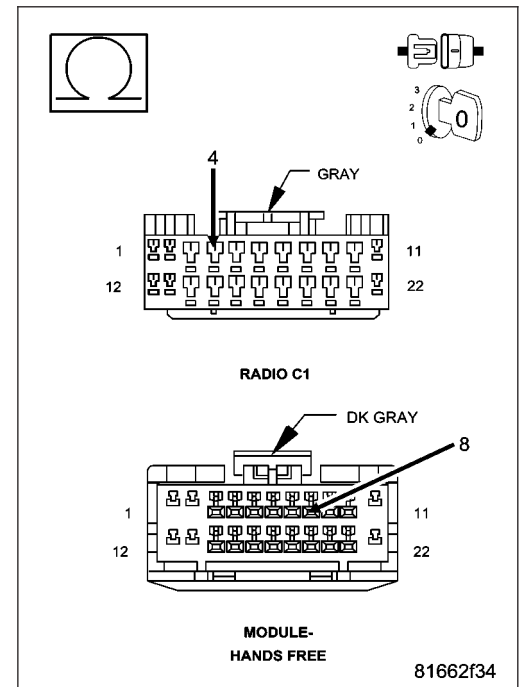
Disconnect the Radio C1 harness connector.

Measure the resistance of the (X716) 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 (X716) Left Audio Output circuit for an open
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



3. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

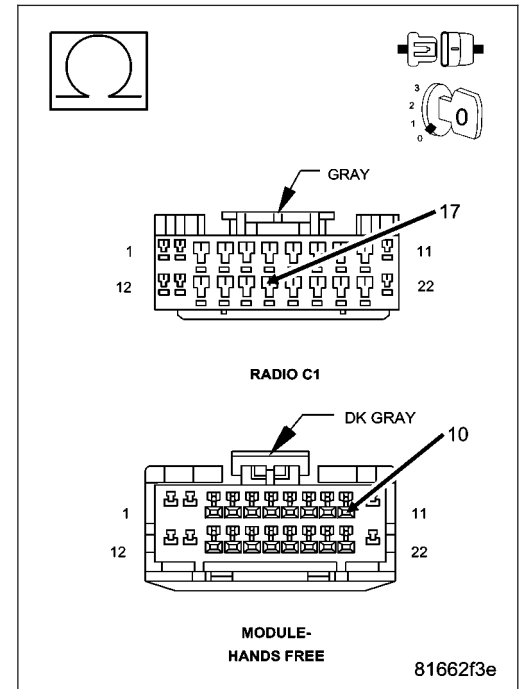
Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



4. (X716) LEFT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE

Turn the ignition on.

Measure the voltage of the (X716) Left Audio Output circuit.

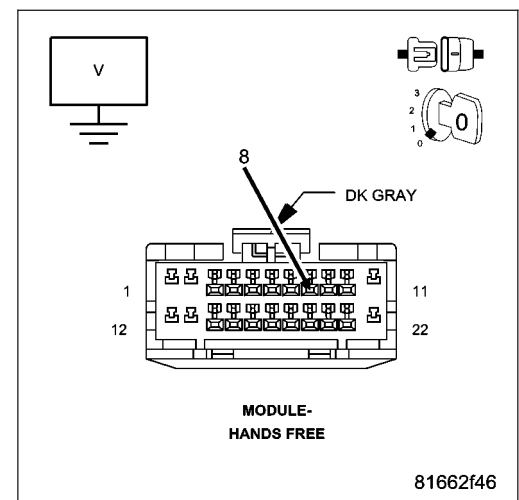
Is the voltage above 1.0 volts?

Yes >> Repair the (X716) Left Audio Output circuit for a short to voltage.

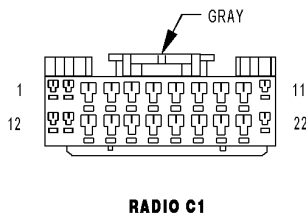
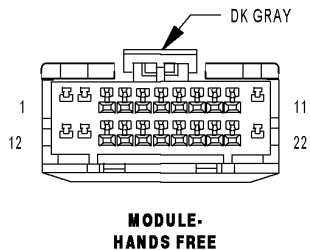
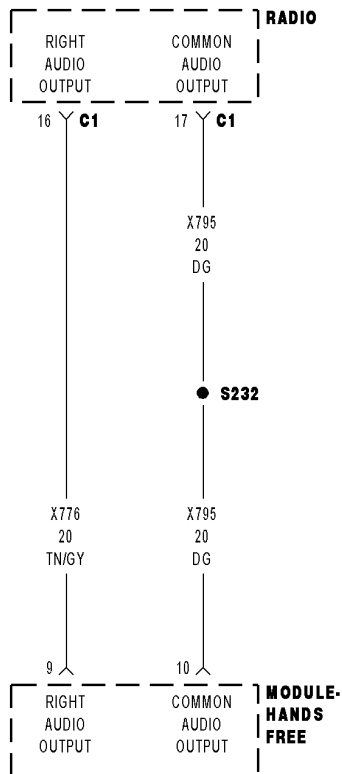
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B1415-HFM RIGHT AUDIO OUTPUT CIRCUIT LOW



- **When Monitored:**

With the ignition on.

- **Set Condition:**

The Hands Free Module detects low voltage on the (X776) Right Audio Output circuit.

Possible Causes
(X776) RIGHT AUDIO OUTPUT CIRCUIT OPEN
(X776) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO GROUND
(X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
(X776) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

2. (X776) RIGHT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

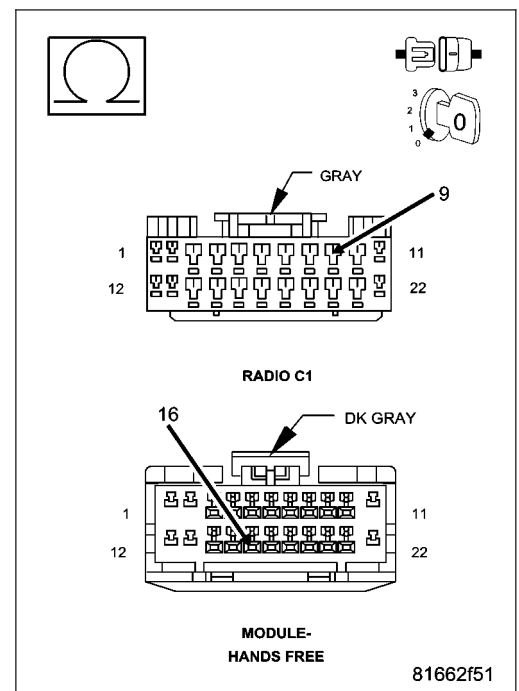
Disconnect the Radio C1 harness connector.

Measure the resistance of the (X776) 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 (X776) Right Audio Output circuit for an open.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



3. (X776) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO GROUND

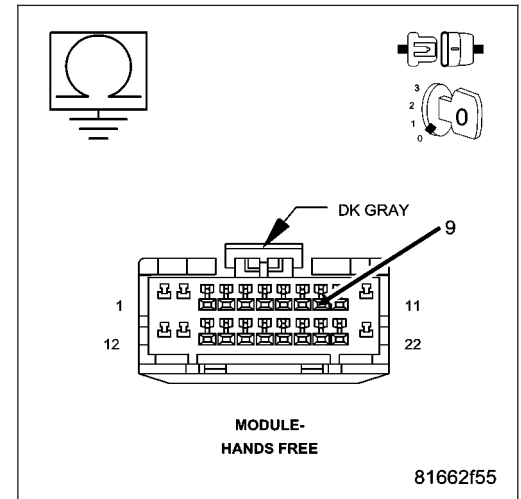
Measure the resistance between ground and the (X776) Right Audio Output circuit.

Is the resistance below 5.0 ohms?

Yes >> Repair the (X776) Right Audio Output circuit for short to ground.

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Go To 4



4. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

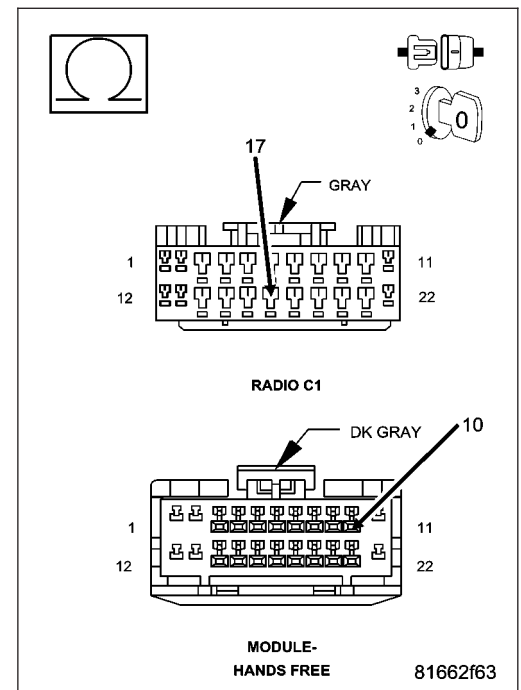
Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



5. (X776) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO (X795) COMMON AUDIO OUTPUT CIRCUIT

Measure the resistance between the (X776) Right Audio Output circuit and the (X795) Common Audio Output circuit.

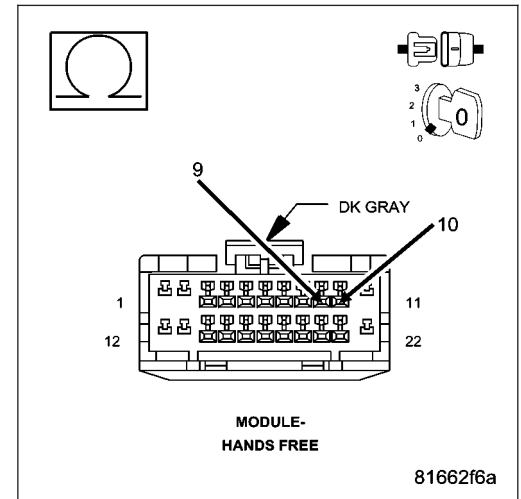
Is the resistance below 5.0 ohms?

Yes >> Repair the (X776) Right Audio Output circuit for a short to the (X795) Common Audio Output circuit.

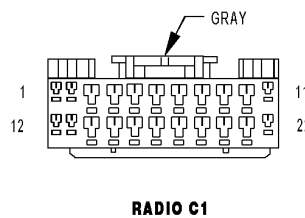
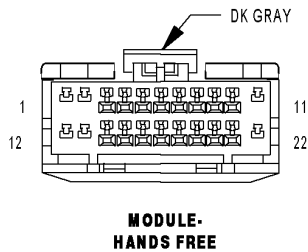
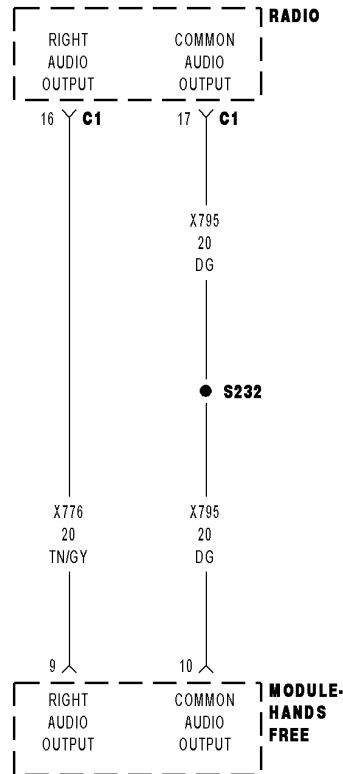
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B1416-HFM RIGHT AUDIO OUTPUT CIRCUIT HIGH



- **When Monitored:**

With the ignition on.

- **Set Condition:**

The Hands Free Module detects high voltage on the (X776) Right Audio Output circuit.

Possible Causes

(X776) RIGHT AUDIO OUTPUT CIRCUIT OPEN
 (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN
 (X776) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE
 HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

2. (X776) RIGHT AUDIO OUTPUT CIRCUIT OPEN

Turn the ignition off. Disconnect the Hands Free Module harness connector.

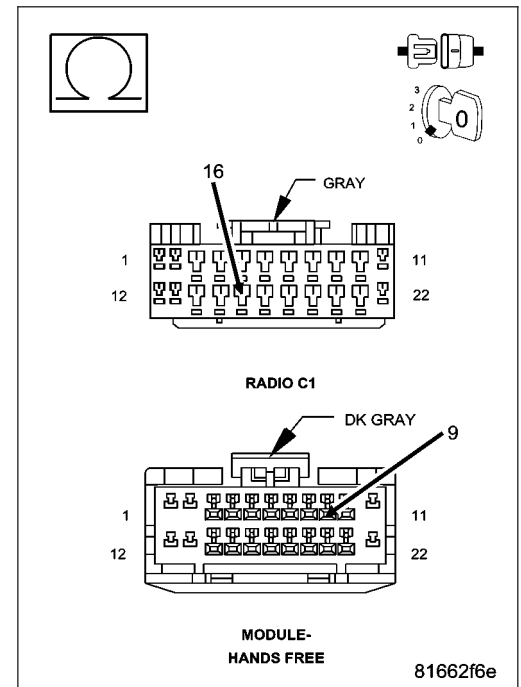
Disconnect the Radio C1 harness connector.

Measure the resistance of the (X776) 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 (X776) Right Audio Output circuit for an open
 Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



3. (X795) COMMON AUDIO OUTPUT CIRCUIT OPEN

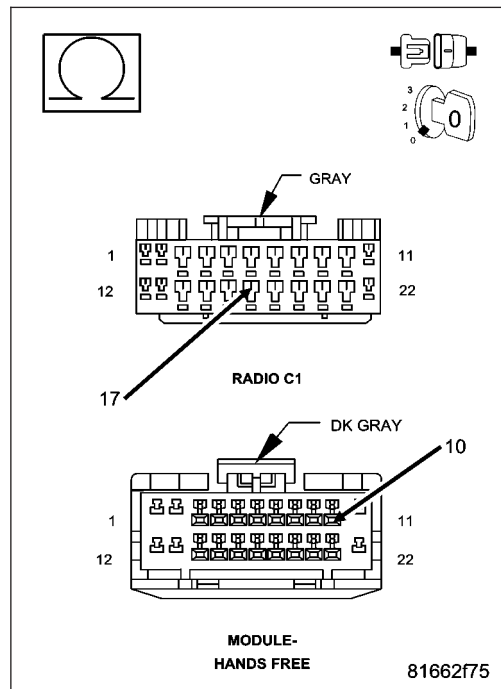
Measure the resistance of the (X795) Common Audio Output circuit between the HFM connector and the radio connector.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



4. (X776) RIGHT AUDIO OUTPUT CIRCUIT SHORT TO VOLTAGE

Turn the ignition on.

Measure the voltage of the (X776) Right Audio Output circuit.

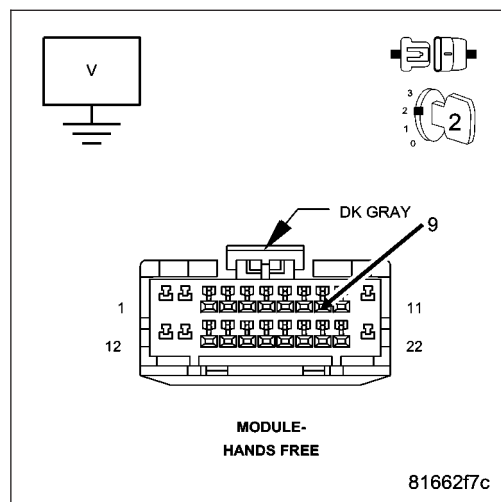
Is the voltage above 1.0 volts?

Yes >> Repair the (X776) Right Audio Output circuit for a short to voltage.

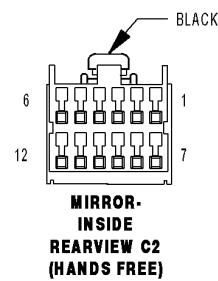
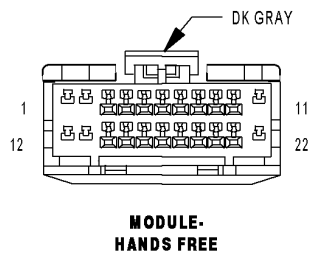
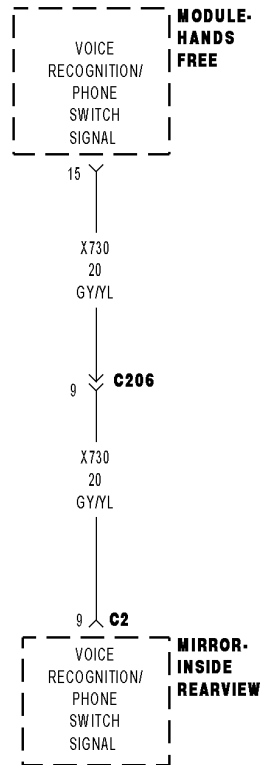
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B1435-VOICE RECOGNITION/PHONE SWITCH INPUT CIRCUIT PERFORMANCE



- **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 REAR VIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

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

Turn the ignition off.

Disconnect the Inside Rear View Mirror C2 harness connector.

Turn the ignition on.

With the scan tool, 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 scan tool 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.

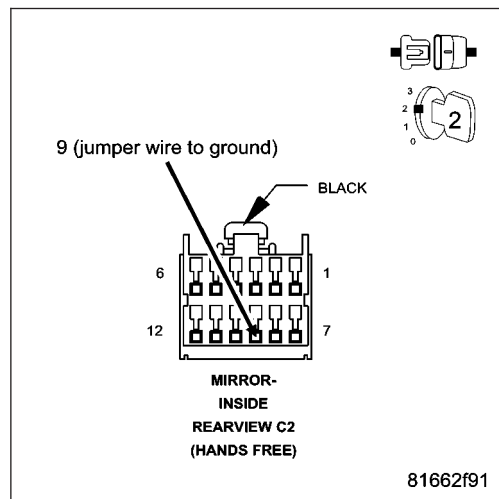
Does the sensor voltage switch from above 4.7 volts to below 0.6 volt as described?

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

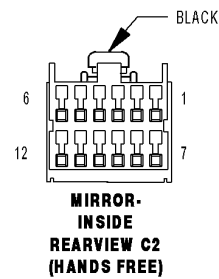
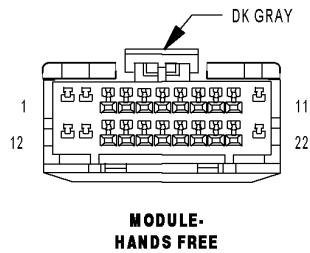
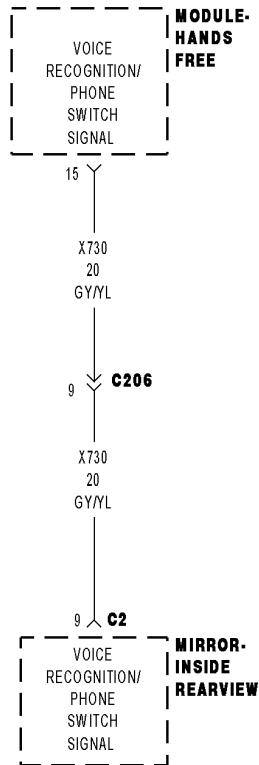
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B1436-VOICE RECOGNITION/PHONE SWITCH INPUT CIRCUIT LOW



- **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
INSIDE REAR VIEW MIRROR
(X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT SHORT TO (X835) SENSOR GROUND CIRCUIT
(X730) VOICE RECOGNITION/PHONE SWITCH SIGNAL CIRCUIT SHORT TO GROUND
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

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

Turn the ignition off.

Disconnect the Inside Rear View Mirror C2 harness connector.

Turn the ignition on.

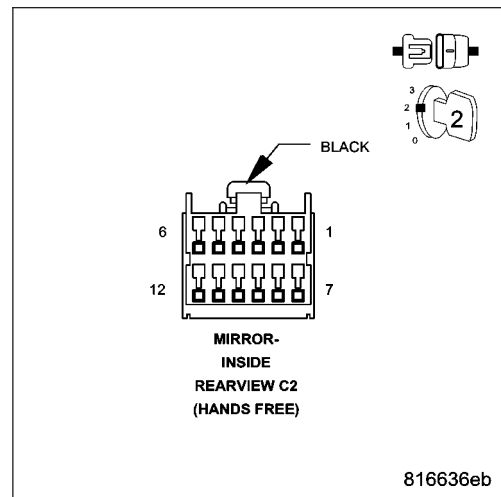
With the scan tool, monitor the VR Phone Switch voltage.

Is the voltage above 4.7 volts?

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

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Go To 3



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.

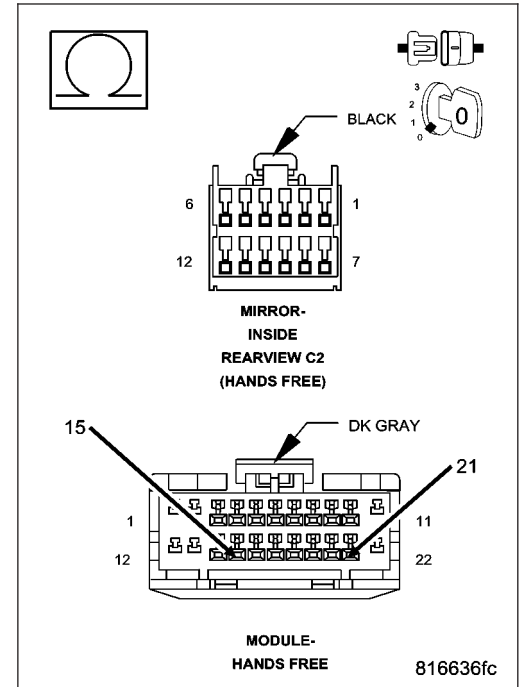
Measure the resistance between the (X730) Voice Recognition/Phone Switch Signal circuit and the (X835) Sensor Ground circuit.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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.

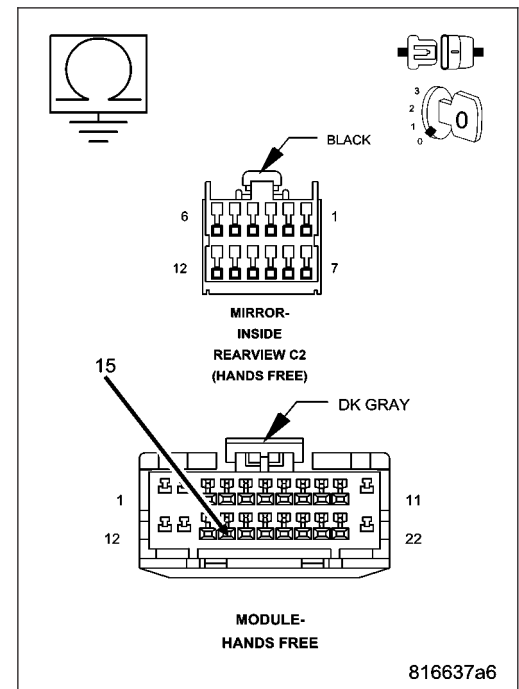
Is the resistance below 100.0 ohms?

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

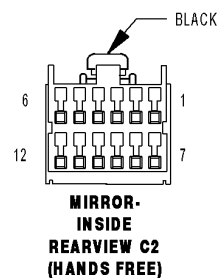
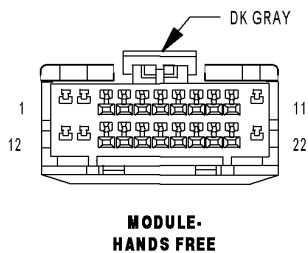
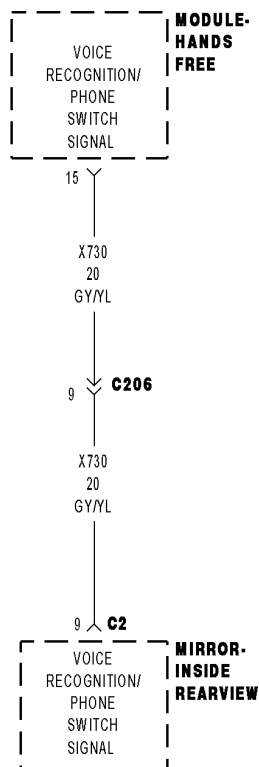
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B1437-VOICE RECOGNITION/PHONE SWITCH INPUT CIRCUIT HIGH



- **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 REAR VIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

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

Turn the ignition off.

Disconnect the Inside Rear View Mirror C2 harness connector.

Turn the ignition on.

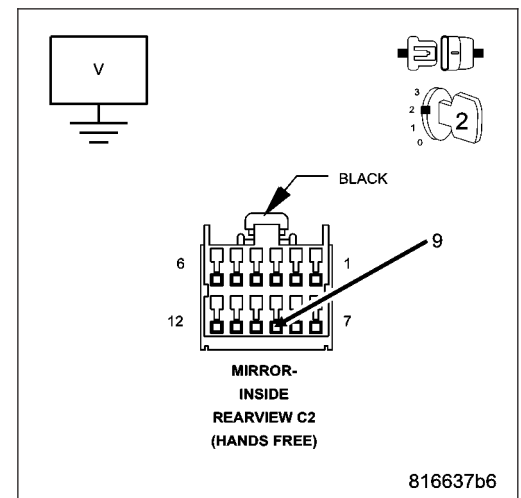
Measure the voltage of the (X730) Voice Recognition/Phone Switch Signal circuit.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Go To 3



3. INSIDE REAR VIEW 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.

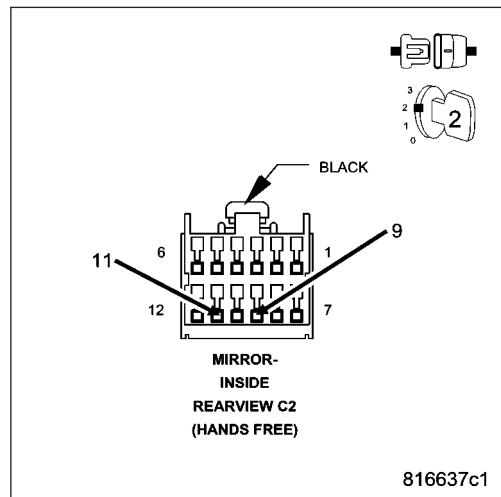
With the scan tool, monitor the VR Phone Switch Voltage.

Is the voltage approximately 0 volts?

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

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Go To 4



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

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

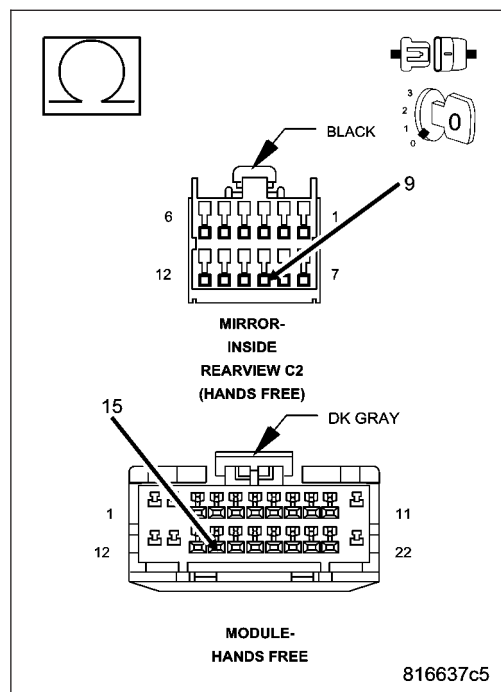
Measure the resistance of the (X730) Voice Recognition/Phone Switch Signal circuit between the HFM connector and the inside rear view mirror connector.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



5. (X835) SENSOR GROUND CIRCUIT OPEN

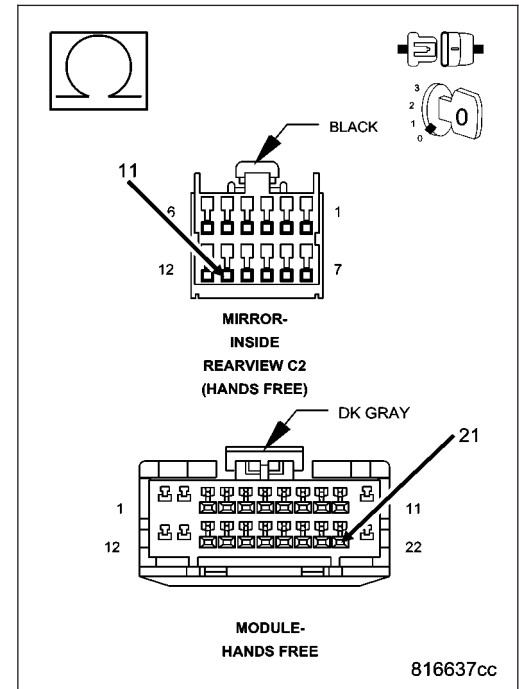
Measure the resistance of the (X835) Sensor Ground circuit between the HFM connector and the inside rear view mirror connector.

Is the resistance below 5.0 ohms?

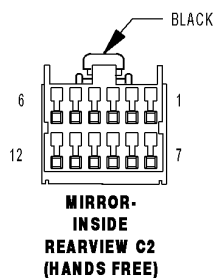
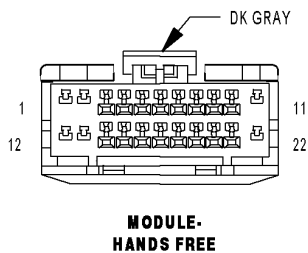
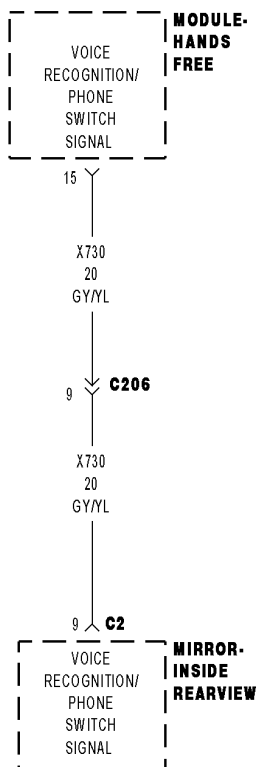
Yes >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Repair the (X835) Sensor Ground circuit for an open.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B1438-VOICE RECOGNITION SWITCH STUCK



- **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 REAR VIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTCS

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

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

Turn the ignition off.

Disconnect the Inside Rear View Mirror C2 harness connector.

Turn the ignition on.

With the scan tool, 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 scan tool 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.

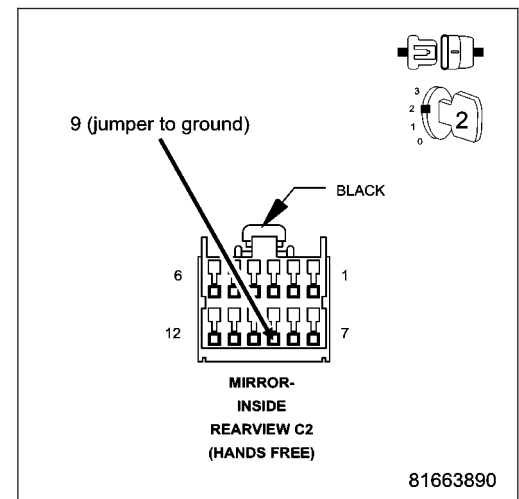
Does the sensor voltage switch from above 4.7 volts to below 0.6 volt as described?

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

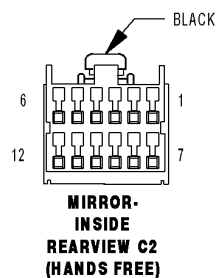
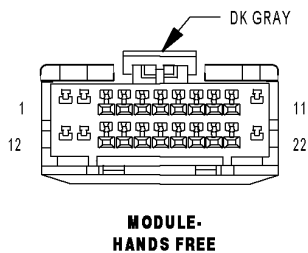
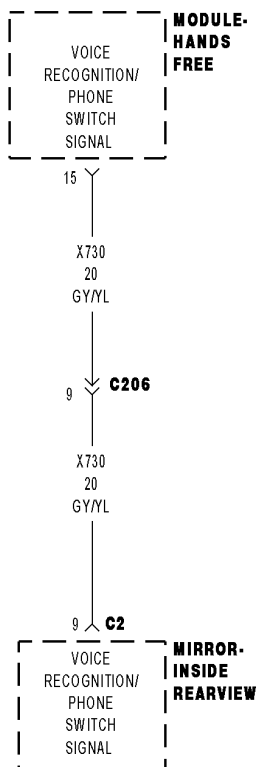
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B1439-PHONE SWITCH STUCK



- **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 REAR VIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTCS

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

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

Turn the ignition off.

Disconnect the Inside Rear View Mirror C2 harness connector.

Turn the ignition on.

With the scan tool, 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 scan tool 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.

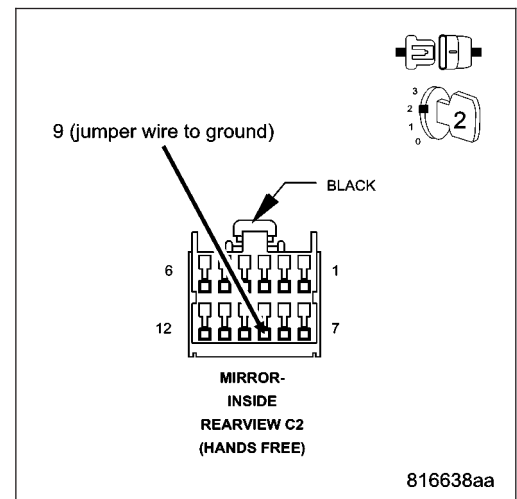
Does the sensor voltage switch from above 4.7 volts to below 0.6 volt as described?

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

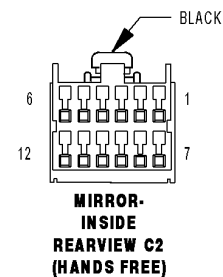
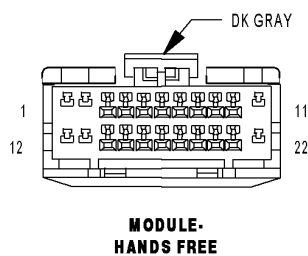
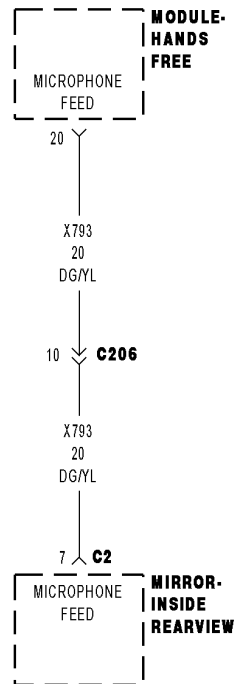
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



B145A-TELEMATICS MIRROR CONTROL CIRCUIT HIGH



- **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 REAR VIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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 scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

2. (X793) MICROPHONE FEED CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

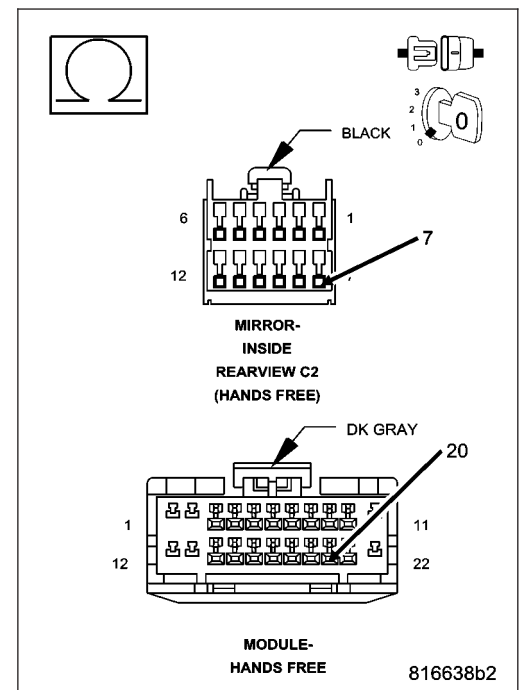
Disconnect the Inside Rear View Mirror C2 harness connector.

Measure the resistance of the (X793) Microphone Feed circuit between the HFM connector and the inside rear view 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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



3. (X793) MICROPHONE FEED CIRCUIT SHORT TO VOLTAGE

Turn the ignition on.

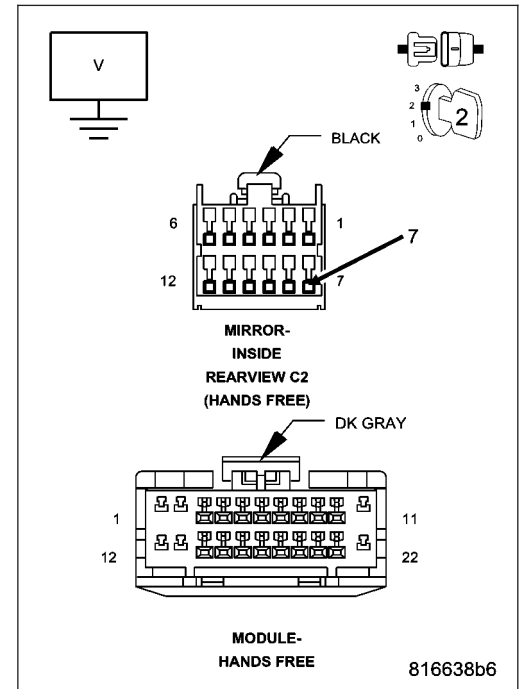
Measure the voltage of the (X793) Microphone Feed circuit.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Go To 4



4. INSIDE REAR VIEW MIRROR

Replace the Inside Rear View 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 scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

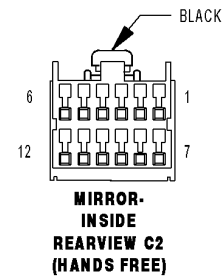
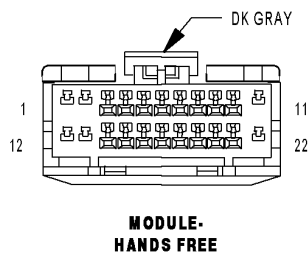
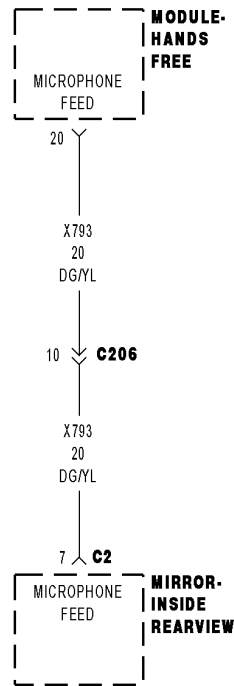
Yes >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Repair is complete.

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

B1459-TELEMATICS MIRROR CONTROL CIRCUIT LOW



- **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 REAR VIEW MIRROR
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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 scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

2. (X793) MICROPHONE FEED CIRCUIT OPEN

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

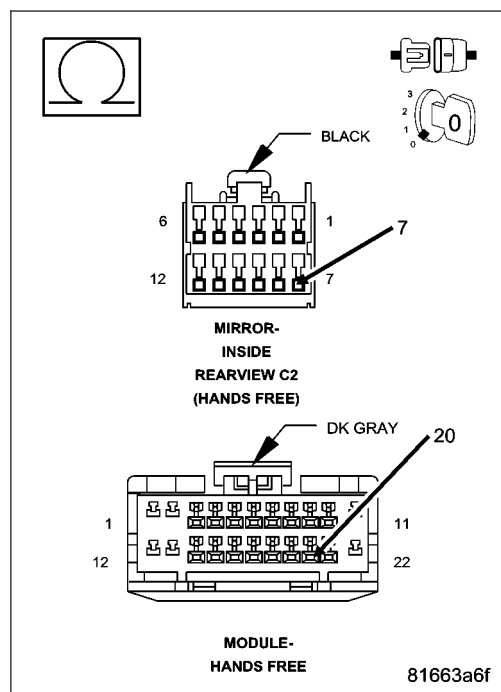
Disconnect the Inside Rear View Mirror C2 harness connector.

Measure the resistance of the (X793) Microphone Feed circuit between the HFM connector and the inside rear view 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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



3. (X793) MICROPHONE FEED CIRCUIT SHORT TO GROUND

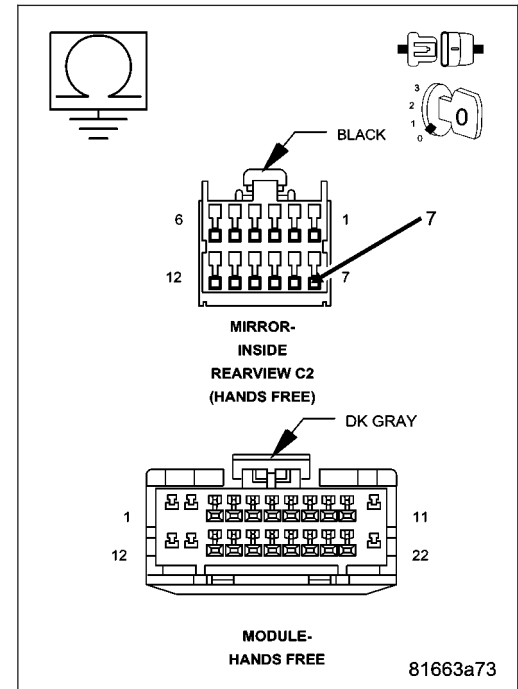
Measure the resistance between ground and the (X793) Microphone Feed circuit.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Go To 4



4. INSIDE REAR VIEW MIRROR

Replace the Inside Rear View 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 scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

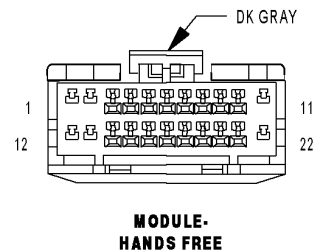
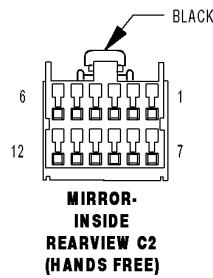
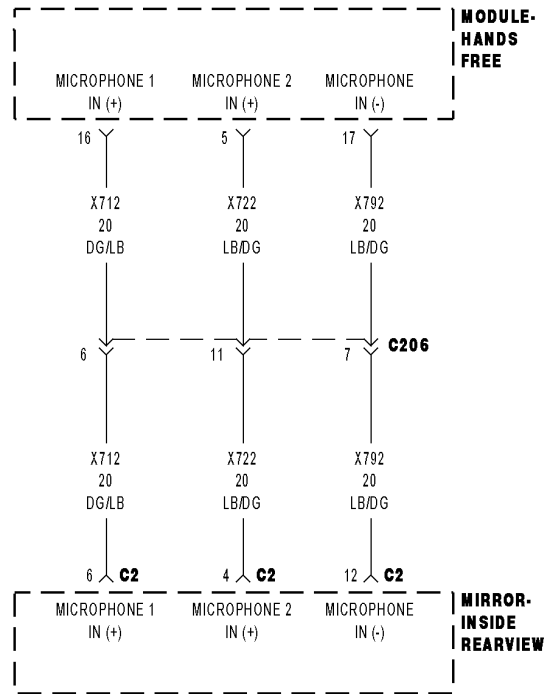
Yes >> Inspect the wiring and connectors for damage or shorted circuits. If ok, replace and program the Hands Free Module in accordance with the service information.

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Repair is complete.

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

B1492-GENERAL MICROPHONE PERFORMANCE



- **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 REAR VIEW MIRROR
 HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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 scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

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

Turn the ignition off.

Disconnect the Hands Free Module harness connector.

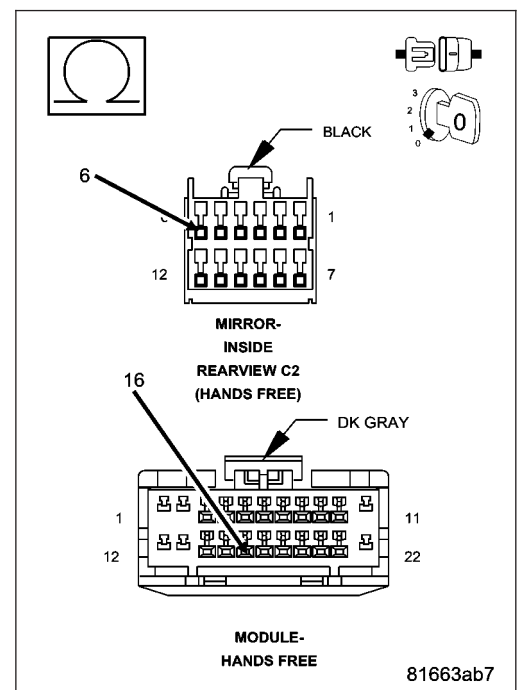
Disconnect the Inside Rear View Mirror C2 harness connector.

Measure the resistance of the (X712) Microphone 1 IN (+) circuit between the HFM connector and the inside rear view 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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



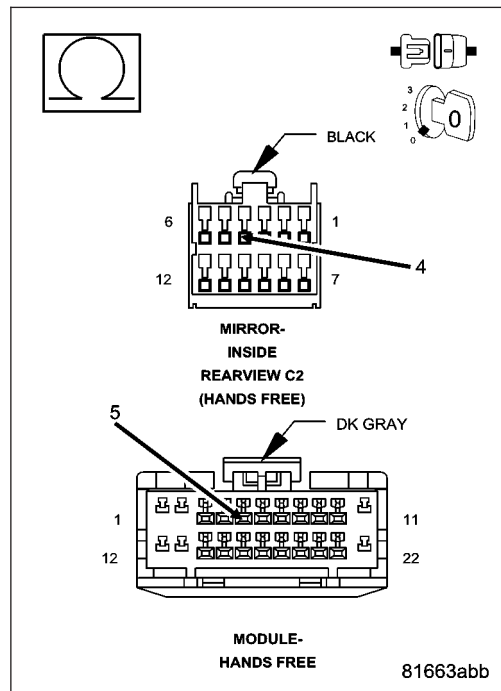
3. (X722) MICROPHONE 2 IN (+) CIRCUIT OPEN

Measure the resistance of the (X722) Microphone 2 IN (+) circuit between the HFM connector and the inside rear view 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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).



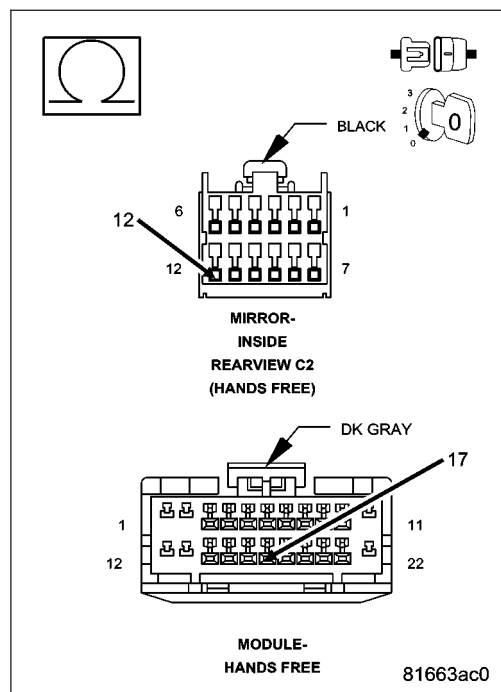
4. (X792) MICROPHONE IN (-) CIRCUIT OPEN

Measure the resistance of the (X792) Microphone IN (-) circuit between the HFM connector and the inside rear view 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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).



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

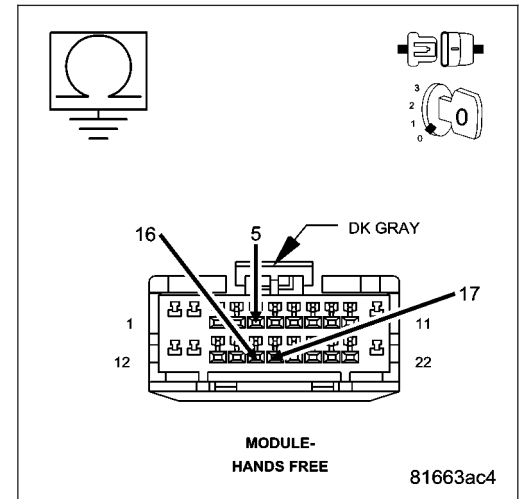
Measure the resistance between ground and each (X712) (X722) (X792) Microphone circuit.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).

No >> Go To 6



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

Turn the ignition on.

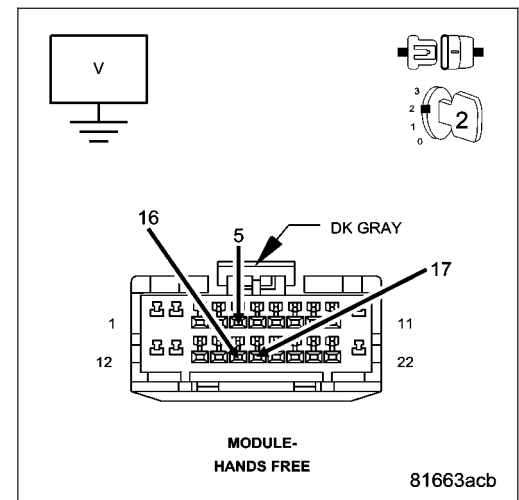
Measure the voltage of each (X712) (X722) (X792) Microphone circuit.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).

No >> Go To 7



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

Turn the ignition off.

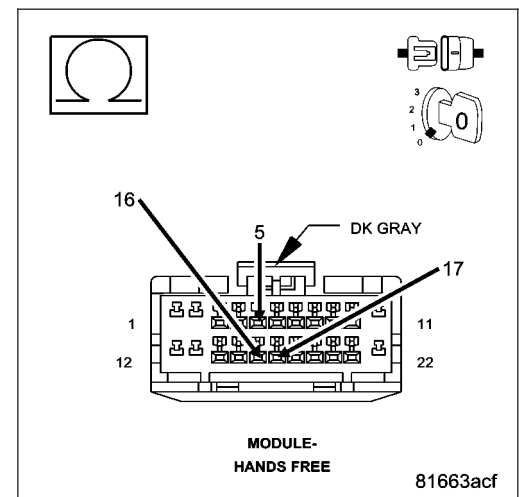
Measure the resistance between each (X712) (X722) (X792) Microphone circuit.

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).

No >> Go To 8



8. INSIDE REAR VIEW MIRROR

Replace the Inside Rear View 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 scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).

No >> Repair is complete.

Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).

B2203-ROM CHECKSUM PERFORMANCE

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. REPLACE THE HANDS FREE MODULE IF DTC IS ACTIVE

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

- Yes** >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).
- No** >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

B222A-VEHICLE LINE MISMATCH

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

- **When Monitored:**
With the ignition on.
- **Set Condition:**
The Hands Free Module will receive and monitor the vehicle line message from the PCM and record the vehicle line if different from the last vehicle line.

Possible Causes
INCORRECT PCM
HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTC

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

2. CHECK VEHICLE LINE IN PCM

With the scan tool compare the vehicle line that is programmed into the PCM to the vehicle line of the vehicle.

Does the vehicle line programmed into the PCM match the vehicle?

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 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).

No >> Replace and program the Powertrain Control Module in accordance with the service information. Ensure the PCM is replaced with the correct vehicle line PCM.

Perform (NGC) POWERTRAIN VERIFICATION TEST VER - 5.

B222E-FLASH CHECKSUM PERFORMANCE

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. REPLACE THE HANDS FREE MODULE IF DTC IS ACTIVE

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

- Yes** >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).
- No** >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

B222F-FLASH WRITE PERFORMANCE

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. REPLACE THE HANDS FREE MODULE IF DTC IS ACTIVE

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

- Yes** >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE).
- No** >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

B2223-(HFM) HANDS FREE PHONE INTERNAL

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. REPLACE THE HANDS FREE MODULE IF DTC IS ACTIVE**

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

- Yes** >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)
- No** >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

B2230–RAM WRITE PERFORMANCE

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. REPLACE THE HANDS FREE MODULE IF DTC IS ACTIVE

With the scan tool, read the active DTC's.

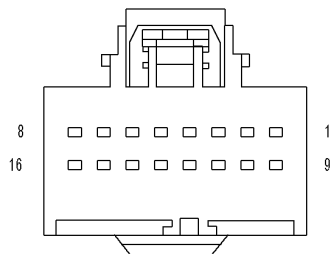
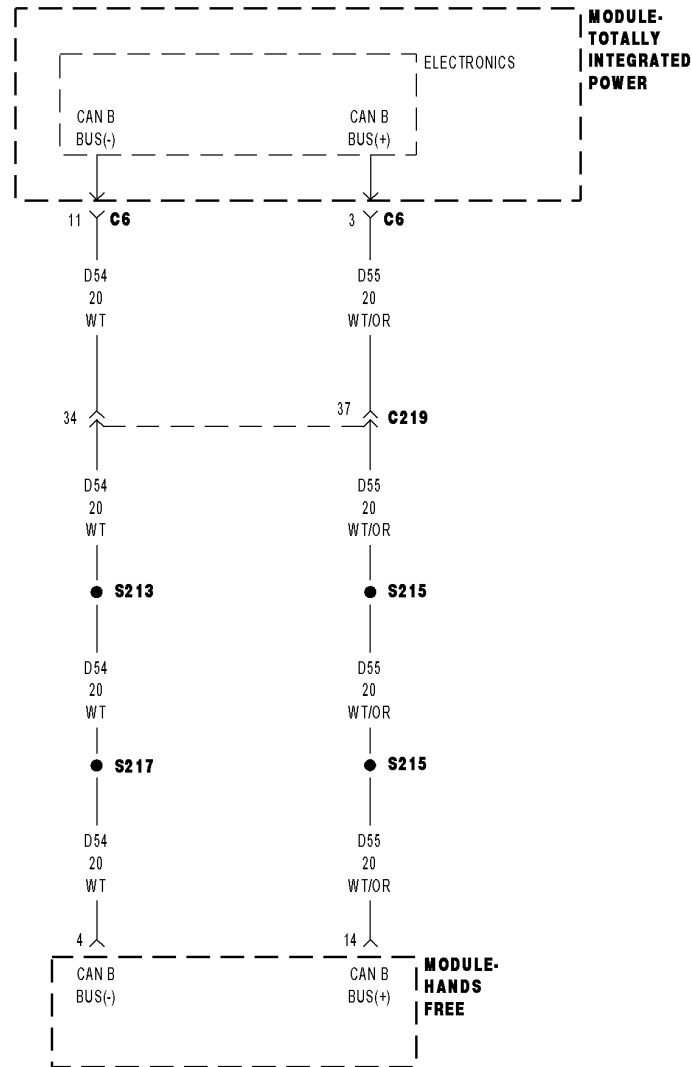
Cycle the ignition switch from off to on at least 5 times, leaving the ignition on for a minimum of 90 seconds per cycle.

With the scan tool, read the active DTC's.

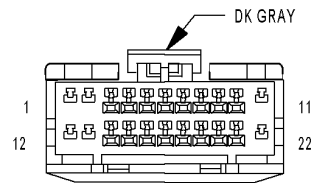
Does the scan tool display this DTC as active?

- Yes** >> Replace and program the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)
- No** >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

U0019-CAN B BUS



MODULE-TOTALLY INTEGRATED POWER C6



MODULE-HANDS FREE

- **When Monitored:**

Continuously

- **Set Condition:**

Whenever the CAN B Bus (+) or CAN B Bus (-) circuit is open, shorted to voltage or shorted to ground.

Possible Causes
CAN B BUS DTC's IN FRONT CONTROL MODULE (D55) CAN B BUS (+) CIRCUIT OPEN (D54) CAN B BUS (-) CIRCUIT OPEN HANDS FREE MODULE

Diagnostic Test

1. CHECK FOR ACTIVE DTCS

With the scan tool, read the active DTC's.

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

With the scan tool, read the active DTC's.

Does the scan tool display this DTC as active?

Yes >> Go To 2

No >> If the DTC is stored, check for an intermittent condition. Visually inspect the related wiring harness connectors. Look for broken, bent, pushed out, or corroded terminals.

2. CHECK FRONT CONTROL MODULE DTC's

With the scan tool, read Front Control Module active DTC's

Does the scan tool display any CAN B BUS DTC's – ACTIVE?

Yes >> (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Go To 3

3. (D55) CAN B BUS (+) CIRCUIT OPEN

Turn the ignition off.

Disconnect the negative battery cable.

Disconnect the Hands Free Module connector.

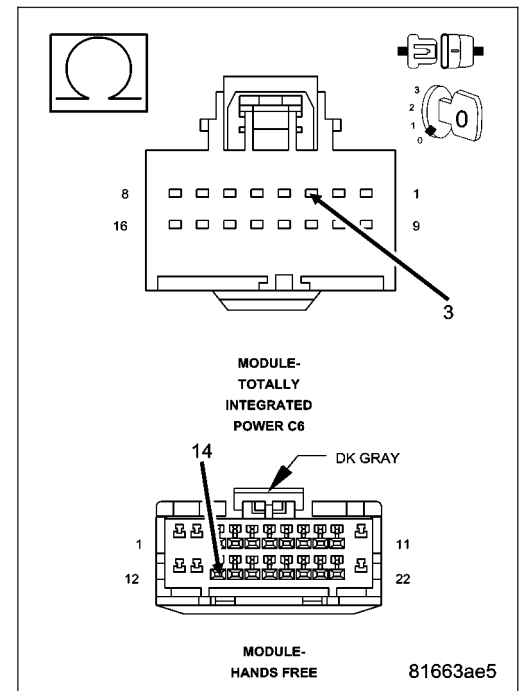
Disconnect the Totally Integrated Power Module C6 connector.

Measure the resistance of the (D55) CAN B Bus (+) circuit between the Totally Integrated Power Module C6 connector and the Hands Free Module connector.

Is the resistance below 2.0 ohms?

Yes >> Go To 4

No >> Repair the (D55) CAN B Bus (+) circuit for an open.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



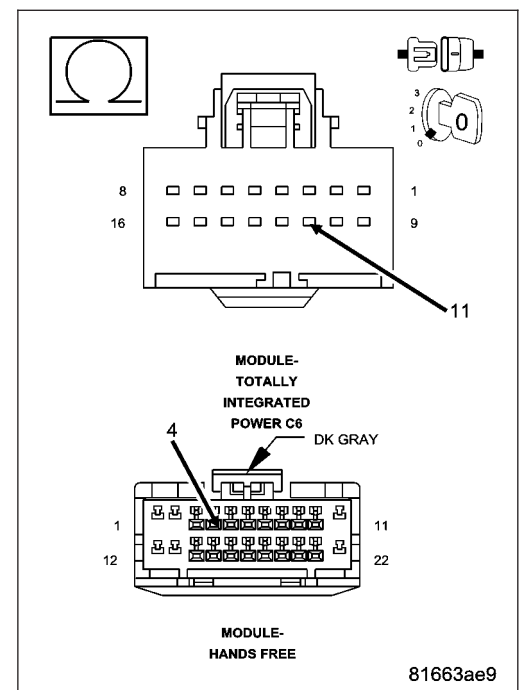
4. (D54) CAN B BUS (-) CIRCUIT OPEN

Measure the resistance of the (D54) CAN B Bus (-) circuit between the Totally Integrated Power Module C6 connector and the Hands Free Module connector.

Is the resistance below 2.0 ohms?

Yes >> Replace the Hands Free Module in accordance with the service information.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)

No >> Repair the (D54) CAN B Bus (-) circuit for an open.
Perform BODY VERIFICATION TEST – VER 1. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - STANDARD PROCEDURE)



U0141–LOST COMMUNICATION WITH FRONT CONTROL MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0151-LOST COMMUNICATION WITH OCCUPANT RESTRAINT CONTROLLER

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0154-LOST COMMUNICATION WITH OCCUPANT CLASSIFICATION MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0155-LOST COMMUNICATION WITH CLUSTER/CCN

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0156-LOST COMMUNICATION WITH EOM

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0159-LOST COMMUNICATION WITH PARKING ASSIST CONTROL MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0164-LOST COMMUNICATION WITH HVAC CONTROL MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0167-LOST COMMUNICATION WITH INTRUSION TRANSCEIVER CONTROL MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0168-LOST COMMUNICATION WITH VEHICLE SECURITY CONTROL MODULE (SKREEM/WCM)

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0169-LOST COMMUNICATION WITH SUNROOF CONTROL MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0184-LOST COMMUNICATION WITH RADIO

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0186-LOST COMMUNICATION WITH AUDIO AMPLIFIER

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0195-LOST COMMUNICATION WITH SDARS

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0196-LOST COMMUNICATION WITH VEHICLE ENTERTAINMENT CONTROL MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0199-LOST COMMUNICATION WITH DRIVER DOOR MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0200-LOST COMMUNICATION WITH PASSENGER DOOR MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0208-LOST COMMUNICATION WITH HEATED SEAT CONTROL MODULE

For a complete wiring diagram Refer to Section 8W.

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0209-LOST COMMUNICATION WITH MEMORY SEAT CONTROL MODULE

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

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0212-LOST COMMUNICATION WITH SCCM - CAN B

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

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0231-LOST COMMUNICATION WITH RAIN SENSING MODULE

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

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

U0241-LOST COMMUNICATION WITH AUTO HIGHBEAM HEADLAMP CONTROL MODULE

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

(Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES - DIAGNOSIS AND TESTING) for the diagnostic test procedure.

NAVIGATION/TELECOMMUNICATION - SERVICE INFORMATION

TABLE OF CONTENTS

	page		page
NAVIGATION/TELECOMMUNICATION - SERVICE INFORMATION		MODULE-HANDS FREE	
DESCRIPTION	55	REMOVAL	58
OPERATION	55	INSTALLATION	58
DIAGNOSIS AND TESTING			
TELECOMMUNICATION	55		

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

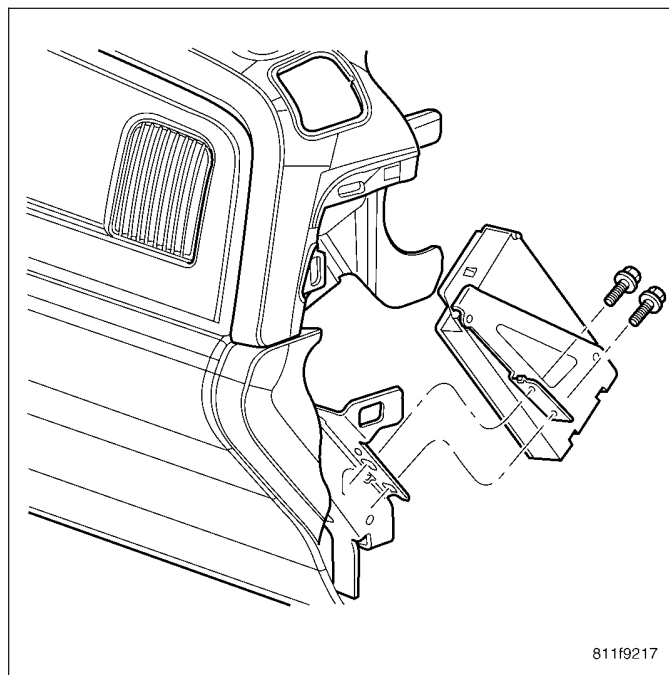
CONDITION	POSSIBLE CAUSE	CORRECTION
Phone Not Available	1. Bluetooth phone not paired to the system.	1. Ensure that phone(s) are paired to the system.
	2. Bluetooth phone not present or turned OFF.	2. Make sure paired phone is present, turned ON and that the Bluetooth option is enabled on the phone.
	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.
	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.

CONDITION	POSSIBLE CAUSE	CORRECTION
	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.

