

Information and Entertainment System

Diagnostic Trouble Code (DTC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Diagnostic Trouble Code Chart

Module	DTC	Description	Action
ACM	B150C:01	Automobile Audio Bus (A2B) Node 1: General Electrical Failure	GO to Pinpoint Test C
ACM	B150C:11	Automobile Audio Bus (A2B) Node 1: Circuit Short To Ground	GO to Pinpoint Test C
ACM	B150C:12	Automobile Audio Bus (A2B) Node 1: Circuit Short To Battery	GO to Pinpoint Test C
ACM	B150C:13	Automobile Audio Bus (A2B) Node 1: Circuit Open	GO to Pinpoint Test C
ACM	B150C:55	Automobile Audio Bus (A2B) Node 1: Not Configured	GO to Pinpoint Test C
ACM	B150C:87	Automobile Audio Bus (A2B) Node 1: Missing Message	GO to Pinpoint Test C
ACM	B150C:8F	Automobile Audio Bus (A2B) Node 1: Erratic	GO to Pinpoint Test C
ACM	B150C:95	Automobile Audio Bus (A2B) Node 1: Incorrect Assembly	GO to Pinpoint Test C
ACM	B1511:01	Automobile Audio Bus (A2B) Master Node: General Electrical Failure	GO to Pinpoint Test C
ACM	B1511:11	Automobile Audio Bus (A2B) Master Node: Circuit Short To Ground	GO to Pinpoint Test C
ACM	B1511:12	Automobile Audio Bus (A2B) Master Node: Circuit Short To Battery	GO to Pinpoint Test C
ACM	B1511:13	Automobile Audio Bus (A2B) Master Node: Circuit Open	GO to Pinpoint Test C
ACM	B1511:95	Automobile Audio Bus (A2B) Master Node: Incorrect Assembly	GO to Pinpoint Test C
ACM	B1A01:01	Speaker #1: General Electrical Failure	GO to Pinpoint Test F
ACM	B1A01:01	Speaker #1: General Electrical Failure	GO to Pinpoint Test H
ACM	B1A01:11	Speaker #1: Circuit Short To Ground	GO to Pinpoint Test F
ACM	B1A01:11	Speaker #1: Circuit Short To Ground	GO to Pinpoint Test H
ACM	B1A01:12	Speaker #1: Circuit Short To Battery	GO to Pinpoint Test F
ACM	B1A01:12	Speaker #1: Circuit Short To Battery	GO to Pinpoint Test H
ACM	B1A01:13	Speaker #1: Circuit Open	GO to Pinpoint Test F
ACM	B1A01:13	Speaker #1: Circuit Open	GO to Pinpoint Test H
ACM	B1A02:01	Speaker #2: General Electrical Failure	GO to Pinpoint Test F
ACM	B1A02:01	Speaker #2: General Electrical Failure	GO to Pinpoint Test H
ACM	B1A02:11	Speaker #2: Circuit Short To Ground	GO to Pinpoint Test F
ACM	B1A02:11	Speaker #2: Circuit Short To Ground	GO to Pinpoint Test H
ACM	B1A02:12	Speaker #2: Circuit Short To Battery	GO to Pinpoint Test F
ACM	B1A02:12	Speaker #2: Circuit Short To Battery	GO to Pinpoint Test H
ACM	B1A02:13	Speaker #2: Circuit Open	GO to Pinpoint Test F
ACM	B1A02:13	Speaker #2: Circuit Open	GO to Pinpoint Test H
ACM	B1A03:01	Speaker #3: General Electrical Failure	GO to Pinpoint Test F
ACM	B1A03:01	Speaker #3: General Electrical Failure	GO to Pinpoint Test G
ACM	B1A03:01	Speaker #3: General Electrical Failure	GO to Pinpoint Test H
ACM	B1A03:11	Speaker #3: Circuit Short To Ground	GO to Pinpoint Test F
ACM	B1A03:11	Speaker #3: Circuit Short To Ground	GO to Pinpoint Test G
ACM	B1A03:11	Speaker #3: Circuit Short To Ground	GO to Pinpoint Test H
ACM	B1A03:12	Speaker #3: Circuit Short To Battery	GO to Pinpoint Test F
ACM	B1A03:12	Speaker #3: Circuit Short To Battery	GO to Pinpoint Test G
ACM	B1A03:12	Speaker #3: Circuit Short To Battery	GO to Pinpoint Test H
ACM	B1A03:13	Speaker #3: Circuit Open	GO to Pinpoint Test F
ACM	B1A03:13	Speaker #3: Circuit Open	GO to Pinpoint Test G
ACM	B1A03:13	Speaker #3: Circuit Open	GO to Pinpoint Test H
ACM	B1A04:01	Speaker #4: General Electrical Failure	GO to Pinpoint Test F
ACM	B1A04:01	Speaker #4: General Electrical Failure	GO to Pinpoint Test G

ACM	B1A04:01	Speaker #4: General Electrical Failure	GO to Pinpoint Test H
ACM	B1A04:11	Speaker #4: Circuit Short To Ground	GO to Pinpoint Test F
ACM	B1A04:11	Speaker #4: Circuit Short To Ground	GO to Pinpoint Test G
ACM	B1A04:11	Speaker #4: Circuit Short To Ground	GO to Pinpoint Test H
ACM	B1A04:12	Speaker #4: Circuit Short To Battery	GO to Pinpoint Test F
ACM	B1A04:12	Speaker #4: Circuit Short To Battery	GO to Pinpoint Test G
ACM	B1A04:12	Speaker #4: Circuit Short To Battery	GO to Pinpoint Test H
ACM	B1A04:13	Speaker #4: Circuit Open	GO to Pinpoint Test F
ACM	B1A04:13	Speaker #4: Circuit Open	GO to Pinpoint Test G
ACM	B1A04:13	Speaker #4: Circuit Open	GO to Pinpoint Test H
ACM	B1A06:01	Speaker #6: General Electrical Failure	GO to Pinpoint Test F
ACM	B1A06:11	Speaker #6: Circuit Short To Ground	GO to Pinpoint Test F
ACM	B1A06:12	Speaker #6: Circuit Short To Battery	GO to Pinpoint Test F
ACM	B1A06:13	Speaker #6: Circuit Open	GO to Pinpoint Test F
ACM	B1A07:13	Speaker #7: Circuit Open	GO to Pinpoint Test H
ACM	B1A08:13	Speaker #8: Circuit Open	GO to Pinpoint Test H
ACM	B1A09:13	Speaker #9: Circuit Open	GO to Pinpoint Test H
ACM	B1A10:13	Speaker #10: Circuit Open	GO to Pinpoint Test H
ACM	B1A56:11	Antenna: Circuit Short To Ground	GO to Pinpoint Test A
ACM	B1A56:15	Antenna: Circuit Short To Battery or Open	GO to Pinpoint Test A
ACM	B1A89:11	Satellite Antenna: Circuit Short To Ground	GO to Pinpoint Test B
ACM	B1A89:13	Satellite Antenna: Circuit Open	GO to Pinpoint Test B
ACM	U0100:00	Lost Communication with ECM/PCM "A": No Sub Type Information	GO to Pinpoint Test AB
ACM	U0121:00	Lost Communication With Anti-Lock Brake System (ABS) Control Module: No Sub Type Information	GO to Pinpoint Test AC
ACM	U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AD
ACM	U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test AF
ACM	U0198:00	Lost Communication With Telematic Control Module: No Sub Type Information	GO to Pinpoint Test AH
ACM	U0238:00	Lost Communication With Digital Audio Control Module "D": No Sub Type Information	GO to Pinpoint Test AI
ACM	U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	GO to Pinpoint Test AJ
ACM	U201A:51	Control Module Main Calibration Data: Not Programmed	GO to Pinpoint Test AQ
ACM	U201B:04	Control Module Calibration Data #2: System Internal Failure	GO to Pinpoint Test AQ
ACM	U201B:51	Control Module Calibration Data #2: Not Programmed	GO to Pinpoint Test AQ
ACM	U201B:55	Control Module Calibration Data #2: Not Configured	GO to Pinpoint Test AQ
ACM	U2024:00	Control Module Cal-Config Data: No Sub Type Information	GO to Pinpoint Test AQ
ACM	U2024:57	Control Module Cal-Config Data: Invalid / Incompatible Software Component	GO to Pinpoint Test AQ
ACM	U2026:54	Control Module Cal-Config Data #3: Missing Calibration	GO to Pinpoint Test AQ
ACM	U2100:00	Initial Configuration Not Complete: No Sub Type Information	GO to Pinpoint Test AQ
ACM	U2101:00	Control Module Configuration Incompatible: No Sub Type Information	GO to Pinpoint Test AQ
ACM	U3000:41	Control Module: General Checksum Failure	GO to Pinpoint Test AP
ACM	U3000:42	Control Module: General Memory Failure	GO to Pinpoint Test AP
ACM	U3000:92	Control Module: Performance or Incorrect Operation	GO to Pinpoint Test AP
ACM	U3000:94	Control Module: Unexpected Operation	GO to Pinpoint Test AP
ACM	U3000:96	Control Module: Component Internal Failure	GO to Pinpoint Test AP
ACM	U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AK
ACM	U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AL
APIM	B1087:01	LIN Bus "A": General Electrical Failure	GO to Pinpoint Test L
APIM	B108E:01	Display: General Electrical Failure	GO to Pinpoint Test O
APIM	B108E:02	Display: General Signal Failure	GO to Pinpoint Test O
APIM	B108E:4A	Display: Inccorret Component Installed	GO to Pinpoint Test O
APIM	B108E:4B	Display: Over Temperature	GO to Pinpoint Test O
APIM	B108E:87	Display: Missing Message	GO to Pinpoint Test O
APIM	B119F:01	GPS Antenna: General Electrical Failure	GO to Pinpoint Test W
APIM	B119F:13	GPS Antenna: Circuit Open	GO to Pinpoint Test W
APIM	B1252:11	USB Port: Circuit Short to Ground	GO to Pinpoint Test S
APIM	B1252:13	USB Port: Circuit Open	GO to Pinpoint Test S
APIM	B14FD:11	External Media Control Connectivity: Circuit Short To Ground	GO to Pinpoint Test S

	B156D:54	TCU Customer Connectivity Settings Synchronization With HMI: Missing Calibration	GO to Pinpoint Test AU
APIM	B156D:89	TCU Customer Connectivity Settings Synchronization With HMI: Data Transfer Failure	GO to Pinpoint Test AU
APIM	B15EB:57	Consumer Apps: Invalid / Incompatible Software Component	GO to Pinpoint Test AU
APIM	B1D79:11	Microphone Input: Circuit Short To Ground	GO to Pinpoint Test Q
APIM	B1D79:12	Microphone Input: Circuit Short To Battery	GO to Pinpoint Test Q
APIM	B1D79:13	Microphone Input: Circuit Open	GO to Pinpoint Test Q
APIM	U0100:00	Lost Communication with ECM/PCM "A": No Sub Type Information	GO to Pinpoint Test AB
APIM	U0121:00	Lost Communication With Anti-Lock Brake System (ABS) Control Module: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0121:55	Lost Communication With Anti-Lock Brake System (ABS) Control Module "A": Not Configured	GO to Pinpoint Test AU
APIM	U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0159:00	Lost Communication With Parking Assist Control Module "A": No Sub Type Information	GO to Pinpoint Test AS
APIM	U0162:00	Lost Communication With Navigation Display Module: No Sub Type Information	GO to Pinpoint Test O
APIM	U0184:00	Lost Communication With Radio: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0198:00	Lost Communication With Telematic Control Module: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0208:00	Lost Communication With "Seat Control Module A": No Sub Type Information	GO to Pinpoint Test AS
APIM	U020C:00	Lost Communication with Wireless Accessory Charging Module "A": No Sub Type Information	GO to Pinpoint Test AS
APIM	U0212:00	Lost Communication With Steering Column Control Module: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0232:00	Lost Communication With Side Obstacle Detection Control Module - Left: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0233:00	Lost Communication With Side Obstacle Detection Control Module - Right: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0238:00	Lost Communication With Digital Audio Control Module "D": No Sub Type Information	GO to Pinpoint Test AS
APIM	U023B:00	Lost Communication With Image Processing Module B: No Sub Type Information	GO to Pinpoint Test AS
APIM	U024B:00	Lost Communication with Seat Control Module "G": No Sub Type Information	GO to Pinpoint Test AS
APIM	U024C:00	Lost Communication with Seat Control Module "H": No Sub Type Information	GO to Pinpoint Test AS
APIM	U0293:00	Lost Communication With Hybrid/EV Powertrain Control Module: No Sub Type Information	GO to Pinpoint Test AS
APIM	U0415:00	Invalid Data Received From Anti-Lock Brake System (ABS) Control Module: No Sub Type Information	GO to Pinpoint Test AT
APIM	U0415:94	Invalid Data Received From Anti-Lock Brake System (ABS) Control Module: Unexpected Operation	GO to Pinpoint Test AT
APIM	U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	GO to Pinpoint Test AT
APIM	U0452:00	Invalid Data Received From Restraints Control Module: No Sub Type Information	GO to Pinpoint Test AT
APIM	U1A00:87	Private Communication Network: Missing Message	GO to Pinpoint Test B
APIM	U2013:01	Switch Pack: General Electrical Failure	GO to Pinpoint Test L
APIM	U2013:16	Switch Pack: Circuit Voltage Below Threshold	GO to Pinpoint Test L
APIM	U2013:17	Switch Pack: Circuit Voltage Above Threshold	GO to Pinpoint Test L
APIM	U2013:63	Switch Pack: Circuit / Component Protection Time-Out	GO to Pinpoint Test L
APIM	U2017:45	Control Module Software #2: Program Memory Failure	GO to Pinpoint Test AU
APIM	U2017:51	Control Module Software #2: Not Programmed	GO to Pinpoint Test AU
APIM	U2017:52	Control Module Software #2: Not Activated	GO to Pinpoint Test AU
APIM	U2017:54	Control Module Software #2: Missing Calibration	GO to Pinpoint Test AU
APIM	U2100:00	Initial Configuration Not Complete: No Sub Type Information	GO to Pinpoint Test AU
APIM	U2101:00	Control Module Configuration Incompatible: No Sub Type Information	GO to Pinpoint Test AU
APIM	U3000:04	Control Module: System Internal Failure	GO to Pinpoint Test AV
APIM	U3000:05	Control Module: System Programming Failure	GO to Pinpoint Test AV
APIM	U3000:09	Control Module: Component Failure	GO to Pinpoint Test AV
APIM	U3000:41	Control Module: General Checksum Failure	GO to Pinpoint Test AV
APIM	U3000:43	Control Module: Special Memory Failure	GO to Pinpoint Test AV
APIM	U3000:57	Control Module: Invalid / Incompatible Software Component	GO to Pinpoint Test AU
APIM	U3000:88	Control Module: Bus Off	GO to Pinpoint Test AS
APIM	U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AK
APIM	U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AL
DSP	B13FB:11	Audio Enable Line: Circuit Short To Ground	GO to Pinpoint Test C
DSP	B1A01:01	Speaker #1: General Electrical Failure	GO to Pinpoint Test I
DSP	B1A01:01	Speaker #1: General Electrical Failure	GO to Pinpoint Test J
DSP	B1A01:11	Speaker #1: Circuit Short To Ground	GO to Pinpoint Test I
DSP	B1A01:11	Speaker #1: Circuit Short To Ground	GO to Pinpoint Test J
DSP	B1A01:12	Speaker #1: Circuit Short To Battery	GO to Pinpoint Test I

	B1A01:12	Speaker #1: Circuit Short To Battery	GO to Pinpoint Test J
DSP	B1A01:13	Speaker #1: Circuit Open	GO to Pinpoint Test I
DSP	B1A01:13	Speaker #1: Circuit Open	GO to Pinpoint Test J
DSP	B1A02:01	Speaker #2: General Electrical Failure	GO to Pinpoint Test I
DSP	B1A02:01	Speaker #2: General Electrical Failure	GO to Pinpoint Test J
DSP	B1A02:11	Speaker #2: Circuit Short To Ground	GO to Pinpoint Test I
DSP	B1A02:11	Speaker #2: Circuit Short To Ground	GO to Pinpoint Test J
DSP	B1A02:12	Speaker #2: Circuit Short To Battery	GO to Pinpoint Test I
DSP	B1A02:12	Speaker #2: Circuit Short To Battery	GO to Pinpoint Test J
DSP	B1A02:13	Speaker #2: Circuit Open	GO to Pinpoint Test I
DSP	B1A02:13	Speaker #2: Circuit Open	GO to Pinpoint Test J
DSP	B1A03:01	Speaker #3: General Electrical Failure	GO to Pinpoint Test I
DSP	B1A03:01	Speaker #3: General Electrical Failure	GO to Pinpoint Test K
DSP	B1A03:11	Speaker #3: Circuit Short To Ground	GO to Pinpoint Test I
DSP	B1A03:11	Speaker #3: Circuit Short To Ground	GO to Pinpoint Test K
DSP	B1A03:12	Speaker #3: Circuit Short To Battery	GO to Pinpoint Test I
DSP	B1A03:12	Speaker #3: Circuit Short To Battery	GO to Pinpoint Test K
DSP	B1A03:13	Speaker #3: Circuit Open	GO to Pinpoint Test I
DSP	B1A03:13	Speaker #3: Circuit Open	GO to Pinpoint Test K
DSP	B1A04:01	Speaker #4: General Electrical Failure	GO to Pinpoint Test I
DSP	B1A04:01	Speaker #4: General Electrical Failure	GO to Pinpoint Test J
DSP	B1A04:11	Speaker #4: Circuit Short To Ground	GO to Pinpoint Test I
DSP	B1A04:11	Speaker #4: Circuit Short To Ground	GO to Pinpoint Test J
DSP	B1A04:12	Speaker #4: Circuit Short To Battery	GO to Pinpoint Test I
DSP	B1A04:12	Speaker #4: Circuit Short To Battery	GO to Pinpoint Test J
DSP	B1A04:13	Speaker #4: Circuit Open	GO to Pinpoint Test I
DSP	B1A04:13	Speaker #4: Circuit Open	GO to Pinpoint Test J
DSP	B1A05:01	Speaker #5: General Electrical Failure	GO to Pinpoint Test I
DSP	B1A05:01	Speaker #5: General Electrical Failure	GO to Pinpoint Test J
DSP	B1A05:11	Speaker #5: Circuit Short To Ground	GO to Pinpoint Test I
DSP	B1A05:11	Speaker #5: Circuit Short To Ground	GO to Pinpoint Test J
DSP	B1A05:12	Speaker #5: Circuit Short To Battery	GO to Pinpoint Test I
DSP	B1A05:12	Speaker #5: Circuit Short To Battery	GO to Pinpoint Test J
DSP	B1A05:13	Speaker #5: Circuit Open	GO to Pinpoint Test I
DSP	B1A05:13	Speaker #5: Circuit Open	GO to Pinpoint Test J
DSP	B1A06:01	Speaker #6: General Electrical Failure	GO to Pinpoint Test I
DSP	B1A06:01	Speaker #6: General Electrical Failure	GO to Pinpoint Test J
DSP	B1A06:11	Speaker #6: Circuit Short To Ground	GO to Pinpoint Test I
DSP	B1A06:11	Speaker #6: Circuit Short To Ground	GO to Pinpoint Test J
DSP	B1A06:12	Speaker #6: Circuit Short To Battery	GO to Pinpoint Test I
DSP	B1A06:12	Speaker #6: Circuit Short To Battery	GO to Pinpoint Test J
DSP	B1A06:13	Speaker #6: Circuit Open	GO to Pinpoint Test I
DSP	B1A06:13	Speaker #6: Circuit Open	GO to Pinpoint Test J
DSP	B1A07:01	Speaker #7: General Electrical Failure	GO to Pinpoint Test J
DSP	B1A07:11	Speaker #7: Circuit Short To Ground	GO to Pinpoint Test J
DSP	B1A07:12	Speaker #7: Circuit Short To Battery	GO to Pinpoint Test J
DSP	B1A07:13	Speaker #7: Circuit Open	GO to Pinpoint Test J
DSP	B1A08:01	Speaker #8: General Electrical Failure	GO to Pinpoint Test J
DSP	B1A08:11	Speaker #8: Circuit Short To Ground	GO to Pinpoint Test J
DSP	B1A08:12	Speaker #8: Circuit Short To Battery	GO to Pinpoint Test J
DSP	B1A08:13	Speaker #8: Circuit Open	GO to Pinpoint Test J
DSP	B1A09:01	Speaker #9: General Electrical Failure	GO to Pinpoint Test J
DSP	B1A09:11	Speaker #9: Circuit Short To Ground	GO to Pinpoint Test J
DSP	B1A09:12	Speaker #9: Circuit Short To Battery	GO to Pinpoint Test J
DSP	B1A09:13	Speaker #9: Circuit Open	GO to Pinpoint Test J
DSP	B1A10:01	Speaker #10: General Electrical Failure	GO to Pinpoint Test K

	B1A10:11	Speaker #10: Circuit Short To Ground	GO to Pinpoint Test K
<u>DSP</u>	B1A10:12	Speaker #10: Circuit Short To Battery	GO to Pinpoint Test K
<u>DSP</u>	B1A10:13	Speaker #10: Circuit Open	GO to Pinpoint Test K
<u>DSP</u>	U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AD
<u>DSP</u>	U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	GO to Pinpoint Test AF
<u>DSP</u>	U0184:00	Lost Communication With Radio: No Sub Type Information	GO to Pinpoint Test AG
<u>DSP</u>	U0198:00	Lost Communication With Telematic Control Module: No Sub Type Information	GO to Pinpoint Test AH
<u>DSP</u>	U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	GO to Pinpoint Test AJ
<u>DSP</u>	U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	GO to Pinpoint Test AN
<u>DSP</u>	U0423:00	Invalid Data Received from Instrument Panel Cluster: No Sub Type Information	GO to Pinpoint Test AN
<u>DSP</u>	U201A:51	Control Module Main Calibration Data: Not Programmed	GO to Pinpoint Test AO
<u>DSP</u>	U2024:41	Control Module Cal-Config Data: General Checksum Failure	GO to Pinpoint Test AO
<u>DSP</u>	U2024:48	Control Module Cal-Config Data: Supervision Software	GO to Pinpoint Test AO
<u>DSP</u>	U2024:51	Control Module Cal-Config Data: Not Programmed	GO to Pinpoint Test AO
<u>DSP</u>	U2100:00	Initial Configuration Not Complete: No Sub Type Information	GO to Pinpoint Test AO
<u>DSP</u>	U2101:00	Control Module Configuration Incompatible: No Sub Type Information	GO to Pinpoint Test AO
<u>DSP</u>	U3000:41	Control Module: General Checksum Failure	GO to Pinpoint Test AP
<u>DSP</u>	U3000:42	Control Module: General Memory Failure	GO to Pinpoint Test AP
<u>DSP</u>	U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AK
<u>DSP</u>	U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AL
<u>SCCM</u>	B137F:11	Steering Wheel Left Switch Pack: Circuit Short To Ground	GO to Pinpoint Test M
<u>SCCM</u>	B137F:13	Steering Wheel Left Switch Pack: Circuit Open	GO to Pinpoint Test M
<u>SCCM</u>	B137F:4A	Steering Wheel Left Switch Pack: Incorrect Component Installed	GO to Pinpoint Test M
<u>SCCM</u>	B137F:96	Steering Wheel Left Switch Pack: Component Internal Failure	GO to Pinpoint Test M
<u>SCCM</u>	B137F:9E	Steering Wheel Left Switch Pack: Stuck On	GO to Pinpoint Test M
<u>SCCM</u>	B1380:11	Steering Wheel Right Switch Pack: Circuit Short To Ground	GO to Pinpoint Test M
<u>SCCM</u>	B1380:13	Steering Wheel Right Switch Pack: Circuit Open	GO to Pinpoint Test M
<u>SCCM</u>	B1380:4A	Steering Wheel Right Switch Pack: Incorrect Component Installed	GO to Pinpoint Test M
<u>SCCM</u>	B1380:96	Steering Wheel Right Switch Pack: Component Internal Failure	GO to Pinpoint Test M
<u>SCCM</u>	B1380:9E	Steering Wheel Right Switch Pack: Stuck On	GO to Pinpoint Test M
<u>SECM</u>	B137F:11	Steering Wheel Left Switch Pack: Circuit Short To Ground	GO to Pinpoint Test N
<u>SECM</u>	B137F:17	Steering Wheel Left Switch Pack: Circuit Voltage Above Threshold	GO to Pinpoint Test N
<u>SECM</u>	B137F:2A	Steering Wheel Left Switch Pack: Signal Stuck In Range	GO to Pinpoint Test N
<u>SECM</u>	B137F:4A	Steering Wheel Left Switch Pack: Incorrect Component Installed	GO to Pinpoint Test N
<u>SECM</u>	B1380:11	Steering Wheel Right Switch Pack: Circuit Short To Ground	GO to Pinpoint Test N
<u>SECM</u>	B1380:17	Steering Wheel Right Switch Pack: Circuit Voltage Above Threshold	GO to Pinpoint Test N
<u>SECM</u>	B1380:2A	Steering Wheel Right Switch Pack: Signal Stuck In Range	GO to Pinpoint Test N
<u>SECM</u>	B1380:4A	Steering Wheel Right Switch Pack: Incorrect Component Installed	GO to Pinpoint Test N
<u>TCU</u>	B116C:04	External SIM Cable/SIM Card: System Internal Failure	GO to Pinpoint Test AP
<u>TCU</u>	B116C:57	External SIM Cable/SIM Card: Invalid / Incompatible Software Component	GO to Pinpoint Test AP
<u>TCU</u>	B119F:11	GPS Antenna: Circuit Short To Ground	GO to Pinpoint Test V
<u>TCU</u>	B119F:13	GPS Antenna: Circuit Open	GO to Pinpoint Test V
<u>TCU</u>	B1246:11	GSM (Group System for Mobile) Antenna: Circuit Short To Ground	GO to Pinpoint Test X
<u>TCU</u>	B1246:13	GSM (Group System for Mobile) Antenna: Circuit Open	GO to Pinpoint Test X
<u>TCU</u>	B1D55:11	Antenna #2: Circuit Short To Ground	GO to Pinpoint Test Y
<u>TCU</u>	B1D55:13	Antenna #2: Circuit Open	GO to Pinpoint Test Y
<u>TCU</u>	U0001:09	High Speed CAN Communication Bus: Component Failure	GO to Pinpoint Test AM
<u>TCU</u>	U0140:00	Lost Communication With Body Control Module: No Sub Type Information	GO to Pinpoint Test AD
<u>TCU</u>	U0146:09	Lost Communication With Serial Data Gateway "A": Component Failure	GO to Pinpoint Test AE
<u>TCU</u>	U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	GO to Pinpoint Test AN
<u>TCU</u>	U1A01:09	Communication Link: Component Failure	GO to Pinpoint Test AQ
<u>TCU</u>	U1A01:92	Communication Link: Performance or Incorrect Operation	GO to Pinpoint Test AP
<u>TCU</u>	U1A01:93	Communication Link: No Operation	GO to Pinpoint Test AP
<u>TCU</u>	U1A4B:52	Control Module Processor B: Not Activated	GO to Pinpoint Test AP
<u>TCU</u>	U2100:00	Initial Configuration Not Complete: No Sub Type Information	GO to Pinpoint Test AQ
<u>TCU</u>	U2101:00	Control Module Configuration Incompatible: No Sub Type Information	GO to Pinpoint Test AQ

	U2101:56	Control Module Configuration Incompatible: Invalid / Incompatible Configuration	GO to Pinpoint Test AO
TCU	U2200:00	Control Module Configuration Memory Corrupt: No Sub Type Information	GO to Pinpoint Test AP
TCU	U3000:04	Control Module: System Internal Failure	GO to Pinpoint Test AQ
TCU	U3000:09	Control Module: Component Failure	GO to Pinpoint Test AP
TCU	U3000:43	Control Module: Special Memory Failure	GO to Pinpoint Test AP
TCU	U3000:57	Control Module: Invalid / Incompatible Component	GO to Pinpoint Test AR
TCU	U3000:96	Control Module: Component Internal Failure	GO to Pinpoint Test AP
TCU	U3003:16	Battery Voltage: Circuit Voltage Below Threshold	GO to Pinpoint Test AK
TCU	U3003:17	Battery Voltage: Circuit Voltage Above Threshold	GO to Pinpoint Test AL

Symptom Charts

Symptom Chart: Radio

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Actions
A module does not respond to the diagnostic scan tool	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).
The AM radio is inoperative	GO to Pinpoint Test A
The FM radio is inoperative	GO to Pinpoint Test A
Poor AM reception	GO to Pinpoint Test A
Poor FM reception	GO to Pinpoint Test A
Continuous seek or scan in AM / FM mode	GO to Pinpoint Test A
Poor satellite radio reception	GO to Pinpoint Test B
SIRIUS™ on-demand streaming content does not play or is not available	GO to Pinpoint Test B
SIRIUS™ content pausing repeatedly	GO to Pinpoint Test B
Poor sound quality or no sound while in satellite radio mode - all other functions operate correctly	GO to Pinpoint Test B
The satellite radio is inoperative or does not operate correctly	GO to Pinpoint Test B
The audio system does not operate correctly from the audio control panel	GO to Pinpoint Test L
One or more audio steering wheel control button is inoperative - vehicles not equipped with adaptive steering	GO to Pinpoint Test M
One or more audio steering wheel control button is inoperative - vehicles equipped with adaptive steering	GO to Pinpoint Test N
The speed compensated volume is inoperative	GO to Pinpoint Test E
Unable to change the audio source	GO to Pinpoint Test C
The touchscreen displays Audio System Off at regular intervals	GO to Pinpoint Test C

Symptom Chart: Speakers and Sound Quality - 4, 6, 5 Or 7 Speaker System

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Actions
No sound from all speakers	GO to Pinpoint Test C
The left speakers are inoperative when using Bluetooth and USB hub SYNC features	GO to Pinpoint Test P
The right speakers are inoperative when using Bluetooth and USB hub SYNC features	GO to Pinpoint Test P
Poor sound quality or distorted sound from one or more speakers (not all speakers)	GO to Pinpoint Test D
The instrument panel center speaker is inoperative	GO to Pinpoint Test E

The left A-pillar speaker is inoperative	GO to Pinpoint Test F
The right A-pillar speaker is inoperative	GO to Pinpoint Test F
The left front door speaker is inoperative	GO to Pinpoint Test F
The right front door speaker is inoperative	GO to Pinpoint Test F
The left rear door speaker is inoperative	GO to Pinpoint Test F
The right rear door speaker is inoperative	GO to Pinpoint Test F

Symptom Chart: Speakers and Sound Quality - 8 Speaker System

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Actions
No sound from all speakers	GO to Pinpoint Test C
The left speakers are inoperative when using Bluetooth and USB hub SYNC features	GO to Pinpoint Test P
The right speakers are inoperative when using Bluetooth and USB hub SYNC features	GO to Pinpoint Test P
Poor sound quality or distorted sound from one or more speakers (not all speakers)	GO to Pinpoint Test D
The instrument panel center speaker is inoperative	GO to Pinpoint Test I
The left A-pillar speaker is inoperative	GO to Pinpoint Test G
The right A-pillar speaker is inoperative	GO to Pinpoint Test G
The left front door speaker is inoperative	GO to Pinpoint Test I
The right front door speaker is inoperative	GO to Pinpoint Test I
The left rear door speaker is inoperative	GO to Pinpoint Test I
The right rear door speaker is inoperative	GO to Pinpoint Test I
The subwoofer speaker is inoperative	GO to Pinpoint Test I

Symptom Chart: Speakers and Sound Quality - 18 Speaker System

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Actions
No sound from all speakers	GO to Pinpoint Test C
The left speakers are inoperative when using Bluetooth and USB hub SYNC features	GO to Pinpoint Test P
The right speakers are inoperative when using Bluetooth and USB hub SYNC features	GO to Pinpoint Test P
Poor sound quality or distorted sound from one or more speakers (not all speakers)	GO to Pinpoint Test D
The instrument panel center speaker is inoperative	GO to Pinpoint Test J
The instrument panel left speaker is inoperative	GO to Pinpoint Test J
The instrument panel right speaker is inoperative	GO to Pinpoint Test J
The left A-pillar speaker is inoperative	GO to Pinpoint Test H
The right A-pillar speaker is inoperative	GO to Pinpoint Test H
The left front door speaker is inoperative	GO to Pinpoint Test J
The right front door speaker is inoperative	GO to Pinpoint Test J
The left rear door speaker is inoperative	GO to Pinpoint Test H
The right rear door speaker is inoperative	GO to Pinpoint Test H
The left driver headrest speaker is inoperative	GO to Pinpoint Test K
The left passenger headrest speaker is inoperative	GO to Pinpoint Test K
The right driver headrest speaker is inoperative	GO to Pinpoint Test K
The right passenger headrest speaker is inoperative	GO to Pinpoint Test K
The left overhead speaker is inoperative	GO to Pinpoint Test J
The right overhead speaker is inoperative	GO to Pinpoint Test J
The subwoofer speaker is inoperative	GO to Pinpoint Test J

Symptom Chart: Display Unit

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Actions
The display unit is blank or black	GO to Pinpoint Test O
The display unit is not responsive to touch	GO to Pinpoint Test O
The display unit is slow to respond to touch	GO to Pinpoint Test O
The image on the display unit is incorrect, the image color is incorrect, or the image is distorted, flickering, or unclear	GO to Pinpoint Test O
The image on the display unit is locked or frozen	GO to Pinpoint Test O

Symptom Chart: SYNC Features/Media/Phone

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Actions
The SYNC system does not operate correctly from the audio control panel	GO to Pinpoint Test L
One or more steering wheel SYNC control button is inoperative - vehicles not equipped with adaptive steering	GO to Pinpoint Test M
One or more steering wheel SYNC control button is inoperative - vehicles equipped with adaptive steering	GO to Pinpoint Test N
The left speakers are inoperative when using Bluetooth and media hub SYNC features	GO to Pinpoint Test P
The right speakers are inoperative when using Bluetooth and media hub SYNC features	GO to Pinpoint Test P
The SYNC system audible prompts are inoperative or do not operate correctly	GO to Pinpoint Test P
During a phone call, no incoming audio is heard in the vehicle	GO to Pinpoint Test P
Poor sound quality, distorted, or no sound while in SYNC mode	GO to Pinpoint Test P
Voice commands are inoperative or outgoing audio is not transmitted during a phone call	GO to Pinpoint Test Q
The SYNC system does not respond to the wake word	GO to Pinpoint Test R
Unable to pair Bluetooth device or a Bluetooth functionality is inoperative	GO to Pinpoint Test T
A <u>USB</u> device is not recognized by the SYNC system or audio files on a <u>USB</u> device are not found using the SYNC system from one or both <u>USB</u> ports - vehicles equipped with a touchscreen display	GO to Pinpoint Test S
The 911 Assist or Emergency Assistance Not Operational message displays	GO to Pinpoint Test U
SYNC AppLink is inoperative or does not operate correctly - vehicles equipped with a touchscreen display	GO to Pinpoint Test Z
FordPass is inoperative or does not operate correctly	GO to Pinpoint Test X
Android Auto™ or Apple CarPlay™ is inoperative	GO to Pinpoint Test AA
The vehicle Wi-Fi hotspot feature is inoperative, experiencing poor data speed or cannot stream any data	GO to Pinpoint Test Y
Automatic system updates do not occur or are delayed	REFER to: Module Configuration (418-01B Module Configuration - Vehicles With: Over-the-Air (OTA) Programming, Diagnosis and Testing).

Symptom Chart: Navigation/Compass

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.
REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Condition	Actions
The compass is inoperative or does not operate correctly - SYNC 4 Low	GO to Pinpoint Test V
The compass is inoperative or does not operate correctly - SYNC 4	GO to Pinpoint Test W

Navigation is inoperative or does not operate correctly	GO to Pinpoint Test W
Traffic announcement is inoperative (vehicles equipped with a <u>DAB</u> radio)	GO to Pinpoint Test B

Pinpoint Tests

PINPOINT TEST A : POOR AM (AMPLITUDE MODULATION) - FM (FREQUENCY MODULATION) RECEPTION

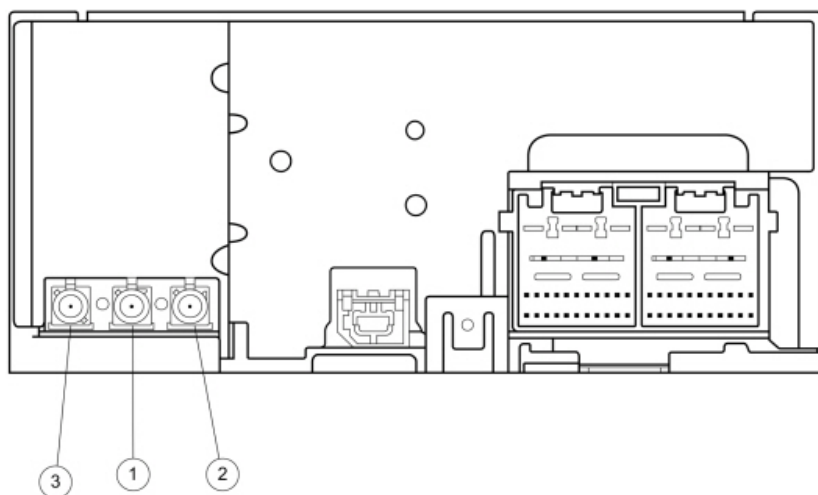
Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

ACM Coaxial Cable Connections



E309749

Item	Part Number	Description
1	—	Audio unit antenna connection
2	—	FM2 diversity antenna connection
3	—	Satellite radio connection

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
ACM B1A56:11	Antenna: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the <u>AM</u> / <u>FM</u> 1 antenna cable.
ACM B1A56:15	Antenna: Circuit Short To Battery Or Open	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage or an open from the <u>AM</u> / <u>FM</u> 12 antenna cable.

Possible Sources

- Wiring, terminals, or connectors
- Ignition system
- Generator
- Antenna cable
- Antenna amplifier
- ACM

NOTE: Prior to carrying out diagnostics, it may be beneficial to determine the cause using the Antenna Tool Kit (refer to the Rotunda catalog for the latest part number) or equivalent tool.

A1 CHECK THE AUDIO SYSTEM RECEPTION WITH THE ENGINE RUNNING AND WITH THE ENGINE OFF

NOTE: For hybrid vehicles, begin with test step A4.

- Ignition OFF.
- Operate the audio system in AM / FM mode.
- Observe the radio reception.

- Start the engine and observe the radio reception.

Does the poor reception only occur with the engine running?

Yes	GO to A2
No	GO to A4

A2 CHECK THE GENERATOR

- Ignition OFF.
- Disconnect the generator "A" connector.
- NOTE:** Do not increase the engine RPM above idle speed.
Start the engine.
- NOTE:** Do not increase the RPM above idle speed. Incorrect test results may occur if the engine speed is increased above idle.
With the engine at idle only, operate the audio system in AM / FM mode.

Is the reception OK?

Yes	INSTALL a new generator. REFER to the appropriate Removal and Installation procedure in section 414-02.
No	GO to A3

A3 CHECK THE IGNITION CIRCUITS

- Ignition OFF.
- Connect the generator "A" connector.
- Inspect the engine compartment and make sure all ignition coils are correctly and securely connected, and no cracks are visible in the coil housings.
- Inspect all the wiring harnesses and connectors for damaged insulation and loose or broken conditions.

Are the ignition components OK?

Yes	USE a jumper cable to ground various parts of the vehicle to the frame (for example: engine, fenders, quarter panels, stone deflectors, air cleaner, and body sheet metal). When the noise is eliminated, PROVIDE a permanent ground where necessary.
No	REPAIR the ignition system as necessary.

A4 CHECK FOR ACM (AUDIO FRONT CONTROL MODULE) ANTENNA VOLTAGE OUTPUT

NOTE: The AM / FM 1 antenna cable is also known as the audio unit antenna cable.

- Ignition OFF.
- Disconnect the AM / FM 1 antenna cable from the ACM.
- Ignition ON.
- NOTE:** Refer to the diagram at the beginning of this test to identify the correct cable connection to the ACM.

Using the female Flex Probe 300-08058 (0.5 mm x 0.5 mm) or equivalent, measure:

Positive Lead	Measurement / Action	Negative Lead
<u>AM</u> / <u>FM</u> 1 antenna cable core at the <u>ACM</u> (component side)	$\overline{\text{V}}$	Ground

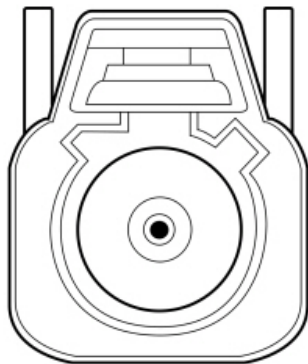
Is the voltage greater than 11 volts?

Yes	GO to A5
No	GO to A7

A5 CHECK FOR VOLTAGE TO THE ANTENNA

- Ignition OFF.
- Connect the AM / FM 1 antenna cable to the ACM.
- Disconnect the audio unit antenna cable from the AM / FM antenna.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
	$\overline{\text{V}}$	Ground



E253403

AM / FM 1 antenna cable core

Is the voltage approximately 10 volts?

Yes	GO to A6
No	IDENTIFY the antenna cable (or the antenna amplifier on vehicles equipped with the DAB feature) with the open or short condition. INSTALL a new cable or antenna amplifier in question. REFER to: Audio Unit Antenna Cable - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).

A6 CHECK THE AM (AMPLITUDE MODULATION) / FM (FREQUENCY MODULATION) ANTENNA

- Ignition OFF.
- Install a new [AM / FM](#) antenna.
REFER to: [Audio Unit Antenna](#) (415-00 Information and Entertainment System - General Information, Removal and Installation).
- Operate the audio system in [AM / FM](#) (and [DAB](#) if equipped) mode.

Is the reception OK?

Yes	The repair is complete.
No	GO to A7

A7 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the [ACM](#) connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the [ACM](#) connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new ACM . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST B : SATELLITE RADIO/SIRIUS™ STREAMING CONTENT/TRAFFIC ANNOUNCEMENT CONCERN

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

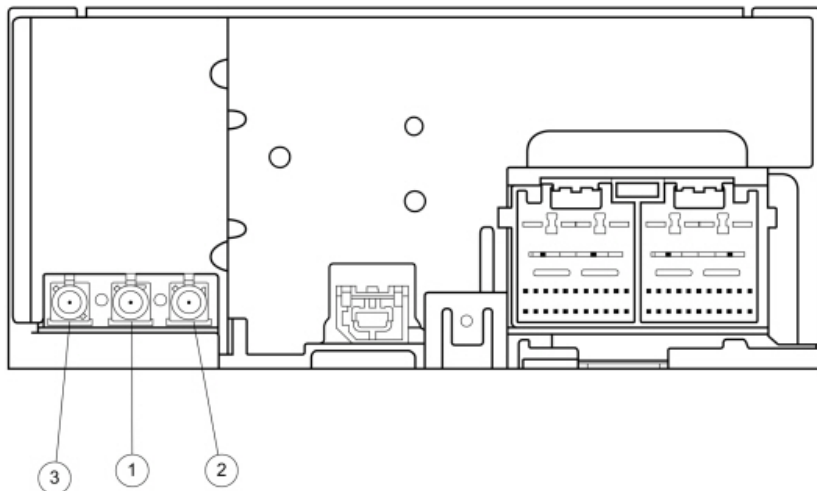
Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

When a satellite radio subscription is active, the ESN of the satellite radio receiver built into the ACM associates with the VIN.

ACM Coaxial Cable Connections



E309749

Item	Part Number	Description
1	—	Audio unit antenna connection
2	—	FM2 diversity antenna connection
3	—	Satellite radio connection

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>ACM</u> B1A89:11	Satellite Antenna: Circuit Short To Ground	Sets in continuous memory or during the on-demand self-test when the <u>ACM</u> detects a short to ground from the satellite radio cable.
<u>ACM</u> B1A89:13	Satellite Antenna: Circuit Open	Sets in continuous memory or during the on-demand self-test when the <u>ACM</u> detects an open from the satellite radio cable.
<u>APIM</u> U1A00:87	Private Communication Network: Missing Message	Sets during the on-demand self-test when the <u>APIM</u> does not receive a valid response from the <u>ACM</u> over the serial data circuits.

Possible Sources

- Expired subscription
- Vehicle Connectivity or the SiriusXM™ with 360L setting disabled
- Compass concern
- Ethernet cable concern
- Cellular data input concern
- Obstructions in the antenna line of sight
- Incorrectly matched ESN
- Wiring, terminals, or connectors
- Lower satellite radio antenna cable (includes GPS splitter)
- GPS /satellite radio antenna
- ACM
- APIM

NOTE: Prior to carrying out diagnostics, it may be beneficial to determine the cause using the Antenna Tool Kit (refer to the Rotunda catalog for the latest part number) or equivalent tool.

NOTE: Carrying out a Master Reset of the SYNC system prior to diagnostics may resolve some satellite radio/traffic announcement concerns.

B1 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U1A00:87

- Ignition ON.
- Using a diagnostic scan tool, carry out the APIM self-test.

Is DTC U1A00:87 present?

Yes	GO to B16
No	For vehicles equipped with a satellite radio, GO to B2 For vehicles not equipped with a satellite radio, GO to B14

B2 CHECK FOR PROMOTIONAL CHANNEL 1

- Select channel 1.

Does the satellite radio system receive channel 1 with normal sound quality?

Yes	GO to B3
No	GO to B10

B3 VERIFY AN ACTIVE SUBSCRIPTION

- For a Sirius Radio concern, operate the audio system in satellite radio mode and observe the display.

Does the display indicate the subscription has expired?

Yes	GO to B4
No	For a SIRIUS on-demand streaming data concern, GO to B6 For all other satellite radio concerns, GO to B9

B4 CHECK THE VEHICLE SERVICE HISTORY FOR ACM (AUDIO FRONT CONTROL MODULE) REPLACEMENT

- Check the vehicle service history and determine if the ACM was replaced.

Does the vehicle service history indicate the ACM was recently replaced?

Yes	GO to B5
No	The subscription has expired. INSTRUCT the vehicle owner to contact SIRIUS to reactivate the subscription.

B5 VERIFY THE VIN (VEHICLE IDENTIFICATION NUMBER) AND THE ESN (ELECTRONIC SERIAL NUMBER) ON FILE MATCHES THE VIN (VEHICLE IDENTIFICATION NUMBER) AND THE ESN (ELECTRONIC SERIAL NUMBER) FROM THE VEHICLE

- Retrieve the satellite radio ESN by tuning to channel 0.
- Contact the SIRIUS Dealer Support.
- Make sure the VIN and the ESN SIRIUS has on the customer file match the VIN and the ESN retrieved from the vehicle.

Does the VIN and the ESN on the SIRIUS customer file match the ESN and VIN retrieved from the vehicle?

Yes	The subscription has expired. INSTRUCT the vehicle owner to contact SIRIUS to reactivate the subscription.
No	INSTRUCT the vehicle owner to contact SIRIUS to update the <u>VIN</u> and the <u>ESN</u> retrieved from the vehicle.

B6 CHECK THE CONNECTIVITY SETTINGS USING THE TOUCHSCREEN DISPLAY UNIT

- Access the settings menu on the display unit. Make sure the Vehicle Connectivity and the SiriusXM with 360L settings are enabled.

Are the Vehicle Connectivity and the SiriusXM with 360L settings enabled?

Yes	GO to B7
No	ENABLE the Vehicle Connectivity and the SiriusXM with 360L settings.

B7 CHECK FOR GWM (GATEWAY MODULE A) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the GWM self-test.

Are any GWM Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the Master DTC Chart.
No	GO to B8

B8 CHECK THE CELLULAR SIGNAL STRENGTH

- Drive the vehicle to an outdoor location that is free from obstacles such as tall buildings.
- Observe the cellular signal strength on the display unit.

Does the display indicate a good cellular strength signal of at least 2 bars?

Yes	GO to B9
No	GO to Pinpoint Test X

B9 VERIFY THE VIN (VEHICLE IDENTIFICATION NUMBER) AND THE ESN (ELECTRONIC SERIAL NUMBER) ON FILE MATCHES THE VIN

(VEHICLE IDENTIFICATION NUMBER) AND THE ESN (ELECTRONIC SERIAL NUMBER) FROM THE VEHICLE

- Retrieve the satellite radio ESN by tuning to channel 0.
 - Contact the SIRIUS Dealer Support.
 - Make sure the VIN and the ESN SIRIUS has on the file match the VIN and the ESN retrieved from the vehicle.
 - Drive the vehicle to an open location free from obstacles such as tall buildings or large trees.
 - Operate the audio system in satellite radio mode.
 - **NOTE:** *It may take up to 30 minutes for the activation signal to be received and satellite radio functions to operate.*
- Request for SIRIUS to send the activation signal to the vehicle 2-3 times.
- Operate multiple channels with the audio system in satellite radio mode.

Does the satellite radio system receive multiple channels with normal sound quality?

Yes	The system is operating correctly. The concern may have been caused by the SIRIUS file information not matching the vehicle or a result of the activation signal needing to be resent.
No	GO to B12

B10 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OUTPUT VOLTAGE TO THE SATELLITE RADIO ANTENNA CABLE

- Ignition OFF.
- Disconnect the satellite radio antenna cable at the ACM.
- Ignition ON.
- Using the female Flex Probe 300-08058 (0.5 mm x 0.5 mm) or equivalent, measure:

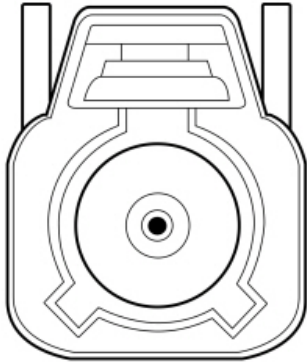
Positive Lead	Measurement / Action	Negative Lead
Satellite radio antenna cable core at the <u>ACM</u> (component side)	 V	Ground

Is the voltage between 4.7 and 5.8 volts?

Yes	GO to B11
No	GO to B20

B11 CHECK FOR VOLTAGE TO THE GPS (GLOBAL POSITIONING SYSTEM) /SATELLITE RADIO ANTENNA

- Ignition OFF.
- Connect the satellite radio antenna cable at the ACM.
- Disconnect the satellite radio antenna cable at the GPS /satellite antenna.
- Ignition ON.
- Using the female Flex Probe 300-08058 (0.5 mm x 0.5 mm) or equivalent, measure:

Positive Lead	Measurement / Action	Negative Lead
 E258796 <u>GPS</u> /satellite radio antenna cable core at the antenna	 V	Ground

Is the voltage between 4.7 and 5.8 volts?

Yes	GO to B12
No	IDENTIFY the cable with the open or short. INSTALL a new <u>GPS</u> /satellite radio cable for the one in question. REFER to: Satellite Radio / Global Positioning System (GPS) Antenna Cable - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation). REFER to: Satellite Radio / Global Positioning System (GPS) Splitter / Cable (415-00 Information and Entertainment System - General Information, Removal and Installation).

B12 ISOLATE THE GPS (GLOBAL POSITIONING SYSTEM) /SATELLITE RADIO ANTENNA SPLITTER CABLE

- INSTALL a new GPS /satellite radio antenna splitter cable.
REFER to: [Satellite Radio / Global Positioning System \(GPS\) Splitter / Cable](#) (415-00 Information and Entertainment System - General Information, Removal and Installation).
- For a satellite radio concern, check the operation of the satellite radio function.
- For a Sirius on-demand streaming concern, check the operation of this feature.

Does the system in question operate correctly?

Yes	The repair is complete. The concern was caused by the original <u>GPS</u> /satellite radio antenna splitter cable.
No	GO to B13

B13 CHECK THE ANTENNA BASE AND MOUNTING SURFACE

- Remove the GPS /satellite radio antenna.
- Inspect for corrosion on the audio unit antenna base and the vehicle mounting surface.

Is antenna base and mounting free of corrosion?

Yes	GO to B15
No	REPAIR any corrosion on the antenna unit base and/or vehicle mounting surface. INSTALL the antenna and make sure the correct torque value is used when tightening the fastener.

B14 VERIFY THE COMPASS OPERATES CORRECTLY

- Ignition ON.
- Check the operation of the compass and make sure it operates correctly.

Does the compass operate correctly?

Yes	GO to B15
No	GO to Pinpoint Test W

B15 ISOLATE THE GPS (GLOBAL POSITIONING SYSTEM) /SATELLITE RADIO ANTENNA

- INSTALL a new GPS /satellite radio antenna.
- For a satellite radio concern, check the operation of the satellite radio function.
- For a Sirius on-demand streaming concern, check the operation of this feature.
- For a traffic announcement (vehicles with a DAB radio) concern, check the operation of the traffic announcement feature.

Does the system in question operate correctly?

Yes	The repair is complete. The concern was caused by the original <u>GPS</u> /satellite radio antenna.
No	GO to B16

B16 CHECK THE SERIAL DATA CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect ACM C240A and C240B .
- Disconnect APIM C2383A .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2383A-27	Ω	Ground
C2383A-28	Ω	Ground
C2383A-51	Ω	Ground
C2383A-52	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to B17
No	REPAIR the circuit in question.

B17 CHECK THE SERIAL DATA CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2383A-27	$\overline{\overline{V}}$	Ground
C2383A-28	$\overline{\overline{V}}$	Ground
C2383A-51	$\overline{\overline{V}}$	Ground
C2383A-52	$\overline{\overline{V}}$	Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to B18

B18 CHECK THE SERIAL DATA CIRCUITS FOR A SHORT TOGETHER

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2383A-27	Ω	C2383A-28
C2383A-51	Ω	C2383A-52

Is the resistance greater than 10,000 ohms?

Yes	GO to B19
No	REPAIR the circuits.

B19 CHECK THE SERIAL DATA CIRCUITS FOR AN OPEN

- Measure:

ACM_C240A

Positive Lead	Measurement / Action	Negative Lead
C2383A-27	Ω	C240A-14
C2383A-28	Ω	C240A-25

ACM_C240B

Positive Lead	Measurement / Action	Negative Lead
C2383A-51	Ω	C240B-18
C2383A-52	Ω	C240B-29

Are the resistances less than 3 ohms?

Yes	GO to B20
No	REPAIR the circuit in question.

B20 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition ON.

- Disconnect and inspect all ACM connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation). TEST the system for normal operation. If the concern is still present, GO to <u>B21</u>
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

B21 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the APIM connector.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the APIM connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST C : NO SOUND FROM ALL SPEAKERS

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

A short to ground or voltage in the circuitry to one of the speakers may cause multiple speakers to lose sound due to the built-in overload protection feature of the ACM. In this case, a speaker fault DTC sets.

DTC Fault Trigger Conditions

<u>DTC</u>	Description	Fault Trigger Condition
<u>ACM</u> B150C:01	Automobile Audio Bus (A2B) Node 1: General Electrical Failure	Sets in continuous memory when the <u>ACM</u> detects short circuits from the A2B cable.
<u>ACM</u> B150C:11	Automobile Audio Bus (A2B) Node 1: Circuit Short To Ground	Sets in continuous memory when the <u>ACM</u> detects a short to ground from the A2B cable circuitry.
<u>ACM</u> B150C:12	Automobile Audio Bus (A2B) Node 1: Circuit Short To Battery	Sets in continuous memory when the <u>ACM</u> detects a short to voltage from the A2B cable circuitry.
<u>ACM</u> B150C:13	Automobile Audio Bus (A2B) Node 1: Circuit Open	Sets in continuous memory when the <u>ACM</u> detects an open within the A2B circuitry.
<u>ACM</u> B150C:55	Automobile Audio Bus (A2B) Node 1: Not Configured	Sets in continuous memory when the <u>ACM</u> detects a fault attempting to configure the audio <u>DSP</u> module as Slave 1.
<u>ACM</u> B150C:87	Automobile Audio Bus (A2B) Node 1: Missing Message	Sets in continuous memory when the <u>ACM</u> detects a fault trying to communicate to the audio <u>DSP</u> module.
<u>ACM</u> B150C:8F	Automobile Audio Bus (A2B) Node 1: Erratic	Sets in continuous memory when the <u>ACM</u> detects a fault trying to communicate to the audio <u>DSP</u> module.

ACM B150C:95	Automobile Audio Bus (A2B) Node 1: Incorrect Assembly	Sets in continuous memory when the ACM detects the A2B cable circuitry is reversed.
ACM B1511:01	Automobile Audio Bus (A2B) Master Node: General Electrical Failure	Sets in continuous memory when the ACM detects a fault trying to communicate to the audio DSP module.
ACM B1511:11	Automobile Audio Bus (A2B) Master Node: Circuit Short To Ground	Sets in continuous memory when the ACM detects a short to ground from the Automobile Audio Bus (A2B).
ACM B1511:12	Automobile Audio Bus (A2B) Master Node: Circuit Short To Battery	Sets in continuous memory when the ACM detects a short to voltage from the Automobile Audio Bus (A2B).
ACM B1511:13	Automobile Audio Bus (A2B) Master Node: Circuit Open	Sets in continuous memory when the ACM detects an open from the Automobile Audio Bus (A2B) cable.
ACM B1511:95	Automobile Audio Bus (A2B) Master Node: Incorrect Assembly	Sets in continuous memory when the ACM detects the A2B cable circuitry is reversed.
DSP B13FB:11	Audio Enable Line: Circuit Short To Ground	Sets in continuous memory when the audio DSP module does not detect the correct voltage signal from the enable circuit 5 seconds after receiving the ignition mode RUN message from the BCM .

Possible Sources

- Network communication concern
- Wiring, terminals, or connectors
- Automobile Audio Bus (A2B) cable
- Module configuration
- **DSP**
- **ACM**

C1 VERIFY THE ACM (AUDIO FRONT CONTROL MODULE) PASSES THE NETWORK TEST

- Ignition ON.
- Using a diagnostic scan tool, carry out the network test.

Does the **ACM** pass the network test?

Yes	GO to C2
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

C2 VERIFY THE APIM (SYNC MODULE) PASSES THE NETWORK TEST

- Review the results from the network test.

Does the **APIM** pass the network test?

Yes	If equipped with the 4, 6, 5 or 7 speaker system, GO to C4 If equipped with the 8 or 18 speaker system, GO to C3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

C3 VERIFY THE DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) PASSES THE NETWORK TEST

- Review the results from the network test.

Does the **DSP** pass the network test?

Yes	GO to C4
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

C4 CHECK FOR APIM (SYNC MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the **APIM** self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the DTC Chart in this section.
No	GO to C5

C5 CHECK FOR ACM (AUDIO FRONT CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the **ACM** self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	For any Automobile Audio Bus (A2B) <u>DTC</u> , GO to C13 For all other Diagnostic Trouble Codes (DTCs), REFER to the <u>DTC</u> Chart in this section.
No	If equipped with the 4, 6, 5 or 7 speaker system, GO to C16 If equipped with the 8 or 18 speaker system, GO to C6

C6 CHECK FOR DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) SPEAKER-RELATED DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the DSP self-test.

Are any speaker-related Diagnostic Trouble Codes (DTCs) present?

Yes	For the 8 speaker, GO to Pinpoint Test I For the 18 speaker, GO to Pinpoint Test J
No	GO to C7

C7 CHECK THE DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) ENABLE CIRCUIT FOR CORRECT VOLTAGE

- Ignition OFF.
- Disconnect DSP C3154B (8 speaker) or C3155B (18 speaker).
- Ignition ON.
- Turn the audio system on.
- Measure:

8 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3154B-3	$\overline{\text{V}}$	Ground

18 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3155B-3	$\overline{\text{V}}$	Ground

Is the voltage between 3.5 and 7 volts?

Yes	GO to C12
No	GO to C8

C8 CHECK THE DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) ENABLE CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect ACM C240B .
- Measure:

8 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3154B-3	Ω	Ground

18 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3155B-3	Ω	Ground

Is the resistance greater than 10,000 ohms?

--	--

Yes	GO to C9
No	REPAIR the circuit.

C9 CHECK THE DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) ENABLE CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition ON.
- Measure:

8 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3154B-3		Ground

18 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3155B-3		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to C10

C10 CHECK THE DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) ENABLE CIRCUIT FOR AN OPEN

- Ignition OFF.
- Measure:

8 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3154B-3	Ω	C240B-23

18 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3155B-3	Ω	C240B-23

Is the resistance less than 3 ohms?

Yes	GO to C11
No	REPAIR the circuit.

C11 CHECK THE ACM (AUDIO FRONT CONTROL MODULE) CONFIGURATION

- Connect DSP C3154B (8 speaker) or C3155B (18 speaker).
- Connect ACM C240B .
- Ignition ON.
- Carry out the PMI \ programming for the ACM using as-built data.
REFER to: [Module Programming](#) (418-01A Module Configuration, General Procedures).
- Test the audio system for correct speaker operation.

Is sound heard from all of the speakers?

Yes	The system is operating correctly. The cause may have been caused by incorrect module configuration.
No	GO to C16

C16 CHECK THE DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) CONFIGURATION

- Ignition OFF.
- Connect DSP_C3154B (8 speaker) or C3155B (18 speaker).
- Ignition ON.
- Carry out the PMI programming for the DSP using as-built data.
REFER to: [Module Programming](#) (418-01A Module Configuration, General Procedures).
- Test the audio system for correct speaker operation.

Is sound heard from all of the speakers?

Yes	The system is operating correctly. The cause may have been caused by incorrect module configuration.
No	GO to C13

C13 CHECK THE REAR AUTOMOBILE AUDIO BUS (A2B) CABLE

- Ignition OFF.
- Install a new rear Automobile Audio Bus (A2B) cable.
REFER to: [Automotive Audio Bus \(AAB\) Cable - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen](#) (415-00 Information and Entertainment System - General Information, Removal and Installation).
- Ignition ON.
- Test the audio system for correct speaker operation.

Is sound heard from all of the speakers?

Yes	The repair is complete. The cause was caused by the rear Automobile Audio Bus (A2B) cable.
No	GO to C14

C14 CHECK THE FRONT AUTOMOBILE AUDIO BUS (A2B) CABLE

- Ignition OFF.
- Install a new front Automobile Audio Bus (A2B) cable.
REFER to: [Automotive Audio Bus \(AAB\) Cable - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen](#) (415-00 Information and Entertainment System - General Information, Removal and Installation).
- Ignition ON.
- Test the audio system for correct speaker operation.

Is sound heard from all of the speakers?

Yes	The repair is complete. The cause was caused by the front Automobile Audio Bus (A2B) cable.
No	GO to C15

C15 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the DSP connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the DSP connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>DSP</u> . REFER to: Audio Digital Signal Processing (DSP) Module (415-00 Information and Entertainment System - General Information, Removal and Installation). TEST the system for normal operation. If the concern is still present, GO to C16
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

C16 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new ACM . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST D : POOR SOUND QUALITY OR DISTORTED SOUND FROM ONE OR MORE SPEAKERS (NOT ALL SPEAKERS)

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

Possible Sources

- Loose component fasteners
- Loose door handle, lock or other trim panel components and fasteners
- Loose items in storage areas
- Loose speaker grilles
- Loose wire harnesses or wire harness fasteners
- Speaker
- Trim panel
- Water shield bonding and placement

Visual Inspection and Pre-checks

- Any map pockets and storage compartments (including cup holders) for contents that can rattle (if equipped)
- Door pull cup attachments for correct fit (if equipped)
- Door switch bezels for correct fit (if equipped)
- Speaker grilles for correct fit
- Trim panels for correct fit

D1 ISOLATE THE ZONE

- Download all the diagnostic sound tracks to a suitable [USB](#) flash drive and connect it to the media hub.
REFER to: [Speaker Audio Test](#) (415-00 Information and Entertainment System - General Information, General Procedures).
- Operate the audio system in [USB](#) mode using the downloaded audio files.
- Using the audio system fade and balance settings, adjust the audio sound to each of the zones and use the 6 diagnostic sound tracks to isolate the poor sound quality.
- Locate and apply pressure to the trim panel(s) around the poor sound quality area in question.

Does applying pressure to a trim panel reduce or eliminate the noise?

Yes	REPAIR or REPLACE the trim panel as needed.
No	GO to D2

D2 REMOVE AND INSPECT BEHIND/UNDERNEATH THE SUSPECT TRIM PANEL

- Remove the trim panel to access the suspect speaker.
- Operate the audio system in [USB](#) mode using the downloaded audio files.
- Validate where the poor sound quality area is located.
- Check:
 - Trim panel for loose components (speaker grille for example) around the speaker area.
 - Trim panel joining components for missing or broken pieces.
 - Door latch mechanical parts for correct attachment.
 - Wire harnesses for correct routing and attachment.
 - Water shield for correct placement (speaker air path not blocked).
 - Water shield for correct bonding to sheet metal.
 - Storage areas for loose items.
 - All safety belt retractors.
 - All speaker bracket and related fasteners. Make sure they are secure and tightened to specified torque.

Is the source of the noise located?

Yes	REPAIR or REPLACE any loose or broken component or fastener as necessary.
No	GO to D3

D3 CHECK THE SUSPECT SPEAKER FOR WATER INTRUSION

- Inspect for watermarks.

- Check the following speaker components:

- Cone
- Magnet
- Basket

Are any watermarks present on the speaker?

Yes	VERIFY the water shield is in the correct location, REPAIR or REPLACE any trim, door or speaker seal as required. DRY the speaker in question. TEST the system for normal operation.
No	GO to D4

D4 ISOLATE THE SUSPECT SPEAKER TO VERIFY NOISE

- Remove the suspect speaker from its location and leave the speaker connected to the harness.
- Hold the speaker away from any trim panel and make sure the speaker is isolated from contact.
- Operate the audio system in USB mode using the downloaded audio files.

Is the noise still present in the suspect speaker?

Yes	INSTALL a new speaker for the one in question.
No	LOCATE the source of the noise and REPAIR as necessary.

PINPOINT TEST E : THE SPEED COMPENSATED VOLUME IS INOPERATIVE

Normal Operation and Fault Conditions

Possible Sources

- Speed compensated volume setting
- Network communication concern
- Module configuration
- ACM
- DSP

E1 CHECK THE SPEED COMPENSATED VOLUME SETTING

NOTE: Refer to the Owner Literature to access the speed compensated volume settings.

- Turn the speed compensated volume off.
- Operate the audio system in AM / FM mode.
- Drive the vehicle at various speeds and observe the speaker volume.
- Set the speed compensated volume to maximum compensation.
- Drive the vehicle at various speeds and observe the speaker volume.

Does the volume remain constant with the speed compensated volume turned off, and increase and decrease with vehicle speed with the speed compensated volume set to maximum?

Yes	The system is operating correctly at this time. INFORM the vehicle owner in the correct usage of the speed compensated volume feature.
No	GO to E2

E2 CHECK FOR COMMUNICATION DIAGNOSTIC TROUBLE CODES (DTCs)

- For vehicles equipped with the 6 speaker system, carry out the ACM self-test.
- For vehicles equipped with the 10 speaker system, carry out the DSP self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the <u>DTC</u> chart in this section.
No	GO to E3

E3 CARRY OUT PMI (PROGRAMMABLE MODULE INSTALLATION) FOR THE SUSPECT MODULE

- For vehicles equipped with the 6 speaker system, carry out the PMI for the ACM.
- For vehicles equipped with the 10 speaker system, carry out the PMI for the DSP.
- Check the operation of the speed compensated volume feature.

Does the speed compensated volume feature operate?

Yes	The repair is complete.
No	For vehicles equipped with the 4, 6, 5 or 7 speaker system, GO to E5

For vehicles equipped with the 8 or 18 speaker system, GO to [E4](#)

E4 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the DSP connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the DSP connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>DSP</u> . REFER to: Audio Digital Signal Processing (DSP) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

E5 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST F : ONE OR MORE SPEAKER IS INOPERATIVE - ACM (AUDIO FRONT CONTROL MODULE) CONTROLLED 4, 6, 5 OR 7 SPEAKER SYSTEM

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).
REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>ACM</u> B1A01:01	Speaker #1: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the left front door and A-pillar speaker circuits.
<u>ACM</u> B1A01:11	Speaker #1: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the left front door and A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A01:12	Speaker #1: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the left front door and A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A01:13	Speaker #1: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the left front door and A-pillar speaker circuits.
<u>ACM</u> B1A02:01	Speaker #2: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the right front door and A-pillar speaker circuits.
<u>ACM</u>	Speaker #2: Circuit Short	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from

B1A02:11	To Ground	the right front door and A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A02:12	Speaker #2: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the right front door and A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A02:13	Speaker #2: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the right front door and A-pillar speaker circuits.
<u>ACM</u> B1A03:01	Speaker #3: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the right rear door speaker circuits.
<u>ACM</u> B1A03:11	Speaker #3: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the right rear door speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A03:12	Speaker #3: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the right rear door speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A03:13	Speaker #3: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the right rear door speaker circuits.
<u>ACM</u> B1A04:01	Speaker #4: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the left rear door speaker circuits.
<u>ACM</u> B1A04:11	Speaker #4: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the left rear door speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A04:12	Speaker #4: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the left rear door speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A04:13	Speaker #4: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the left rear door speaker circuits.
<u>ACM</u> B1A06:01	Speaker #6: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the instrument panel center speaker circuits.
<u>ACM</u> B1A06:11	Speaker #6: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the instrument panel center speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A06:12	Speaker #6: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the instrument panel center speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A06:13	Speaker #6: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the instrument panel center speaker circuits.

Possible Sources

- Wiring, terminals, or connectors
- Speaker
- ACM

NOTE: The front door speaker and corresponding A-pillar speaker share the same circuitry. If a concern exists with both speakers, retest the system with the A-pillar speaker disconnected to determine if the A-pillar speaker is the cause of the concern.

F1 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect the suspect speaker.
- Disconnect ACM C240A .
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	Ω	Ground
C2356-2	Ω	Ground

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	Ω	Ground
C2420-3	Ω	Ground

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	Ground
C2421-3	Ω	Ground

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	Ground
C570-4	Ω	Ground

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	Ground
C628-4	Ω	Ground

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	Ground
C702-4	Ω	Ground

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	Ground
C804-4	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to F2
No	REPAIR the circuit in question.

F2 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO VOLTAGE

- Ignition ON.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	$\overline{\overline{V}}$	Ground
C2356-2	$\overline{\overline{V}}$	Ground

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	$\overline{\overline{V}}$	Ground
C2420-3	$\overline{\overline{V}}$	Ground

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	$\overline{\overline{V}}$	Ground
C2421-3	$\overline{\overline{V}}$	Ground

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	$\overline{\overline{V}}$	Ground
C570-4	$\overline{\overline{V}}$	Ground

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	$\overline{\overline{V}}$	Ground
C628-4	$\overline{\overline{V}}$	Ground

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	$\overline{\overline{V}}$	Ground
C702-4	$\overline{\overline{V}}$	Ground

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	$\overline{\overline{V}}$	Ground
C804-4	$\overline{\overline{V}}$	Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to F3

F3 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TOGETHER

NOTE: For a front door or corresponding A-pillar speaker concern, make sure both speakers are disconnected.

- Ignition OFF.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	Ω	C2356-2

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead

C2420-1	Ω	C2420-3
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Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	C2421-3

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	C570-4

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	C628-4

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	C702-4

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	C804-4

Are the resistances greater than 10,000 ohms?

Yes	GO to F4
No	REPAIR the circuits.

F4 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR AN OPEN

- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	Ω	C240A-13
C2356-2	Ω	C240A-24

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	Ω	C240A-8
C2420-3	Ω	C240A-7

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	C240A-3
C2421-3	Ω	C240A-2

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	C240A-8
C570-4	Ω	C240A-7

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	C240A-3
C628-4	Ω	C240A-2

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	C240A-6
C702-4	Ω	C240A-5

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	C240A-10
C804-4	Ω	C240A-9

Are the resistances less than 3 ohms?

Yes	GO to F5
No	REPAIR the circuit in question.

F5 CHECK THE AUDIO SIGNAL TO THE SUSPECT SPEAKER

- Connect ACM C240A .
- Ignition ON.
- Operate the audio system in AM/ FM mode.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	$\tilde{V}$	C2356-2

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1		C2420-3

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1		C2421-3

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1		C570-4

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1		C628-4

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1		C702-4

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1		C804-4

Is a fluctuating **AC** voltage present?

Yes	INSTALL a new speaker for the one in question.
No	GO to F6

F6 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root

cause of any connector or pin issues.

PINPOINT TEST G : ONE OR MORE SPEAKER IS INOPERATIVE - ACM (AUDIO FRONT CONTROL MODULE) CONTROLLED 8 SPEAKER SYSTEM

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>ACM</u> B1A03:01	Speaker #3: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the right A-pillar speaker circuits.
<u>ACM</u> B1A03:11	Speaker #3: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the right A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A03:12	Speaker #3: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the right A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A03:13	Speaker #3: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the right A-pillar speaker circuits.
<u>ACM</u> B1A04:01	Speaker #4: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the left A-pillar speaker circuits.
<u>ACM</u> B1A04:11	Speaker #4: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the left A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A04:12	Speaker #4: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the left A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
<u>ACM</u> B1A04:13	Speaker #4: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the left A-pillar speaker circuits.

Possible Sources

- Wiring, terminals, or connectors
- Speaker
- ACM

G1 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect the suspect speaker.
- Disconnect ACM_C240A.
- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	Ω	Ground
C2420-3	Ω	Ground

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	Ground
C2421-3	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to G2
No	REPAIR the circuits.

G2 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO VOLTAGE

- Ignition ON.
- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	$\overline{\overline{V}}$	Ground
C2420-3	$\overline{\overline{V}}$	Ground

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	$\overline{\overline{V}}$	Ground
C2421-3	$\overline{\overline{V}}$	Ground

Is any voltage present?

Yes	REPAIR the circuits.
No	GO to G3

G3 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TOGETHER

- Ignition OFF.
- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	Ω	C2420-3

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	C2421-3

Are the resistances greater than 10,000 ohms?

Yes	GO to G4
No	REPAIR the circuits.

G4 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR AN OPEN

- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	Ω	C240A-6
C2420-3	Ω	C240A-5

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	C240A-10
C2421-3	Ω	C240A-9

Are the resistances less than 3 ohms?

Yes	GO to G5
No	REPAIR the circuit in question.

G5 CHECK THE AUDIO SIGNAL TO THE SUSPECT SPEAKER

- Connect ACM C240A .
- Ignition ON.
- Operate the audio system in AM/ FM mode.
- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	$\tilde{V}$	C2420-3

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	$\tilde{V}$	C2421-3

Is a fluctuating AC voltage present?

Yes	INSTALL a new speaker for the one in question.
No	GO to G6

G6 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST H : ONE OR MORE SPEAKER IS INOPERATIVE - ACM (AUDIO FRONT CONTROL MODULE) CONTROLLED 18 SPEAKER SYSTEM

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).
 REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
ACM B1A01:01	Speaker #1: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the right rear door speaker circuits.
ACM B1A01:11	Speaker #1: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the right rear door speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
ACM B1A01:12	Speaker #1: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the right rear door speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
ACM B1A01:13	Speaker #1: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the right rear door speaker circuits.
ACM B1A02:01	Speaker #2: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the left rear door speaker circuits.
ACM B1A02:11	Speaker #2: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the left rear door speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
ACM B1A02:12	Speaker #2: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the left rear door speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
ACM B1A02:13	Speaker #2: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the left rear door speaker circuits.
ACM B1A03:01	Speaker #3: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the right A-pillar speaker circuits.
ACM B1A03:11	Speaker #3: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the right A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
ACM B1A03:12	Speaker #3: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the right A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
ACM B1A03:13	Speaker #3: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the right A-pillar speaker circuits.
ACM B1A04:01	Speaker #4: General Electrical Failure	Sets during the on-demand self-test when the <u>ACM</u> detects a failure from the left A-pillar speaker circuits.
ACM B1A04:11	Speaker #4: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to ground from the left A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
ACM B1A04:12	Speaker #4: Circuit Short To Battery	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects a short to voltage from the left A-pillar speaker circuits. The speaker output is disabled when this <u>DTC</u> is set.
ACM B1A04:13	Speaker #4: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the left A-pillar speaker circuits.
ACM B1A07:13	Speaker #7: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the right rear door speaker circuits.
ACM B1A08:13	Speaker #8: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the left rear door speaker circuits.
ACM B1A09:13	Speaker #9: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the right A-pillar speaker circuits.
ACM B1A10:13	Speaker #10: Circuit Open	Sets during the on-demand self-test when the <u>ACM</u> detects an open from the left A-pillar speaker circuits.

Possible Sources

- Wiring, terminals, or connectors
- Speaker
- ACM

H1 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect the suspect speaker.
- Disconnect ACM_C240A.
- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	Ω	Ground
C2420-3	Ω	Ground

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	Ground
C2421-3	Ω	Ground

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	Ground
C702-4	Ω	Ground

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	Ground
C804-4	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to H2
No	REPAIR the circuits.

H2 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO VOLTAGE

- Ignition ON.
- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	$\overline{\overline{V}}$	Ground
C2420-3	$\overline{\overline{V}}$	Ground

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	$\overline{\overline{V}}$	Ground
C2421-3	$\overline{\overline{V}}$	Ground

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	$\overline{\overline{V}}$	Ground
C702-4	$\overline{\overline{V}}$	Ground

Right Rear Door Speaker

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Positive Lead	Measurement / Action	Negative Lead
C802-1	$\overline{\overline{V}}$	Ground
C804-4	$\overline{\overline{V}}$	Ground

Is any voltage present?

Yes	REPAIR the circuits.
No	GO to H3

H3 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TOGETHER

- Ignition OFF.
- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	Ω	C2420-3

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	C2421-3

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	C702-4

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	C804-4

Are the resistances greater than 10,000 ohms?

Yes	GO to H4
No	REPAIR the circuits.

H4 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR AN OPEN

- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	Ω	C240A-6
C2420-3	Ω	C240A-5

Right A-Pillar Speaker

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Positive Lead	Measurement / Action	Negative Lead
C2421-1	Ω	C240A-10
C2421-3	Ω	C240A-9

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	C240A-3
C702-4	Ω	

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	C240A-8
C804-4	Ω	C240A-7

Are the resistances less than 3 ohms?

Yes	GO to H5
No	REPAIR the circuit in question.

H5 CHECK THE AUDIO SIGNAL TO THE SUSPECT SPEAKER

- Connect ACM C240A .
- Ignition ON.
- Operate the audio system in AM / FM mode.
- For the suspect speaker, measure:

Left A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2420-1	$\tilde{V}$	C2420-3

Right A-Pillar Speaker

Positive Lead	Measurement / Action	Negative Lead
C2421-1	$\tilde{V}$	C2421-3

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	$\tilde{V}$	C702-4

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	$\tilde{V}$	C804-4

Is a fluctuating AC voltage present?

Yes	INSTALL a new speaker for the one in question.
No	GO to H6

H6 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the [ACM](#) connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the [ACM](#) connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new ACM . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST I : ONE OR MORE SPEAKER IS INOPERATIVE - DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) CONTROLLED 8 SPEAKER SYSTEM

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
DSP B1A01:01	Speaker #1: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the DSP detects the left rear door speaker circuits are shorted together.
DSP B1A01:11	Speaker #1: Circuit Short To Ground	Sets during the on-demand self-test when the DSP detects a short to ground from the left rear door speaker circuits.
DSP B1A01:12	Speaker #1: Circuit Short To Battery	Sets during the on-demand self-test when the DSP detects a short to voltage from the left rear door speaker circuits.
DSP B1A01:13	Speaker #1: Circuit Open	Sets in continuous memory and during the on-demand self-test when the DSP detects an open from the left rear door speaker circuits.
DSP B1A02:01	Speaker #2: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the DSP detects the instrument panel center speaker circuits are shorted together.
DSP B1A02:11	Speaker #2: Circuit Short To Ground	Sets during the on-demand self-test when the DSP detects a short to ground from the instrument panel center speaker circuits.
DSP B1A02:12	Speaker #2: Circuit Short To Battery	Sets during the on-demand self-test when the DSP detects a short to voltage from the instrument panel center speaker circuits.
DSP B1A02:13	Speaker #2: Circuit Open	Sets in continuous memory and during the on-demand self-test when the DSP detects an open from the instrument panel center speaker circuits.
DSP B1A03:01	Speaker #3: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the DSP detects the right rear door speaker circuits are shorted together.
DSP B1A03:11	Speaker #3: Circuit Short To Ground	Sets during the on-demand self-test when the DSP detects a short to ground from the right rear door speaker circuits.
DSP B1A03:12	Speaker #3: Circuit Short To Battery	Sets during the on-demand self-test when the DSP detects a short to voltage from the right rear door speaker circuits.
DSP B1A03:13	Speaker #3: Circuit Open	Sets in continuous memory and during the on-demand self-test when the DSP detects an open from the right rear door speaker circuits.
DSP B1A04:01	Speaker #4: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the DSP detects the left front door speaker circuits are shorted together.
DSP B1A04:11	Speaker #4: Circuit Short To Ground	Sets during the on-demand self-test when the DSP detects a short to ground from the left front door speaker circuits.

DSP B1A04:12	Speaker #4: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the left front door speaker circuits.
DSP B1A04:13	Speaker #4: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the left front door speaker circuits.
DSP B1A05:01	Speaker #5: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the right front door speaker circuits are shorted together.
DSP B1A05:11	Speaker #5: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the right front door speaker circuits.
DSP B1A05:12	Speaker #5: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the right front door speaker circuits.
DSP B1A05:13	Speaker #5: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the right front door speaker circuits.
DSP B1A06:01	Speaker #6: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the subwoofer speaker circuits are shorted together.
DSP B1A06:11	Speaker #6: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the subwoofer speaker circuits.
DSP B1A06:12	Speaker #6: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the subwoofer speaker circuits.
DSP B1A06:13	Speaker #6: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the subwoofer speaker circuits.

Possible Sources

- Wiring, terminals, or connectors
- Speaker
- DSP

I1 CHECK FOR ACM (AUDIO FRONT CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

- Ignition ON.
- Using a diagnostic scan tool, carry out the ACM self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the <u>DTC</u> Chart in this section.
No	GO to I2

I2 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect the suspect speaker.
- Disconnect DSP C3154A .
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	Ω	Ground
C2356-2	Ω	Ground

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	Ground
C570-4	Ω	Ground

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	Ground
C628-4	Ω	Ground

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	Ground
C702-4	Ω	Ground

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	Ground
C802-4	Ω	Ground

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	Ω	Ground
C3020-2	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to I3
No	REPAIR the circuit in question.

I3 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO VOLTAGE

- Ignition ON.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	$\overline{\overline{V}}$	Ground
C2356-2	$\overline{\overline{V}}$	Ground

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	$\overline{\overline{V}}$	Ground
C570-4	$\overline{\overline{V}}$	Ground

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	$\overline{\overline{V}}$	Ground
C628-4	$\overline{\overline{V}}$	Ground

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	$\overline{\overline{V}}$	Ground
C702-4	$\overline{\overline{V}}$	Ground

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	$\overline{\overline{V}}$	Ground
C802-4	$\overline{\overline{V}}$	Ground

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	$\overline{\overline{V}}$	Ground
C3020-2	$\overline{\overline{V}}$	Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to I4

I4 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TOGETHER

- Ignition OFF.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	Ω	C2356-2

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	C570-4

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	C628-4

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	C702-4

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	C802-4

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	Ω	C3020-2

Are the resistances greater than 10,000 ohms?

Yes	GO to 15
No	REPAIR the circuits.

15 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR AN OPEN

- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	Ω	C3154A-19
C2356-2	Ω	C3154A-9

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	C3154A-17
C570-4	Ω	C3154A-7

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	C3154A-16
C628-4	Ω	C3154A-6

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	Ω	C3154A-20
C702-4	Ω	C3154A-10

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	Ω	C3154A-18
C802-4	Ω	C3154A-8

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	Ω	C3154A-15
C3020-2	Ω	C3154A-5

Are the resistances less than 3 ohms?

Yes	GO to I6
No	REPAIR the circuit in question.

I6 CHECK THE AUDIO SIGNAL TO THE SUSPECT SPEAKER

NOTE: For a rear door tweeter speaker concern, make sure the corresponding door woofer speaker is connected.

- Connect DSP_C3154A .
- Ignition ON.
- Operate the audio system in AM/ FM mode.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	$\tilde{V}$	C2356-2

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	$\tilde{V}$	C570-4

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	$\tilde{V}$	C628-4

Left Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C702-1	$\tilde{V}$	C702-4

Right Rear Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C802-1	$\tilde{V}$	C802-4

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	$\tilde{V}$	C3020-2

Is a fluctuating **AC** voltage present?

Yes	INSTALL a new speaker for the one in question.
No	GO to I7

I7 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the DSP connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the DSP connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>DSP</u> . REFER to: Audio Digital Signal Processing (DSP) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST J : ONE OR MORE SPEAKER IS INOPERATIVE - DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) CONTROLLED 18 SPEAKER SYSTEM

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

<u>DTC</u>	Description	Fault Trigger Condition
<u>DSP</u> B1A01:01	Speaker #1: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the left overhead speaker circuits are shorted together.
<u>DSP</u> B1A01:11	Speaker #1: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the left overhead speaker circuits.
<u>DSP</u> B1A01:12	Speaker #1: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the left overhead speaker circuits.
<u>DSP</u> B1A01:13	Speaker #1: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the left overhead speaker circuits.
<u>DSP</u> B1A02:01	Speaker #2: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the right overhead speaker circuits are shorted together.
<u>DSP</u> B1A02:11	Speaker #2: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the right overhead speaker circuits.
<u>DSP</u> B1A02:12	Speaker #2: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the right overhead speaker circuits.
<u>DSP</u> B1A02:13	Speaker #2: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the right overhead speaker circuits.
<u>DSP</u> B1A04:01	Speaker #4: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the left front door speaker circuits are shorted together.
<u>DSP</u> B1A04:11	Speaker #4: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the left front door speaker circuits.
<u>DSP</u> B1A04:12	Speaker #4: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the left front door speaker circuits.
<u>DSP</u> B1A04:13	Speaker #4: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the left front door speaker circuits.
<u>DSP</u>	Speaker #5: General	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the instrument

B1A05:01	Electrical Failure	panel left speaker circuits are shorted together.
DSP B1A05:11	Speaker #5: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the instrument panel left speaker circuits.
DSP B1A05:12	Speaker #5: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the instrument panel left speaker circuits.
DSP B1A05:13	Speaker #5: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the instrument panel left speaker circuits.
DSP B1A06:01	Speaker #6: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the subwoofer speaker circuits are shorted together.
DSP B1A06:11	Speaker #6: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the subwoofer speaker circuits.
DSP B1A06:12	Speaker #6: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the subwoofer speaker circuits.
DSP B1A06:13	Speaker #6: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the subwoofer speaker circuits.
DSP B1A07:01	Speaker #7: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the right front door speaker circuits are shorted together.
DSP B1A07:11	Speaker #7: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the right front door speaker circuits.
DSP B1A07:12	Speaker #7: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the right front door speaker circuits.
DSP B1A07:13	Speaker #7: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the right front door speaker circuits.
DSP B1A08:01	Speaker #8: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the instrument panel center speaker circuits are shorted together.
DSP B1A08:11	Speaker #8: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the instrument panel center speaker circuits.
DSP B1A08:12	Speaker #8: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the instrument panel center speaker circuits.
DSP B1A08:13	Speaker #8: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the instrument panel center speaker circuits.
DSP B1A09:01	Speaker #9: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the instrument panel right speaker circuits are shorted together.
DSP B1A09:11	Speaker #9: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the instrument panel right speaker circuits.
DSP B1A09:12	Speaker #9: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the instrument panel right speaker circuits.
DSP B1A09:13	Speaker #9: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the instrument panel right speaker circuits.

Possible Sources

- Wiring, terminals, or connectors
- Speaker
- DSP

NOTE: The rear door speaker and corresponding door tweeter speaker share the same circuitry. If a concern exists with both speakers, retest the system with the tweeter speaker disconnected to determine if the tweeter speaker is the cause of the concern.

J1 CHECK FOR ACM (AUDIO FRONT CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

- Ignition ON.
- Using a diagnostic scan tool, carry out the ACM self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the <u>DTC</u> Chart in this section.
No	GO to <u>J2</u>

J2 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO GROUND

NOTE: For a rear door tweeter speaker concern, make sure the corresponding door woofer speaker is disconnected.

- Ignition OFF.
- Disconnect the suspect speaker.
- Disconnect DSP C3155A .
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead

C2356-1	Ω	Ground
C2356-2	Ω	Ground

Instrument Panel Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C231-1	Ω	Ground
C231-2	Ω	Ground

Instrument Panel Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C230-1	Ω	Ground
C230-2	Ω	Ground

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	Ground
C570-4	Ω	Ground

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	Ground
C628-4	Ω	Ground

Left Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9063-1	Ω	Ground
C9063-3	Ω	Ground

Right Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9064-1	Ω	Ground
C9064-3	Ω	Ground

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	Ω	Ground
C3020-2	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to J3
No	REPAIR the circuit in question.

J3 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO VOLTAGE

- Ignition ON.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	$\overline{\overline{\overline{V}}}$	Ground
C2356-2	$\overline{\overline{\overline{V}}}$	Ground

Instrument Panel Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C231-1	$\overline{\overline{\overline{V}}}$	Ground
C231-2	$\overline{\overline{\overline{V}}}$	Ground

Instrument Panel Right Speaker

Positive Lead	Measurement / Action	Negative Lead
C230-1	$\overline{\overline{\overline{V}}}$	Ground
C230-2	$\overline{\overline{\overline{V}}}$	Ground

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	$\overline{\overline{\overline{V}}}$	Ground
C570-4	$\overline{\overline{\overline{V}}}$	Ground

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	$\overline{\overline{\overline{V}}}$	Ground
C628-4	$\overline{\overline{\overline{V}}}$	Ground

Left Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9063-1	$\overline{\overline{\overline{V}}}$	Ground
C9063-3	$\overline{\overline{\overline{V}}}$	Ground

Right Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9064-1	$\overline{\overline{V}}$	Ground
C9064-3	$\overline{\overline{V}}$	Ground

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	$\overline{\overline{V}}$	Ground
C3020-2	$\overline{\overline{V}}$	Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to J4

J4 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TOGETHER

- Ignition OFF.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	Ω	C2356-2

Instrument Panel Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C231-1	Ω	C231-2

Instrument Panel Right Speaker

Positive Lead	Measurement / Action	Negative Lead
C230-1	Ω	C230-2

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	C570-4

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	C628-4

Left Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9063-1	Ω	C9063-3

Right Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9064-1	Ω	C9064-3

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	Ω	C3020-2

Are the resistances greater than 10,000 ohms?

Yes	GO to J5
No	REPAIR the circuits.

J5 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR AN OPEN

- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	Ω	C3155A-13
C2356-2	Ω	C3155A-3

Instrument Panel Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C231-1	Ω	C3155A-16
C231-2	Ω	C3155A-6

Instrument Panel Right Speaker

Positive Lead	Measurement / Action	Negative Lead
C230-1	Ω	C3155A-12
C230-2	Ω	C3155A-2

Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	Ω	C3155A-17
C570-4	Ω	C3155A-7

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	Ω	C3155A-14
C628-4	Ω	C3155A-4

Left Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9063-1	Ω	C3155A-20
C9063-3	Ω	C3155A-10

Right Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9064-1	Ω	C3155A-19
C9064-3	Ω	C3155A-9

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	Ω	C3155A-15
C3020-2	Ω	C3155A-5

Are the resistances less than 3 ohms?

Yes	GO to J6
No	REPAIR the circuit in question.

J6 CHECK THE AUDIO SIGNAL TO THE SUSPECT SPEAKER

- Connect DSP_C3155A .
- Ignition ON.
- Operate the audio system in AM/ FM mode.
- For the suspect speaker, measure:

Instrument Panel Center Speaker

Positive Lead	Measurement / Action	Negative Lead
C2356-1	$\tilde{V}$	C2356-2

Instrument Panel Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C231-1	$\tilde{V}$	C231-2

Instrument Panel Right Speaker

Positive Lead	Measurement / Action	Negative Lead

C230-1	⌚	C230-2
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Left Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C570-1	⌚	C570-4

Right Front Door Speaker

Positive Lead	Measurement / Action	Negative Lead
C628-1	⌚	C628-4

Left Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9063-1	⌚	C9063-3

Right Overhead Speaker

Positive Lead	Measurement / Action	Negative Lead
C9064-1	⌚	C9064-3

Subwoofer Speaker

Positive Lead	Measurement / Action	Negative Lead
C3020-1	⌚	C3020-2

Is a fluctuating AC voltage present?

Yes	INSTALL a new speaker for the one in question.
No	GO to J7

J7 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the DSP connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the DSP connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>DSP</u> . REFER to: Audio Digital Signal Processing (DSP) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST K : ONE OR MORE HEADREST SPEAKER IS INOPERATIVE

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
DSP B1A03:01	Speaker #3: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the left headrests speaker circuits are shorted together.
DSP B1A03:11	Speaker #3: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the left headrests speaker circuits.
DSP B1A03:12	Speaker #3: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the left headrests speaker circuits.
DSP B1A03:13	Speaker #3: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the left headrests speaker circuits.
DSP B1A10:01	Speaker #10: General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the right headrests speaker circuits are shorted together.
DSP B1A10:11	Speaker #10: Circuit Short To Ground	Sets during the on-demand self-test when the <u>DSP</u> detects a short to ground from the right headrests speaker circuits.
DSP B1A10:12	Speaker #10: Circuit Short To Battery	Sets during the on-demand self-test when the <u>DSP</u> detects a short to voltage from the right headrests speaker circuits.
DSP B1A10:13	Speaker #10: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects an open from the right headrests speaker circuits.

Possible Sources

- Wiring, terminals, or connectors
- Speaker
- DSP

NOTE: The driver headrest left speaker shares the same circuitry with the passenger headrest left speaker. The same is true for the right headrest speakers.

K1 CHECK IF THE CORRESPONDING HEADREST SPEAKER IN THE OPPOSING SEAT IS INOPERATIVE

NOTE: Each headrest has a left and right speaker.

- Ignition ON.
- Operate the audio system in AM / FM mode.
- Listen to the each speaker in the driver and the passenger headrest.

Are both left or both right driver/passenger headrest speakers inoperative?

Yes	GO to K3
No	GO to K2

K2 CHECK FOR A SIGNAL TO THE HEADREST SPEAKER

NOTE: The headrest speaker connectors are located in the seat backrest.

- Ignition OFF.
- Disconnect the suspect speaker.
- Ignition ON.
- Operate the audio system in AM / FM mode.
- For the suspect speaker, measure:

Driver Headrest Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C3881-1		C3881-2

Driver Headrest Right Speaker

Positive Lead	Measurement / Action	Negative Lead
C3882-1	$\tilde{V}$	C3882-2

Passenger Headrest Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C3883-1	$\tilde{V}$	C3883-2

Passenger Headrest Right Speaker

Positive Lead	Measurement / Action	Negative Lead
C3884-1	$\tilde{V}$	C3884-2

Is a fluctuating AC voltage present?

Yes	INSTALL a new headrest for the speaker in question.
No	IDENTIFY the open speaker circuit and REPAIR as necessary.

K3 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO GROUND

NOTE: The headrest speaker connectors are located in the seat backrest.

- Ignition OFF.
- Disconnect the suspect speaker.
- Disconnect DSP C3155A (left speaker concern) C3155B (right speaker concern).
- For the suspect speaker, measure:

Driver Headrest Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C3881-1	Ω	Ground
C3881-2	Ω	Ground

Driver Headrest Right Speaker

Positive Lead	Measurement / Action	Negative Lead
C3882-1	Ω	Ground
C3882-2	Ω	Ground

Passenger Headrest Left Speaker

Positive Lead	Measurement / Action	Negative Lead
C3883-1	Ω	Ground
C3883-2	Ω	Ground

Passenger Headrest Right Speaker

Positive Lead	Measurement / Action	Negative Lead
C3884-1	Ω	Ground
C3884-2	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to K4
No	REPAIR the circuit in question.

K4 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TO VOLTAGE

- Ignition ON.
- For the suspect speaker, measure:

Driver Left Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3881-1	$\overline{\overline{V}}$	Ground
C3881-2	$\overline{\overline{V}}$	Ground

Driver Right Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3882-1	$\overline{\overline{V}}$	Ground
C3882-2	$\overline{\overline{V}}$	Ground

Passenger Left Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3883-1	$\overline{\overline{V}}$	Ground
C3883-2	$\overline{\overline{V}}$	Ground

Passenger Right Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3884-1	$\overline{\overline{V}}$	Ground
C3884-2	$\overline{\overline{V}}$	Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to K5

K5 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR A SHORT TOGETHER

NOTE: Make sure the corresponding speaker in the opposing seat is also disconnected.

- Ignition OFF.
- For the suspect speaker, measure:

Driver Left Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3881-1	Ω	C3881-2

Driver Right Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3882-1	Ω	C3882-2

Passenger Left Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3883-1	Ω	C3883-2

Passenger Right Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3884-1	Ω	C3884-2

Are the resistances greater than 10,000 ohms?

Yes	GO to K6
No	REPAIR the circuits.

K6 CHECK THE AUDIO CIRCUITS TO THE SPEAKER FOR AN OPEN

NOTE: Measurement only needs to be taken at one inoperative speaker.

- For the suspect speaker, measure:

Driver Left Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3881-1	Ω	C3155A-18
C3881-2	Ω	C3155A-8

Driver Right Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3882-1	Ω	C3155B-6
C3882-2	Ω	C3155B-2

Passenger Left Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3883-1	Ω	C3155A-18
C3883-2	Ω	C3155A-8

Passenger Right Headrest Speaker

Positive Lead	Measurement / Action	Negative Lead
C3884-1	Ω	C3155B-6
C3884-2	Ω	C3155B-2

Are the resistances less than 3 ohms?

Yes	GO to K7
No	REPAIR the circuit in question.

K7 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the DSP connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the DSP connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>DSP</u> . REFER to: Audio Digital Signal Processing (DSP) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST L : THE AUDIO/SYNC SYSTEM DOES NOT OPERATE CORRECTLY FROM THE AUDIO CONTROL PANEL

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

This pinpoint test does not apply to vehicles equipped with a 15 inch center display as they are not equipped with an audio control panel.

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>APIM</u> B1087:01	LIN Bus 'A': General Electrical Failure	Sets in continuous memory and during the on-demand self-test when the <u>APIM</u> loses communication with the audio control panel.
<u>APIM</u> U2013:01	Switch Pack: General Electrical Failure	Sets in continuous memory when the <u>APIM</u> detects a fault with a knob control on the audio control panel.
<u>APIM</u> U2013:16	Switch Pack: Circuit Voltage Below Threshold	Sets in continuous memory when the <u>APIM</u> receives a low voltage message from the audio control panel.
<u>APIM</u> U2013:17	Switch Pack: Circuit Voltage Above Threshold	Sets in continuous memory when the <u>APIM</u> receives a high voltage message from the audio control panel.
<u>APIM</u> U2013:63	Switch Pack: Circuit/Component Protection Time-Out	Sets in continuous memory and during the on-demand self-test when the <u>APIM</u> receives a continuous button press from the audio control panel for more than 2 minutes.

Possible Sources

- Wiring, terminals, or connectors
- Audio control panel
- APIM
- ACM

L1 CHECK THE AUDIO CONTROL PANEL POWER SUPPLY CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect Audio Control Panel C2009 .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2009-9		Ground

Is the voltage greater than 11 volts?

Yes	GO to L2
No	REPAIR the circuit.

L2 CHECK THE AUDIO CONTROL PANEL GROUND CIRCUIT FOR AN OPEN

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2009-9		C2009-1

Is the voltage greater than 11 volts?

Yes	GO to L3
No	REPAIR the circuit.

L3 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO VOLTAGE

- Disconnect [APIM C2383A](#) .
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2009-2		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to L4

L4 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2009-2	Ω	Ground

Is the resistance greater than 10,000 ohms?

Yes	GO to L5
No	REPAIR the circuit.

L5 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR AN OPEN

- Measure:

Positive Lead	Measurement / Action	Negative Lead
C2009-2		C2383A-44

Is the resistance less than 3 ohms?

Yes	INSTALL a new audio control panel. REFER to: Audio Controls - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
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	TEST the system for normal operation. If the concern is still present, GO to L6
No	REPAIR the circuit.

L6 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Disconnect and inspect all the APIM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the APIM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST M : ONE OR MORE AUDIO/SYNC STEERING WHEEL CONTROL BUTTON IS INOPERATIVE - VEHICLES NOT EQUIPPED WITH ADAPTIVE STEERING

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>SCCM</u> B137F:11	Steering Wheel Left Switch Pack: Circuit Short To Ground	Set in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects a short to ground from a left steering wheel switch input circuit.
<u>SCCM</u> B137F:13	Steering Wheel Left Switch Pack: Circuit Open	Set in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects an open from a left steering wheel switch input circuit.
<u>SCCM</u> B137F:4A	Steering Wheel Left Switch Pack: Incorrect Component Installed	Set in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects a fault from a left steering wheel switch input circuit.
<u>SCCM</u> B137F:96	Steering Wheel Left Switch Pack: Component Internal Failure	Set in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects a fault from a left steering wheel switch input circuit.
<u>SCCM</u> B137F:9E	Steering Wheel Left Switch Pack: Stuck On	Sets in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects a left steering wheel switch is active for more than 2 minutes.
<u>SCCM</u> B1380:11	Steering Wheel Right Switch Pack: Circuit Short To Ground	Set in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects a short to ground from a right steering wheel switch input circuit.
<u>SCCM</u> B1380:13	Steering Wheel Right Switch Pack: Circuit Open	Set in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects an open from a right steering wheel switch input circuit.
<u>SCCM</u> B1380:4A	Steering Wheel Right Switch Pack: Incorrect Component Installed	Set in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects a fault from a right steering wheel switch input circuit.
<u>SCCM</u> B1380:96	Steering Wheel Right Switch Pack: Component Internal Failure	Set in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects a fault from a right steering wheel switch input circuit.
<u>SCCM</u> B1380:9E	Steering Wheel Right Switch Pack: Stuck On	Sets in continuous memory and during the on-demand self-test when the <u>SCCM</u> detects a right steering wheel switch is active for more than 2 minutes.

Possible Sources

- Wiring, terminals, or connectors
- Steering wheel switch
- Clockspring
- Steering wheel
- SCCM

M1 CHECK FOR SCCM (STEERING COLUMN CONTROL MODULE) COMMUNICATION

- Ignition ON.
- Using a diagnostic scan tool, carry out the network test.

Does the SCCM pass the network test?

Yes	GO to M2
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

M2 CHECK FOR VOLTAGE TO THE STEERING WHEEL SWITCH

- Ignition OFF.
- Remove the driver airbag.
REFER to: [Driver Airbag](#) (501-20B Supplemental Restraint System, Removal and Installation).
- Disconnect Right Steering Wheel Switch C2999 .
- Disconnect Left Steering Wheel Switch C2998 .
- Ignition ON.
- Measure:

Right Steering Wheel Switch

Positive Lead	Measurement / Action	Negative Lead
C2999-2		C2999-5
C2999-3		C2999-5
C2999-4		C2999-5

Left Steering Wheel Switch

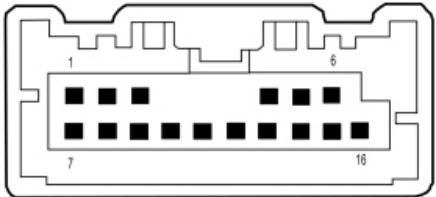
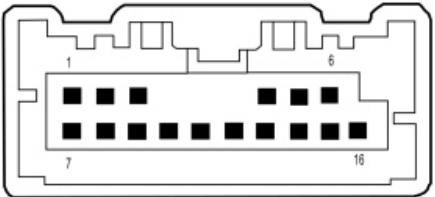
Positive Lead	Measurement / Action	Negative Lead
C2998-2		C2998-5
C2998-3		C2998-5
C2998-4		C2998-5

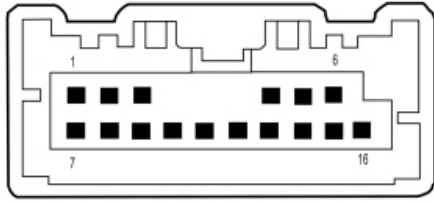
Are the voltages approximately 5 volts?

Yes	INSTALL a new steering wheel switch. in question. REFER to: Steering Wheel Multifunction Switch (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).
No	GO to M3

M3 CHECK THE STEERING WHEEL HARNESS

- Ignition OFF.
- Disconnect Clockspring C218B .
- Ignition ON.
- Measure:

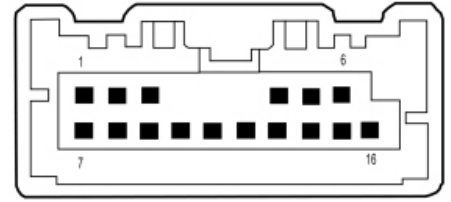
Positive Lead	Measurement / Action	Negative Lead
 E253177 Upper Clockspring C218B, pin 11 (component side)		 E253177 Upper Clockspring C218B, pin 13 (component side)



E253177

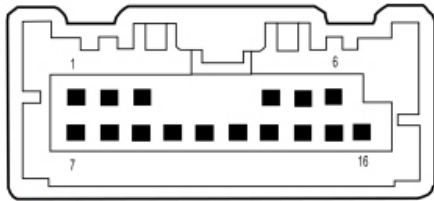
Upper Clockspring C218B, pin 12 (component side)

V



E253177

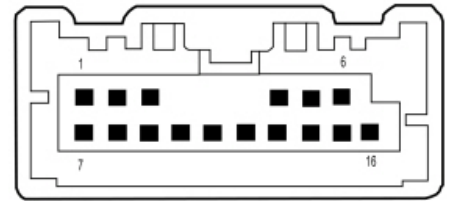
Upper Clockspring C218B, pin 13 (component side)



E253177

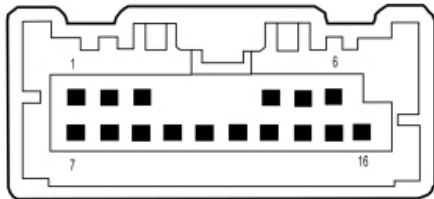
Upper Clockspring C218B, pin 14 (component side)

V



E253177

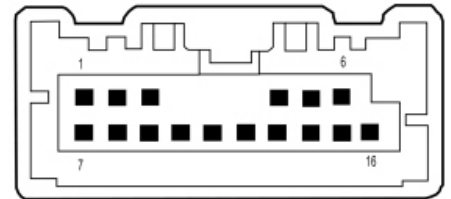
Upper Clockspring C218B, pin 13 (component side)



E253177

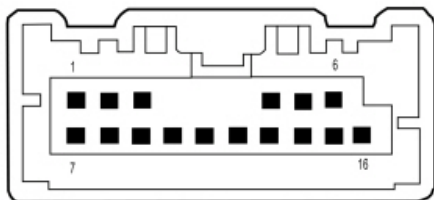
Upper Clockspring C218B, pin 7 (component side)

V



E253177

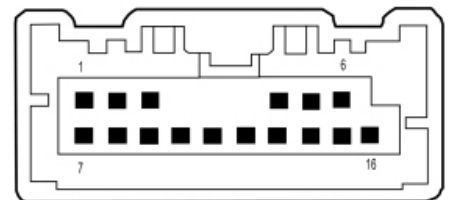
Upper Clockspring C218B, pin 9 (component side)



E253177

Upper Clockspring C218B, pin 8 (component side)

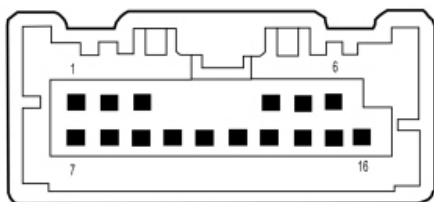
V



E253177

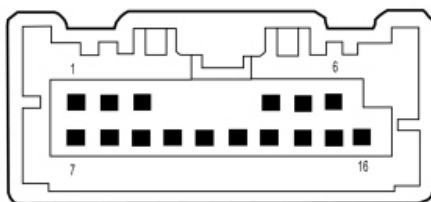
Upper Clockspring C218B, pin 9 (component side)

V



E253177

Upper Clockspring C218B, pin 10 (component side)



E253177

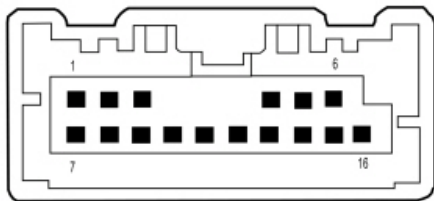
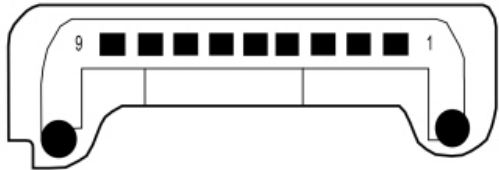
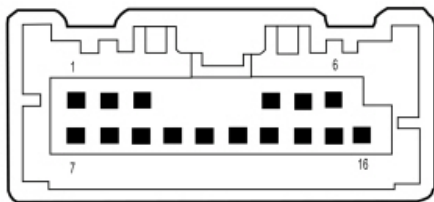
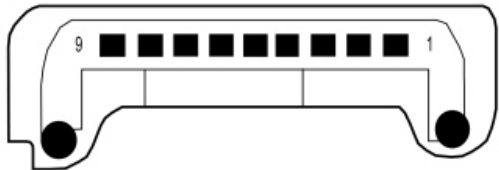
Upper Clockspring C218B, pin 9 (component side)

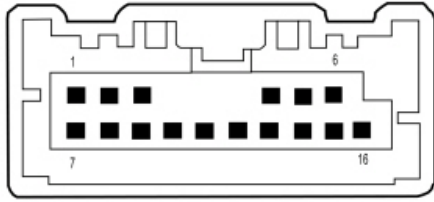
Are the voltages approximately 5 volts?

Yes	REPAIR the steering wheel harness (open or short is present) or INSTALL a new steering wheel as necessary. REFER to: Steering Wheel (211-04 Steering Column, Removal and Installation).
No	GO to M4

M4 CHECK THE CLOCKSPEED FOR AN OPEN

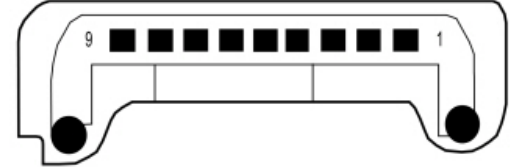
- Ignition OFF.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E253177 Upper Clockspring C218B, pin 11 (component side)	Ω	 E253175 Lower Clockspring C218F, pin 5 (component side)
 E253177 Upper Clockspring C218B, pin 12 (component side)	Ω	 E253175 Lower Clockspring C218F, pin 6 (component side)
	Ω	



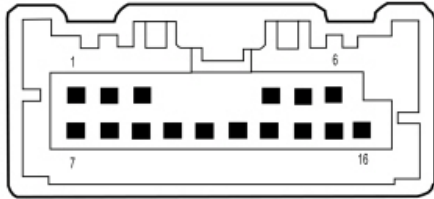
E253177

Upper Clockspring C218B, pin 14 (component side)



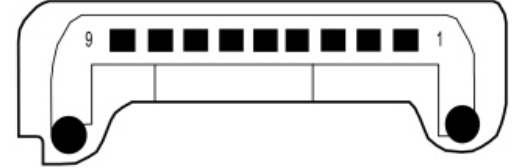
E253175

Lower Clockspring C218F, pin 8 (component side)



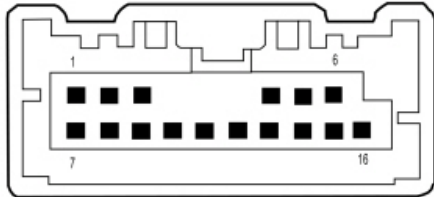
E253177

Upper Clockspring C218B, pin 13 (component side)



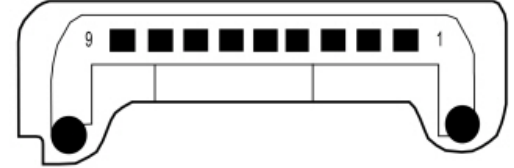
E253175

Lower Clockspring C218F, pin 7 (component side)



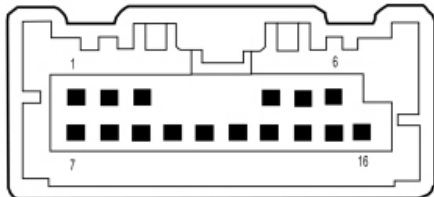
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Upper Clockspring C218B, pin 7 (component side)



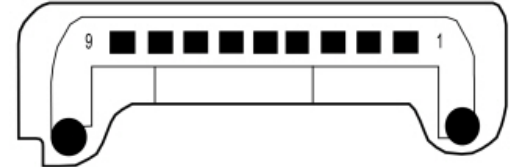
E253175

Lower Clockspring C218F, pin 1 (component side)



E253177

Upper Clockspring C218B, pin 8 (component side)



E253175

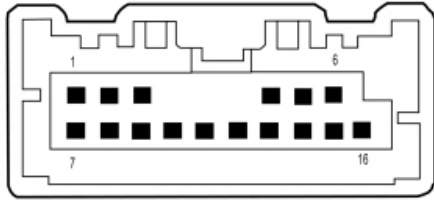
Lower Clockspring C218F, pin 2 (component side)

Ω

Ω

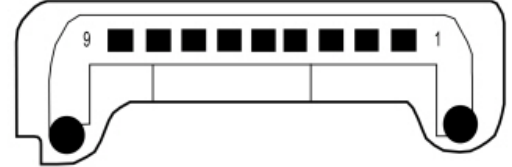
Ω

Ω



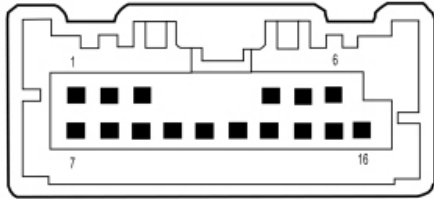
E253177

Upper Clockspring C218B, pin 10 (component side)



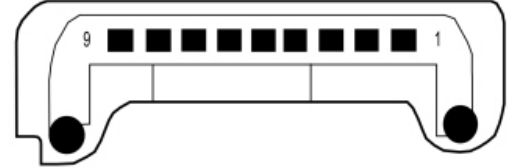
E253175

Lower Clockspring C218F, pin 4 (component side)



E253177

Upper Clockspring C218B, pin 9 (component side)



E253175

Lower Clockspring C218F, pin 3 (component side)

Ω

Are the resistances less than 3 ohms?

Yes	GO to M5
No	INSTALL a new clockspring. REFER to: Clockspring (501-20B Supplemental Restraint System, Removal and Installation).

M5 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the SCCM connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the SCCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK QASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new SCCM. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST N : ONE OR MORE AUDIO/SYNC STEERING WHEEL CONTROL BUTTON IS INOPERATIVE - VEHICLES EQUIPPED WITH ADAPTIVE STEERING

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
SECM B137F:11	Steering Wheel Left Switch Pack: Circuit Short To Ground	Set in continuous memory when the SECM detects a short to ground from a steering wheel switch input circuit.
SECM B137F:17	Steering Wheel Left Switch Pack: Circuit Voltage Above Threshold	Set in continuous memory when the SECM detects a short to voltage from a steering wheel switch input circuit.
SECM B137F:2A	Steering Wheel Left Switch Pack: Stuck in Range	Sets in continuous memory when the SECM detects a left steering wheel switch is active for more than 2 minutes.
SECM B137F:4A	Steering Wheel Left Switch Pack: Incorrect Component Installed	Set in continuous memory when the SECM detects an incorrect resistance value from a steering wheel switch input circuit.
SECM B1380:11	Steering Wheel Right Switch Pack: Circuit Short To Ground	Set in continuous memory when the SECM detects a short to ground from a steering wheel switch input circuit.
SECM B1380:17	Steering Wheel Right Switch Pack: Circuit Voltage Above Threshold	Set in continuous memory when the SECM detects an open from a steering wheel switch input circuit.
SECM B1380:2A	Steering Wheel Right Switch Pack: Stuck in Range	Sets in continuous memory when the SECM detects a right steering wheel switch is active for more than 2 minutes.
SECM B1380:4A	Steering Wheel Right Switch Pack: Incorrect Component Installed	Set in continuous memory when the SECM detects an incorrect resistance value from a steering wheel switch input circuit.

Possible Sources

- Wiring, terminals, or connectors
- Steering wheel switch
- Clockspring
- Steering wheel
- [SECM](#)

N1 CHECK FOR VOLTAGE TO THE STEERING WHEEL SWITCH

- Ignition OFF.
- Remove the driver airbag.
REFER to: [Driver Airbag - Vehicles With: Adaptive Steering](#) (501-20B Supplemental Restraint System, Removal and Installation).
- Disconnect Right Steering Wheel Switch C2999 .
- Disconnect Left Steering Wheel Switch C2998 .
- Ignition ON.
- Measure:

Right Steering Wheel Switch

Positive Lead	Measurement / Action	Negative Lead
C2999-2		C2999-5
C2999-3		C2999-5
C2999-4		C2999-5

Left Steering Wheel Switch

Positive Lead	Measurement / Action	Negative Lead
C2998-2		C2998-5
C2998-3		C2998-5
C2998-4		C2998-5

Are the voltages approximately 5 volts?

Yes	INSTALL a new right steering wheel switch. REFER to: Steering Wheel Multifunction Switch (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern is still present, INSTALL a new left steering wheel switch. REFER to: Steering Wheel Multifunction Switch (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).
No	GO to N2

N2 CHECK THE STEERING WHEEL HARNESS

- Ignition OFF.
- Disconnect [SECM C2391B](#).
- Inspect the steering wheel harness for opens and shorts.

Is the steering wheel harness OK?

Yes	INSTALL a new steering wheel. REFER to: Steering Wheel - Vehicles With: Adaptive Steering (211-04 Steering Column, Removal and Installation).
No	REPAIR the steering wheel harness. If the steering wheel harness cannot be repaired, INSTALL a new steering wheel. REFER to: Steering Wheel - Vehicles With: Adaptive Steering (211-04 Steering Column, Removal and Installation).

PINPOINT TEST O : THE DISPLAY UNIT IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

NOTE: The display unit calibrates after each ignition cycle. Touching the display during an ignition cycle may cause the touchscreen to be inoperative.

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
APIM B108E:01	Display: General Electrical Failure	Sets in continuous memory when the APIM detects an error from the display unit.
APIM B108E:02	Display: General Signal Failure	Sets in continuous memory when the APIM receives a message from the display unit indicating a fault.
APIM B108E:4A	Display: Incorrect Component Installed	Sets in continuous memory when the APIM detects an incorrect display unit is installed.
APIM B108E:4B	Display: Over Temperature	Sets in continuous memory when the APIM receives a message from the display unit reporting an over temperature condition.
APIM B108E:87	Display: Missing Message	Sets in continuous memory when the APIM loses communication to the display unit.
APIM U0162:00	Lost Communication With Navigation Display Module: No Sub Type Information	Sets in continuous memory when the APIM loses communication to the display unit.

Possible Sources

- Communication concern
- Configuration concern
- [LVDS](#) cable
- Display unit
- [APIM](#)

NOTE: Prior to carrying out diagnostics, it may be beneficial to determine the cause using the Circuit Tester and LVDS Adapter Kit 420-912 (Rotunda part number NUD420-912) or equivalent tool.



COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.



To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure **SYNC Touchscreen/Information and Entertainment Display**.

PINPOINT TEST P : SOUND FROM THE SYNC SYSTEM (MUSIC/AUDIBLE PROMPTS) IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

Possible Sources

- Wiring, terminals, or connectors
- Steering wheel switch input concern
- APIM
- ACM

P1 CHECK THE OPERATION OF THE SPEAKERS USING THE AM (AMPLITUDE MODULATION) / FM (FREQUENCY MODULATION) MODE

- Ignition ON.
- Operate the audio system in AM / FM mode.
- Using the audio system fade and balance features, adjust the audio sound to each of the zones (left front, right front, left rear and right rear).

Do all of the speakers operate?

Yes	GO to P2
No	REFER to the appropriate symptom in the Speakers and Sound Quality Symptom Chart.

P2 CHECK THE STEERING WHEEL SWITCH PARAMETER IDENTIFICATIONS (PIDS)

- View the following steering wheel audio/media switch Parameter Identifications (PIDs) while pressing the VOICE button:

Vehicles Not Equipped With Adaptive Steering

- Access the SCCM and monitor the SW_VOICE (none) PID

Vehicles Equipped With Adaptive Steering

- Access the SECM and monitor the SW_VOICE PID

Do the Parameter Identifications (PIDs) correspond correctly?

Yes	GO to P3
No	For vehicles not equipped with adaptive steering, GO to Pinpoint Test M For vehicles equipped with adaptive steering, GO to Pinpoint Test N

P3 CHECK THE APIM (SYNC MODULE) OUTPUT CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect ACM C240B .
- Disconnect APIM C2383A .
- Measure:

Mono/Alert

Positive Lead	Measurement / Action	Negative Lead
C2383A-3	Ω	Ground
C2383A-4	Ω	Ground

Stereo Left

Positive Lead	Measurement / Action	Negative Lead
C2383A-23	Ω	Ground
C2383A-24	Ω	Ground

Stereo Right

Positive Lead	Measurement / Action	Negative Lead
C2383A-25	Ω	Ground
C2383A-26	Ω	Ground

Are the resistances greater than 10,000 ohms?

Yes	GO to P4
No	REPAIR the circuit in question.

P4 CHECK THE APIM (SYNC MODULE) OUTPUT CIRCUITS FOR A SHORT TO VOLTAGE

- Ignition ON.
- Measure:

Mono/Alert

Positive Lead	Measurement / Action	Negative Lead
C2383A-3	$\overline{\overline{V}}$	Ground
C2383A-4	$\overline{\overline{V}}$	Ground

Stereo Left

Positive Lead	Measurement / Action	Negative Lead
C2383A-23	$\overline{\overline{V}}$	Ground
C2383A-24	$\overline{\overline{V}}$	Ground

Stereo Right

Positive Lead	Measurement / Action	Negative Lead
C2383A-25	$\overline{\overline{V}}$	Ground
C2383A-26	$\overline{\overline{V}}$	Ground

Is any voltage present?

Yes	REPAIR the circuit in question.
No	GO to P5

P5 CHECK THE APIM (SYNC MODULE) OUTPUT CIRCUITS FOR A SHORT TOGETHER

- Measure:

Mono/Alert

Positive Lead	Measurement / Action	Negative Lead
C2383A-3	Ω	C2383A-4

Stereo Left

Positive Lead	Measurement / Action	Negative Lead
C2383A-23	Ω	C2383A-24

Stereo Right

Positive Lead	Measurement / Action	Negative Lead
C2383A-25	Ω	C2383A-26

Are the resistances greater than 10,000 ohms?

Yes	GO to P6
No	REPAIR the circuits in question.

P6 CHECK THE APIM (SYNC MODULE) OUTPUT CIRCUITS FOR AN OPEN

- Measure:

Mono/Alert

Positive Lead	Measurement / Action	Negative Lead
C2383A-3	Ω	C240B-19
C2383A-4	Ω	C240B-30

Stereo Left

Positive Lead	Measurement / Action	Negative Lead
C2383A-23	Ω	C240B-20
C2383A-24	Ω	C240B-31

Stereo Right

Positive Lead	Measurement / Action	Negative Lead
C2383A-25	Ω	C240B-21
C2383A-26	Ω	C240B-32

Are the resistances less than 3 ohms?

Yes	GO to P7
No	REPAIR the circuit in question.

P7 CHECK FOR AN AC (ALTERNATING CURRENT) VOLTAGE SIGNAL FROM THE APIM (SYNC MODULE) OUTPUT CIRCUITS

- Connect APIM C2383 .
- Ignition ON.
- For a concern playing music using the SYNC system, play an audio file through the audio system using a SYNC audio source (Bluetooth or USB port).
- For a concern with the SYNC audible prompts, repeatedly press the VOICE button on the steering wheel switch while measuring the voltage.
- **NOTE:** The ACM C240A connector must be connected for this test.

Measure:

Mono/Alert

Positive Lead	Measurement / Action	Negative Lead
C240B-19	$\tilde{V}$	C240B-30

Stereo Left

Positive Lead	Measurement / Action	Negative Lead
C240B-20	$\tilde{V}$	C240B-31

Stereo Right

Positive Lead	Measurement / Action	Negative Lead
C240B-21	$\tilde{V}$	C240B-32

Is a fluctuating AC voltage present?

Yes	GO to P9
No	GO to P8

P8 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the APIM connector.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the APIM connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

P9 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST Q : VOICE COMMANDS ARE INOPERATIVE OR OUTGOING AUDIO IS NOT TRANSMITTED DURING A PHONE CALL

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

DTC Fault Trigger Conditions

<u>DTC</u>	Description	Fault Trigger Condition
<u>APIM</u> B1D79:11	Microphone Input: Circuit Short To Ground	Sets during the on-demand self-test when the <u>APIM</u> detects a short to ground from the microphone circuitry.
<u>APIM</u> B1D79:12	Microphone Input: Circuit Short To Battery	Sets during the on-demand self-test when the <u>APIM</u> detects a short to voltage from the microphone circuitry.
<u>APIM</u> B1D79:13	Microphone Input: Circuit Open	Sets during the on-demand self-test when the <u>APIM</u> detects an open from the microphone circuitry.

Possible Sources

- Wiring, terminals, or connectors
- Steering wheel switch input concern
- Microphone
- APIM



COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.



To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure **SYNC Voice Recognition**.

PINPOINT TEST R : THE SYNC SYSTEM DOES NOT RESPOND TO THE WAKE WORD

Normal Operation and Fault Conditions

Possible Sources

- Wake Word setting disabled
- Incorrect Wake Word used
- Wake Word not recognized
- Steering wheel switch input concern
- Microphone input concern

NOTE: The Wake Word used by the vehicle owner needs to be provided in advance of this test.

R1 CHECK THE OPERATION OF THE STEERING WHEEL VOICE BUTTON

- Ignition ON.
- Press the steering wheel voice control button.

Does the SYNC system acknowledge the voice button press?

Yes	GO to R2
No	For vehicles not equipped with adaptive steering, GO to Pinpoint Test M For vehicles equipped with adaptive steering, GO to Pinpoint Test N

R2 CHECK THE OPERATION OF THE MICROPHONE

- Turn on the radio and set the source to AM radio.
- Press the steering wheel voice control button and then state "FM".

Does the radio change to FM?

Yes	GO to R3
No	GO to Pinpoint Test Q

R3 CHECK THE WAKE WORD SETTINGS

- Access the Ford Voice Settings menu using the touchscreen.

Is the Listen for Wake Word setting enabled?

Yes	GO to R4
No	ENABLE the Listen for Wake Word setting.

R4 CHECK THE PREFERRED WAKE WORD

- Access the Preferred Wake Word in the menu settings.
- Compare the Preferred Wake Word to the wake word provided by the vehicle owner.

Does the Preferred Wake Word match the wake word provided by the vehicle owner?

Yes	The system is operating as designed. The Preferred Wake Word needs to be spoken clearly for the SYNC system to recognize the request.
No	INFORM the vehicle owner of the Preferred Wake Word selected in the SYNC system.

PINPOINT TEST S : A USB (UNIVERSAL SERIAL BUS) INPUT CONCERN

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System -

General Information, Description and Operation).

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
APIM B1252:11	USB Port: Circuit Short To Ground	Sets in continuous memory when the <u>APIM</u> detects a short to ground from the <u>USB</u> cable.
APIM B1252:13	USB Port: Circuit Open	Sets during the on-demand self-test when the <u>APIM</u> detects an open from the <u>USB</u> cable.
APIM B14FD:11	External Media Control Connectivity: Circuit Short To Ground	Sets in continuous memory when the <u>APIM</u> detects a short to ground from the <u>USB</u> hub power supply circuit.

Possible Sources

- USB device
- Foreign object in the USB port
- USB cable
- Media hub
- APIM



COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.



To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure *SYNC Connectivity*.

PINPOINT TEST T : UNABLE TO PAIR BLUETOOTH DEVICE OR A BLUETOOTH FUNCTIONALITY IS INOPERATIVE

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

Possible Sources

- Incompatible Bluetooth device
- Bluetooth device
- APIM



COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.



To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure *SYNC Connectivity*.

PINPOINT TEST U : THE 911 ASSIST OR EMERGENCY ASSISTANCE NOT OPERATIONAL MESSAGE DISPLAYS

Normal Operation and Fault Conditions

If a fault message appears indicating the 911 Assist or emergency assistance is not operational, the concern may be caused due to modules not communicating or incorrect APIM programming procedures.

Possible Sources

- 911 Assist or emergency assistance feature disabled
- Network communication concern
- Module configuration concern
- APIM

U1 VERIFY THE 911 ASSIST OR EMERGENCY ASSISTANCE FEATURE IS ENABLED

- Ignition ON.
- Check the 911 Assist or emergency assistance feature setting in the display settings menu.

Is the 911 Assist or emergency assistance setting enabled?

Yes	GO to U2
No	ENABLE the 911 Assist or emergency assistance feature.

U2 CHECK FOR CONTINUOUS MEMORY DIAGNOSTIC TROUBLE CODES (CMDTCS)

- Using a diagnostic scan tool, retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCS).

Are any Continuous Memory Diagnostic Trouble Codes (CMDTCS) present?

Yes	REFER to the appropriate module <u>DTC</u> Chart in the appropriate section.
No	GO to U3

U3 CHECK THE VEHICLE SERVICE HISTORY

- Check the vehicle service history for recent service actions related to the RCM and the APIM.

Is any recent service action noted with the RCM or the APIM noted?

Yes	CARRY OUT the <u>PMI</u> procedure using As-Built data as directed by the diagnostic scan tool for the module in question.
No	GO to U4

U4 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the APIM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the APIM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST V : THE COMPASS/NAVIGATION IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY - SYNC 4 LOW

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

NOTE: To identify the SYNC system, click on the "ADDITIONAL INFORMATION" link on the OASIS tab on PTS.

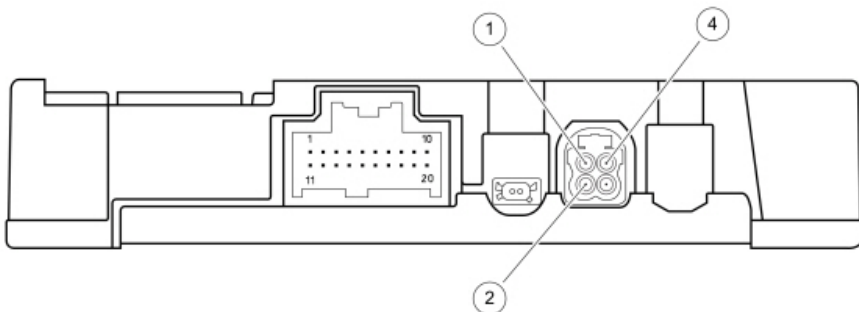
SYNC 4 Low is identified by the code IEVAR.

SYNC 4 is identified by the code IEVAQ.

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

TCU Antenna Cable Connections



E332863

Item	Part Number	Description

1	—	Secondary cellular antenna connection
2	—	GPS antenna connection
4	—	Primary cellular antenna connection

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
TCU B119F:11	GPS Antenna: Circuit Short To Ground	Sets in continuous memory when the <u>TCU</u> detects a short to ground or short to voltage from the <u>GPS</u> antenna cable.
TCU B119F:13	GPS Antenna: Circuit Open	Sets in continuous memory when the <u>TCU</u> detects an open from the <u>GPS</u> antenna cable.

Possible Sources

- Corrosion
- Obstructions in the GPS antenna line of sight to the satellite
- GPS antenna cable
- Roof mounted antenna
- TCU

NOTE: Prior to carrying out diagnostics, it may be beneficial to determine the cause using the Antenna Tool Kit (refer to the Rotunda catalog for the latest part number) or equivalent tool.

NOTE: Carrying out a Master Reset of the SYNC system prior to diagnostics may resolve some compass/navigation concerns.

V1 CHECK COMPASS FOR CORRECT OPERATION

- Operate the vehicle and observe the compass heading.

Does the compass operate correctly?

Yes	The system is operating correctly at this time. The concern may have been caused by obstructions in the antenna line of sight to the satellites for an extended period of time.
No	GO to V2

V2 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OUTPUT VOLTAGE AT THE GPS (GLOBAL POSITIONING SYSTEM) CABLE CONNECTION

- Ignition OFF.
- Disconnect GPS antenna cable from the TCU.
- Ignition ON.
- **NOTE:** Refer to the TCU diagram at the beginning of this test to identify the correct cable connection to the TCU.

Using the female Flex Probe 300-08058 (0.5 mm x 0.5 mm) or equivalent, measure:

Positive Lead	Measurement / Action	Negative Lead
<u>GPS</u> cable core at the <u>TCU</u> (component side)		Ground

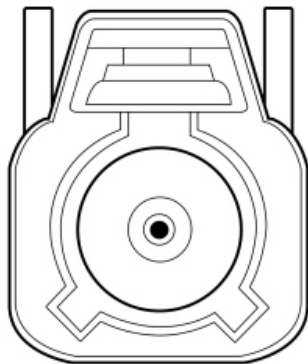
Is the voltage between 4.7 and 5.8 volts?

Yes	GO to V3
No	GO to V6

V3 CHECK FOR VOLTAGE TO THE GPS (GLOBAL POSITIONING SYSTEM) ANTENNA

- Ignition OFF.
- Disconnect the GPS antenna cable from the GPS antenna.
- Connect the GPS antenna cable to the TCU.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
		Ground



E258796

GPS antenna cable core at the antenna

Is the voltage between 4.7 and 5.8 volts?

Yes	GO to V4
No	INSTALL a new <u>GPS</u> /satellite radio cable for the one in question. REFER to: Satellite Radio / Global Positioning System (GPS) Antenna Cable - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).

V4 CHECK THE ANTENNA BASE AND MOUNTING SURFACE

- Remove the GPS antenna.
- Inspect for corrosion on the antenna base and the vehicle mounting surface.

Is antenna base and mounting free of corrosion?

Yes	GO to V5
No	REPAIR any corrosion on the antenna base and/or vehicle mounting surface. INSTALL the antenna and make sure the correct torque value is used when tightening the fastener.

V5 CHECK THE GPS (GLOBAL POSITIONING SYSTEM) ANTENNA

- Install a new GPS antenna.
- Test the system for normal operation.

Does the compass operate correctly?

Yes	The repair is complete.
No	GO to V6

V6 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the TCU connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the TCU connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>TCU</u> . REFER to: Telematics Control Unit (TCU) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

NOTE: To identify the SYNC system, click on the "ADDITIONAL INFORMATION" link on the OASIS tab on [PTS](#).

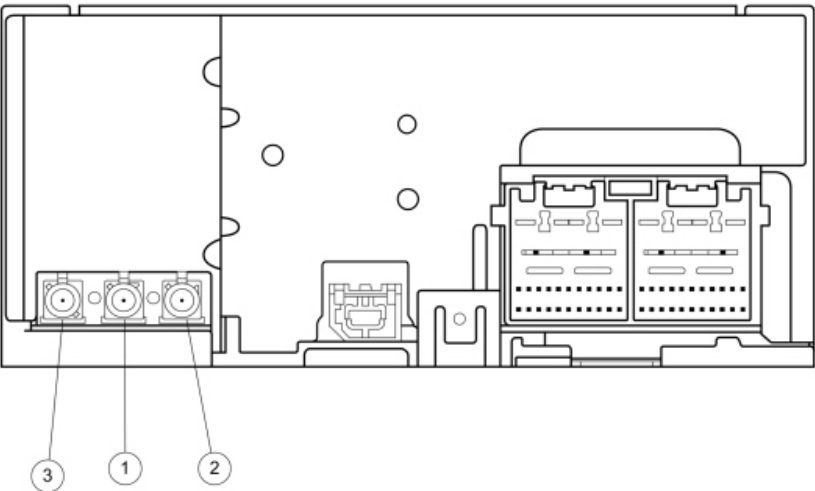
SYNC 4 Low is identified by the code IEVAR.

SYNC 4 is identified by the code IEVAQ.

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

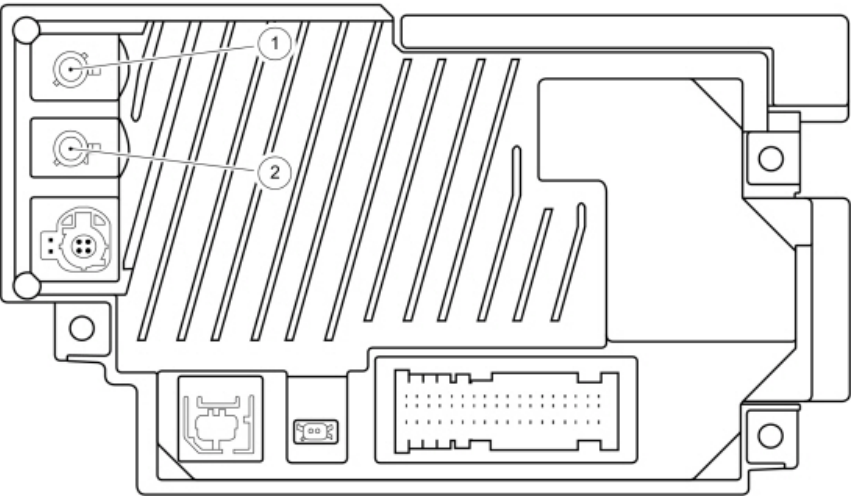
ACM Coaxial Cable Connections



E309749

Item	Part Number	Description
1	—	Audio unit antenna connection
2	—	FM2 diversity antenna connection
3	—	Satellite radio connection

APIM Coaxial Cable Connections



E332834

Item	Part Number	Description
1	—	GPS antenna connection
2	—	Video coaxial cable connection

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>APIM</u> B119F:01	GPS Antenna: General Electrical Failure	Sets in continuous memory when the <u>APIM</u> detects a short to ground or short to voltage from the <u>GPS</u> antenna cable.
<u>APIM</u> B119F:13	GPS Antenna: Circuit Open	Sets in continuous memory when the <u>APIM</u> detects an open from the <u>GPS</u> antenna cable.

Possible Sources

- Corrosion
- Network communication concern
- Obstructions in the GPS antenna line of sight to the satellite
- GPS antenna cable
- Roof mounted antenna
- ACM
- APIM

NOTE: Prior to carrying out diagnostics, it may be beneficial to determine the cause using the Antenna Tool Kit (refer to the Rotunda catalog for the latest part number) or equivalent tool.

NOTE: Carrying out a Master Reset of the SYNC system prior to diagnostics may resolve some compass/navigation concerns.

W1 CHECK FOR ABS (ANTI-LOCK BRAKE SYSTEM) MODULE NETWORK COMMUNICATION

- Ignition ON.
- Using a diagnostic scan tool, clear the APIM Diagnostic Trouble Codes (DTCs).
- Ignition OFF.
- Ignition ON.
- Wait 30 seconds.
- Using a diagnostic scan tool, carry out the APIM self-test.

Is **DTC U0121:00** present?

Yes	GO to Pinpoint Test AC
No	GO to W2

W2 CHECK THE GPS (GLOBAL POSITIONING SYSTEM) ANTENNA RECEPTION

- Access "APIM Diagnostics" using Bezel Diagnostics.
REFER to: [Bezel Diagnostics](#) (415-00 Information and Entertainment System - General Information, General Procedures).
- Select "Location Information".
- **NOTE:** If the value reads less than 3 for "Number of Satellites" or "No GPS Fix" for "Fix Mode", drive the vehicle to an outdoor location free from obstacles such as tall buildings and large trees.
Monitor the "Number of Satellites" and "Fix Mode".

Are 3 or more satellites displayed for "Number of Satellites" and is "3D fix obtained" displayed for "fix Mode"?

Yes	GO to W3
No	GO to W4

W3 CHECK COMPASS FOR CORRECT OPERATION

- Operate the vehicle and observe the compass heading.

Does the compass operate correctly?

Yes	The system is operating correctly at this time. The concern may have been caused by obstructions in the antenna line of sight to the satellites for an extended period of time.
No	GO to W13

W4 CHECK FOR CORRECT APIM (SYNC MODULE) OUTPUT VOLTAGE AT THE GPS (GLOBAL POSITIONING SYSTEM) CABLE CONNECTION

- Ignition OFF.
- Disconnect GPS antenna cable from the APIM.
- Ignition ON.
- **NOTE:** Refer to the APIM diagram at the beginning of this test to identify the correct cable connection to the APIM.
Using the female Flex Probe 300-08058 (0.5 mm x 0.5 mm) or equivalent, measure:

Positive Lead	Measurement / Action	Negative Lead
GPS cable core at the <u>APIM</u> (component side)	$\overline{\text{V}}$	Ground

Is the voltage between 4.7 and 5.8 volts?

Yes	For vehicles not equipped with a satellite radio, GO to W9 For vehicles equipped with a satellite radio, GO to W5
No	GO to W13

W5 CHECK FOR PROMOTIONAL CHANNEL 1

- Operate the audio system in satellite radio mode.
- Select channel 1.

Does the satellite radio system receive channel 1 with normal sound quality?

Yes	GO to W8
No	GO to W6

W6 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OUTPUT VOLTAGE TO THE SATELLITE RADIO ANTENNA CABLE

- Ignition OFF.
- Disconnect the satellite radio antenna cable at the ACM.
- Ignition ON.
- **NOTE:** Refer to the ACM diagram at the beginning of this test to identify the correct cable connection to the APIM.

Using the female Flex Probe 300-08058 (0.5 mm x 0.5 mm) or equivalent, measure:

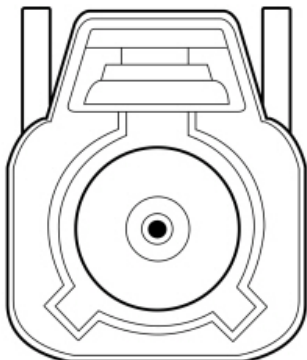
Positive Lead	Measurement / Action	Negative Lead
Satellite radio antenna cable core at the <u>ACM</u> (component side)	$\overline{\text{V}}$	Ground

Is the voltage between 4.7 and 5.8 volts?

Yes	GO to W7
No	GO to W12

W7 CHECK FOR VOLTAGE TO THE GPS (GLOBAL POSITIONING SYSTEM) /SATELLITE RADIO ANTENNA

- Ignition OFF.
- Connect the satellite radio antenna cable to the ACM.
- Disconnect the GPS /satellite radio antenna cable from the satellite radio antenna.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E258796 GPS /satellite radio antenna cable core at the antenna	$\overline{\text{V}}$	Ground

Is the voltage between 4.7 and 5.8 volts?

Yes	GO to W8
No	IDENTIFY the cable with the open or short. INSTALL a new <u>GPS</u> /satellite radio cable for the one in question. REFER to: Satellite Radio / Global Positioning System (GPS) Antenna Cable - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).

W8 ISOLATE THE SATELLITE RADIO/GPS (GLOBAL POSITIONING SYSTEM) ANTENNA SPLITTER CABLE

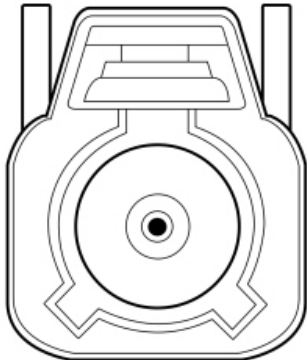
- INSTALL a new satellite radio/ GPS antenna splitter cable.
REFER to: [Satellite Radio / Global Positioning System \(GPS\) Splitter / Cable](#) (415-00 Information and Entertainment System - General Information, Removal and Installation).
- Operate the vehicle and observe the compass heading.

Does the compass operate correctly?

Yes	The repair is complete.
No	GO to W10

W9 CHECK FOR VOLTAGE TO THE GPS (GLOBAL POSITIONING SYSTEM) ANTENNA

- Ignition OFF.
- Disconnect the GPS antenna cable from the GPS antenna.
- Connect the GPS antenna cable to the APIM.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E258796 <u>GPS</u> antenna cable core at the antenna		Ground

Is the voltage between 4.7 and 5.8 volts?

Yes	GO to W10
No	IDENTIFY the cable with the open or short. INSTALL a new <u>GPS</u> /satellite radio cable for the one in question. REFER to: Satellite Radio / Global Positioning System (GPS) Antenna Cable - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).

W10 CHECK THE ANTENNA BASE AND MOUNTING SURFACE

- Remove the GPS /satellite radio antenna.
- Inspect for corrosion on the antenna base and the vehicle mounting surface.

Is antenna base and mounting free of corrosion?

Yes	GO to W11
No	REPAIR any corrosion on the antenna base and/or vehicle mounting surface. INSTALL the antenna and make sure the correct torque value is used when tightening the fastener.

W11 CHECK THE GPS (GLOBAL POSITIONING SYSTEM) /SATELLITE RADIO ANTENNA

- Install a new GPS /satellite radio antenna.
- Test the system for normal operation.

Does the compass operate correctly?

Yes	The repair is complete.
No	GO to W13

W12 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM connectors.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

W13 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the APIM connectors.
- Repair:
 - o corrosion (install new connectors or terminals - clean module pins)
 - o damaged or bent pins - install new terminals pins
 - o pushed-out pins - install new pins as necessary
- Reconnect the APIM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST X : THE FORDPASS FEATURE IS INOPERATIVE OR DOES NOT OPERATE CORRECTLY

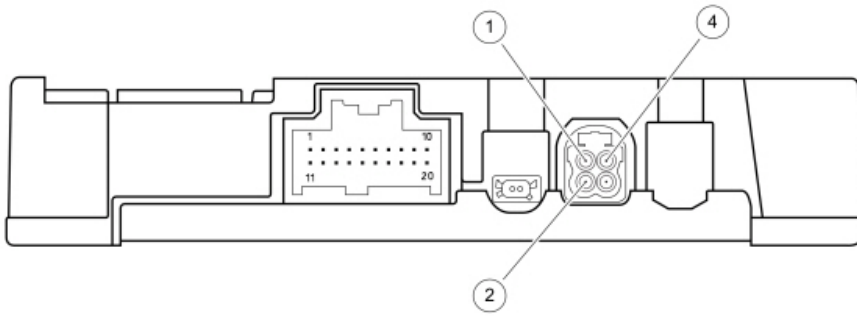
Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

TCU Antenna Cable Connections



E332863

Item	Part Number	Description
1	—	Secondary cellular antenna connection
2	—	GPS antenna connection
4	—	Primary cellular antenna connection

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>TCU</u> B1246:11	GSM (Group System for Mobile) Antenna: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>TCU</u> detects a short to ground from the cellular antenna cable to the satellite antenna for more than 5 seconds.
<u>TCU</u> B1246:13	GSM (Group System for Mobile) Antenna: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>TCU</u> detects an open from the cellular antenna cable to the satellite antenna for more than 5 seconds.

Possible Sources

- Outdated FordPass mobile application software version/level
- Poor reception
- Cellular device
- Wiring, terminals, or connectors
- Cellular antenna cable
- Roof mounted antenna
- TCU

Visual Inspection and Pre-checks

- Check OASIS for any of the following applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, discontinue this test and follow the service article instructions
- Check the following with the vehicle owner:
 - The FordPass mobile application software version level matches the latest software version level available.
 - The device is logged into the FordPass mobile application with the login created from the application or with the Ford Owner account login that corresponds with the vehicle.
 - The vehicle is added to the FordPass mobile application.
 - FordPass has been fully activated by authorizing the vehicle within the FordPass mobile application.
 - The vehicle is within cell phone tower range. Refer to the coverage map at mobile data service provider website.
- Check the operation of the FordPass mobile applications for correct operation.

NOTE: Prior to carrying out diagnostics, it may be beneficial to determine the cause using the Antenna Tool Kit (refer to the Rotunda catalog for the latest part number) or equivalent tool.

NOTE: This pinpoint test presumes the Diagnostic Pre-Checks have been completed.

X1 VERIFY THE TCU (TELEMATIC CONTROL UNIT MODULE) PASSES THE NETWORK TEST

- Ignition ON.
- Using a diagnostic scan tool, carry out the network test.

Does the TCU pass the network test?

Yes	GO to X2
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

X2 CHECK FOR TCU (TELEMATIC CONTROL UNIT MODULE) DIAGNOSTIC TROUBLE CODES

- Using a diagnostic tool, carry out the TCU self-test.

Is any DTC present?

Yes	For any GSM antenna <u>DTC</u> , GO to X19
-----	--

	For all other Diagnostic Trouble Codes (DTCs), REFER to the DTC Chart in this section.
No	GO to X3

X3 VERIFY THE ONBOARD SERIAL NUMBER

- Ignition ON.
- Using the SYNC menu settings, view the onboard modem serial number:
 - Select Settings>General>About Sync

Is the onboard Modem Serial Number (ESN) present?

Yes	GO to X6
No	GO to X4

X4 RESET THE TCU (TELEMATIC CONTROL UNIT MODULE) AND RECHECK FOR THE ONBOARD SERIAL NUMBER

- Ignition OFF.
- Remove the [TCU](#) fuse.
- Wait at 5 minutes.
- Install the [TCU](#) fuse.
- Ignition ON.
- Using the SYNC menu settings, view the onboard modem serial number:
 - Select Settings>General>About Sync

Is the onboard Modem Serial Number (ESN) present?

Yes	GO to X5
No	GO to X21

X5 CHECK FOR CORRECT SYSTEM OPERATION

- Operate the system and determine if the concern is still present.

Is concern is still present?

Yes	GO to X6
No	The repair is complete.

X6 CHECK FOR UPDATED SOFTWARE

- Ignition ON.
- Program the [TCU](#) to the latest version level.
REFER to: [Module Programming](#) (418-01A Module Configuration, General Procedures).
- Check the system and determine if the concern is still present.

Is concern is still present?

Yes	GO to X7
No	The repair is complete.

X7 CHECK THE TCU (TELEMATIC CONTROL UNIT MODULE) CELL PHONE SIGNAL STRENGTH STATUS

- Ignition ON.
 - **NOTE:** Drive the vehicle to an outdoor location with good cellular coverage. Refer to the coverage map at the mobile data service provider website. Monitor the cellular signal strength.
- Using a diagnostic scan tool, access the following [TCU](#) [PID](#) :
- Access the [TCU](#) and monitor the [CELL SIGNAL](#) (Undefined / Not Used) [PID](#)

Is the cellular signal between -85 dBm to -95 dBm?

Yes	GO to X8
No	GO to X19

X8 VERIFY THE TCU (TELEMATIC CONTROL UNIT MODULE) AUTHORIZATION STATUS

- Using a diagnostic scan tool, access the following [TCU](#) [PID](#) :
 - Access the [TCU](#) and monitor the [AUTHMODE](#) [PID](#)

Is "Wait for Auth" or "Authorized" displayed?

Yes	GO to X11
No	GO to X9

X9 CHECK IF THE TCU (TELEMATIC CONTROL UNIT MODULE) IS IN FACTORY MODE

- Using a diagnostic scan tool, access the following TCU PID :
 - Access the TCU and monitor the AUTHMODE PID

Is "Factory Mode" displayed?

Yes	GO to X10
No	GO to X12

X10 RECHECK IF THE TCU (TELEMATIC CONTROL UNIT MODULE) IS IN FACTORY MODE

- Carry out the PMI using as-built data.
- Using a diagnostic scan tool, access the following TCU PID :
 - Access the TCU and monitor the AUTHMODE PID

Is "Factory Mode" still displayed?

Yes	GO to X17
No	GO to X11

X11 RESET THE VEHICLE CONNECTIVITY SETTINGS

- Ignition ON.
- Using the vehicle touchscreen display, access the SYNC Menu.
 - Select Settings/FordPass Connect/Connectivity Settings
- Turn the Vehicle Connectivity option off.
- Ignition OFF.
- Open and then close the driver door.
- Lock the vehicle using the button on the IKT or passive key.
- Wait 30 seconds.
- Unlock the vehicle using the button on the IKT or passive key.
- Ignition ON.
- Using the vehicle touchscreen display, access the SYNC Menu.
 - Select Settings/FordPass Connect/Connectivity Settings
- Turn the Vehicle Connectivity option on.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	GO to X12
No	The repair is complete.

X12 CHECK IF THE TCU (TELEMATIC CONTROL UNIT MODULE) IS UN-PROVISIONED

- Using a diagnostic scan tool, access the following TCU PID :
 - Access the TCU and monitor the AUTHMODE PID

Is "Un-Provisioned" displayed?

Yes	GO to X21
No	GO to X13

X13 CHECK FOR CORRECT VEHICLE OPERATION

- Verify the FordPass function in question operates correctly on the vehicle, independent of the FordPass mobile application. For example, if the FordPass door lock/unlock function is inoperative, check the operation of the door locks using the door lock control switch or IKT /passive key.

Does the base function in question operate when tested on the vehicle?

Yes	GO to X14
No	

No	REFER to the appropriate section in the Workshop Manual to diagnose the inoperative function.
----	---

X14 CHECK IF THE TCU (TELEMATIC CONTROL UNIT MODULE) IS AUTHORIZED

- Using a diagnostic scan tool, access the following TCU PID :
 - Access the TCU and monitor the AUTHMODE PID

Is "Authorized" displayed?

Yes	The vehicle is operating correctly. The concern may have been caused by a loss of cellular signal, an outdated FordPass App or synchronization concern.
No	GO to X15

X15 CHECK IF THE TCU (TELEMATIC CONTROL UNIT MODULE) IS WAITING FOR AUTHORIZATION

- Using a diagnostic scan tool, access the following TCU PID :
 - Access the TCU and monitor the AUTHMODE PID

Is "Waiting for Auth" displayed?

Yes	GO to X16
No	GO to X17

X16 ADD THE VIN (VEHICLE IDENTIFICATION NUMBER) AND THEN RECHECK IF THE TCU (TELEMATIC CONTROL UNIT MODULE) IS AUTHORIZED

- Add the vehicle VIN to the FordPass/Lincoln Way App and then authorize the vehicle.
- Using a diagnostic scan tool, access the following TCU PID :
 - Access the TCU and monitor the AUTHMODE PID

Is "Authorized" displayed?

Yes	The repair is complete.
No	GO to X17

X17 CHECK FOR LOST COMMUNICATION DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, clear all Continuous Memory Diagnostic Trouble Codes (CMDTCs).
- Ignition OFF.
- Ignition ON.
- Wait at least 10 seconds.
- Using a diagnostic scan tool, retrieve all Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any lost communication Diagnostic Trouble Codes (DTCs) set in any audio system module?

Yes	REFER to the <u>DTC</u> Chart in this section.
No	GO to X18

X18 CARRY OUT A SYNC SYSTEM MASTER RESET

NOTE: Carrying out a Master Reset returns all preference settings to the factory defaults, erases the phone book and call histories, deletes any Bluetooth devices paired with the SYNC system, removes any Wi-Fi network connections (cancelling any system update download or installation in progress), erases the saved destinations (home, favorites, and previous), and deletes any devices paired with the FordPass mobile application.

- Carry out a master reset from the SYNC Master Reset menu. Refer to the Owner Literature.
- Uninstall the FordPass mobile application in the phone associated with the vehicle.
- Re-install the FordPass mobile application in the phone associated with the vehicle.
- Reauthorize the vehicle from the FordPass application.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	GO to X19
No	The repair is complete

X19 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OUTPUT VOLTAGE TO THE PRIMARY CELLULAR ANTENNA CABLE

- Disconnect the primary cellular antenna cable from the TCU.
 - Ignition ON.
 - **NOTE:** Refer to the diagram at the beginning of this test to identify the correct cable connection to the TCU.
- Using the female Flex Probe 300-08058 (0.5 mm x 0.5 mm) or equivalent, measure:

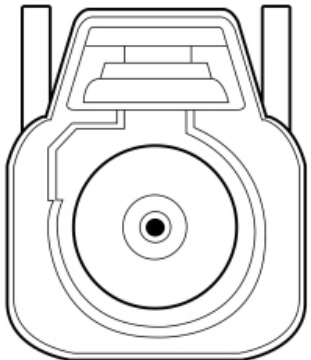
Positive Lead	Measurement / Action	Negative Lead
Primary cellular antenna cable core, pin 4 (component side)	$\overline{V}$	Ground

Does the voltage cycle from 0 to approximately 2.8 volts at regular intervals?

Yes	GO to X20
No	GO to X21

X20 CHECK FOR VOLTAGE TO THE PRIMARY CELLULAR ANTENNA

- Ignition OFF.
- Connect the primary cellular antenna cable to the TCU.
- Disconnect primary cellular antenna cable from the GPS/satellite radio/cellular antenna.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E316038 Primary cellular antenna cable core at the primary <u>GPS</u>/satellite radio/cellular antenna	$\overline{V}$	Ground

Does the voltage cycle from 0 to approximately 2.8 volts at regular intervals?

Yes	INSTALL a new primary cellular antenna. REFER to: Cellular Phone Antenna (415-00 Information and Entertainment System - General Information, Removal and Installation). TEST the system for normal operation. If the concern is still present, GO to X21
No	INSTALL a new cellular antenna cable. REFER to: Telematics Control Unit (TCU) Module Antenna Coaxial Cable (415-00 Information and Entertainment System - General Information, Removal and Installation).

X21 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OPERATION

- Ignition OFF.
- Inspect the TCU connector.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the TCU connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB, GSB, SSM or FSA. If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>TCU</u>. REFER to: Telematics Control Unit (TCU) Module (415-00 Information and Entertainment System - General Information,
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	Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST Y : THE VEHICLE WI-FI HOTSPOT FEATURE IS INOPERATIVE, EXPERIENCING POOR DATA SPEED OR CANNOT STREAM ANY DATA

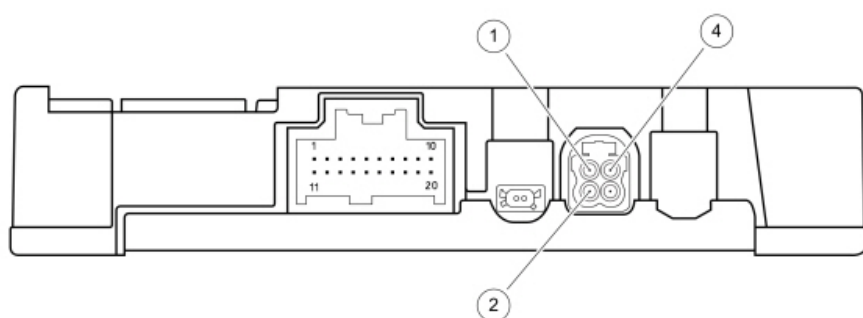
Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Information and Entertainment System - Component Location](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

REFER to: [Information and Entertainment System - System Operation and Component Description](#) (415-00 Information and Entertainment System - General Information, Description and Operation).

TCU Antenna Cable Connections



E332863

Item	Part Number	Description
1	—	Secondary cellular antenna connection
2	—	GPS antenna connection
4	—	Primary cellular antenna connection

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
TCU B1D55:11	Antenna #2: Circuit Short To Ground	Sets in continuous memory and during the on-demand self-test when the <u>TCU</u> detects a short to ground from the <u>TCU</u> antenna cable for more than 5 seconds.
TCU B1D55:13	Antenna #2: Circuit Open	Sets in continuous memory and during the on-demand self-test when the <u>TCU</u> detects an open from the <u>TCU</u> antenna cable for more than 5 seconds.

Possible Sources

- FordPass concern
- Poor TCU reception
- Wi-Fi connected device
- Wiring, terminals, or connectors
- TCU antenna
- TCU antenna cable
- TCU

NOTE: Prior to carrying out diagnostics, it may be beneficial to determine the cause using the Antenna Tool Kit (refer to the Rotunda catalog for the latest part number) or equivalent tool.

Y1 CHECK FOR CORRECT FORDPASS OPERATION

- Verify the FordPass function operates correctly. For example, check the operation of the door locks using the FordPass feature.

Does the FordPass feature operate?

Yes	GO to Y2
No	GO to Pinpoint Test X

Y2 COMPARE THE WI-FI SPEED TO A SECOND DEVICE

- Park the vehicle away from buildings with a clear view of the sky.
- Establish a vehicle Wi-Fi Hotspot connection.
- Use a laptop (or equivalent device), connect to the vehicle Wi-Fi Hotspot.
 - Using the network connection settings or compatible software on the laptop (or equivalent device), document the connection speed.
- Disconnect the laptop (or equivalent device) from the vehicle Wi-Fi Hotspot
- Establish a Wi-Fi connection using a cell phone (or equivalent device) using the cellular network.
- Use the laptop (or equivalent device) to connect to the new Wi-Fi Hotspot.
 - Using the network connection settings or compatible software on the laptop (or equivalent device), document the connection speed.
- Compare the data speed from the vehicle Wi-Fi Hotspot to the second device supporting a Wi-Fi hotspot.

Is the data speed of the vehicle **50% or less** than the second device?

Yes	GO to Y3
No	The system is operating as designed. The concern may have been caused by environmental conditions or obstruction to the signal.

Y3 CHECK FOR TCU (TELEMATIC CONTROL UNIT MODULE) OUTPUT VOLTAGE TO THE SECONDARY CELLULAR ANTENNA CABLE

- Ignition OFF.
 - Disconnect the secondary cellular antenna cable from the TCU.
 - Ignition ON.
 - **NOTE:** Refer to the diagram at the beginning of this test to identify the correct cable connection to the TCU.
- Using the female Flex Probe 300-08058 (0.5 mm x 0.5 mm) or equivalent, measure:

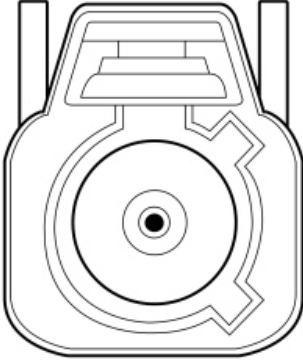
Positive Lead	Measurement / Action	Negative Lead
Secondary cellular antenna cable core, pin 1 (component side)	 V	Ground

Does the voltage cycle from 0 to approximately 2.8 volts at regular intervals?

Yes	GO to Y4
No	GO to Y5

Y4 CHECK FOR VOLTAGE TO THE SECONDARY CELLULAR ANTENNA

- Ignition OFF.
- Connect the secondary cellular antenna cable to the TCU.
- Disconnect secondary cellular antenna cable from the GPS/satellite radio/cellular antenna.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E263494 Secondary cellular antenna cable core at the antenna	 V	Ground

Does the voltage cycle from 0 to approximately 2.8 volts at regular intervals?

Yes	INSTALL a new secondary cellular antenna. TEST the system for normal operation. If the concern is still present, GO to Y5
No	INSTALL a new cellular antenna cable. REFER to: Telematics Control Unit (TCU) Module Antenna Coaxial Cable (415-00 Information and Entertainment System -

Y5 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OPERATION

- Ignition OFF.
- Inspect the TCU connector.
- Repair:
 - Corrosion (clean module pins or install new connectors or terminals)
 - Damaged or bent pins (install new terminals or pins)
 - Pushed-out pins (install new pins as necessary)
- Reconnect the TCU connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new TCU. REFER to: Telematics Control Unit (TCU) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST Z : SYNC APPLINK CONCERN**Normal Operation and Fault Conditions**

- **NOTE:** *AppLink does not operate if Android Auto™ and Apple CarPlay™ are enabled.*

It is normal for incompatible mobile device platforms, applications, and application versions to be unavailable through SYNC AppLink.

- If the mobile device platform, application, and application version are compatible, and the device is connected through Bluetooth only, [GO to Pinpoint Test T](#)
- If the mobile device platform, application, and application version are compatible, and the device is connected through Bluetooth and the USB port, [GO to Pinpoint Test S](#)

Possible Sources

- Refer to the pinpoint test

Diagnostic steps are not provided for this symptom or DTC. REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

PINPOINT TEST AA : ANDROID AUTO™ OR APPLE CARPLAY™ CONCERN**Normal Operation and Fault Conditions****Possible Sources**

- Refer to the pinpoint test or Owner Literature



COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.



To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure *SYNC Connectivity*.

PINPOINT TEST AB : U0100 (ACM (AUDIO FRONT CONTROL MODULE) , APIM (SYNC MODULE))**Normal Operation and Fault Conditions**

The ACM and the APIM communicate with the PCM over the CAN. If messages are missing or not received from the PCM module, features such as the speed compensated volume can be inoperative.

DTC Fault Trigger Conditions

<u>DTC</u>	<u>Description</u>	<u>Fault Trigger Condition</u>
<u>ACM</u> U0100:00	Lost Communication With ECM/PCM 'A': No Sub Type Information	Sets in continuous memory when the <u>ACM</u> detects network messages are missing from the <u>PCM</u> for more than 5 seconds.
<u>APIM</u> U0100:00	Lost Communication With ECM/PCM 'A': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>PCM</u> for more than 5 seconds.

Possible Sources

- Network communication concern
- ACM concern
- APIM concern
- PCM

AB1 VERIFY THE CONCERN

- Ignition ON.
- Verify an observable symptom present.

Is an observable symptom present?

Yes	GO to AB2
No	The system is operating normally at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AB2 CHECK THE NETWORK COMMUNICATION

- Using a diagnostic scan tool, carry out the network test.

Does the PCM pass the network test?

Yes	GO to AB3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

AB3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the self-test for the module in question (ACM , APIM) setting the DTC .

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AB4

AB4 CHECK FOR PCM (POWERTRAIN CONTROL MODULE) TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the PCM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the Master DTC Chart.
No	GO to AB5

AB5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0100:00

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question (ACM , APIM) setting the DTC .
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question (ACM , APIM) setting the DTC .

Is DTC U0100:00 still present?

Yes	GO to AB6
No	The system is operating correctly at this time. The <u>DTC</u> may have set due to high network traffic or an intermittent fault condition.

AB6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.

- Check the vehicle service history for recent service actions related to the PCM and the module in question (ACM , APIM) setting the DTC . If recent service history is found:
 - verify correct replacement module was installed
 - vehicle parts build list may be used to verify correct part fitment
 - verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
 - verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module

- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to AB7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AB7 CHECK FOR CORRECT PCM (POWERTRAIN CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the PCM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the PCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern,  Guided Routine available in the on-line Workshop Manual.
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AC : U0121 (ACM (AUDIO FRONT CONTROL MODULE))

Normal Operation and Fault Conditions

The ACM communicates with the ABS module over the CAN. If messages are missing or not received from the ABS module, the GPS feature may not be accurate.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>ACM</u> U0121:00	Lost Communication With Anti-Lock Brake System (ABS) Control Module 'A': No Sub Type Information	Sets in continuous memory when the <u>ACM</u> detects network messages are missing from the <u>ABS</u> module for more than 5 seconds.

Possible Sources

- Network communication concern
- ACM concern
- ABS module

AC1 VERIFY THE CONCERN

- Ignition ON.
- Verify an observable symptom present.

Is an observable symptom present?

Yes	GO to AC2
No	CLEAR the <u>DTC</u> . The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AC2 CHECK THE NETWORK COMMUNICATION

- Using a diagnostic scan tool, carry out the network test.

Does the ABS module pass the network test?

Yes	GO to AC3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

AC3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the self-test for the module in question ([ACM](#)) setting the [DTC](#) .

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AC4

AC4 CHECK FOR NON-NETWORK ABS (ANTI-LOCK BRAKE SYSTEM) MODULE DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the [ABS](#) module self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the Master DTC Chart.
No	GO to AC5

AC5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0121:00

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question ([ACM](#)) setting the [DTC](#) .
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question ([ACM](#)) setting the [DTC](#) .

Is [DTC U0121:00](#) still present?

Yes	GO to AC6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

AC6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: *If new modules were installed prior to the [DTC](#) being set, the module configuration can be incorrectly set during the [PMI](#) or the [PMI](#) may not have been carried out.*

- Check the vehicle service history for recent service actions related to the [ABS](#) module and the module in question ([ACM](#)) setting the [DTC](#) . If recent service history is found:
 - verify correct replacement module was installed
 - vehicle parts build list may be used to verify correct part fitment
 - verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
 - verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to AC7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AC7 CHECK FOR CORRECT ABS (ANTI-LOCK BRAKE SYSTEM) MODULE OPERATION

- Ignition OFF.
- Disconnect and inspect the [ABS](#) module connector.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the [ABS](#) module connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new ABS module.
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AD : U0140 (ACM (AUDIO FRONT CONTROL MODULE) , DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) , TCU (TELEMATIC CONTROL UNIT MODULE))

Normal Operation and Fault Conditions

The ACM, the DSP and the TCU communicate with the BCM over the CAN. If messages are missing or not received from the BCM, the display screen brightness may not operate not operate correctly.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>ACM</u> U0140:00	Lost Communication With Body Control Module: No Sub Type Information	Sets in continuous memory when the <u>ACM</u> detects network messages are missing from the <u>BCM</u> for more than 5 seconds.
<u>DSP</u> U0140:00	Lost Communication With Body Control Module: No Sub Type Information	Sets in continuous memory when the <u>DSP</u> detects network messages are missing from the <u>BCM</u> for more than 5 seconds.
<u>TCU</u> U0140:00	Lost Communication With Body Control Module: No Sub Type Information	Sets in continuous memory when the <u>TCU</u> detects network messages are missing from the <u>BCM</u> for more than 5 seconds.

Possible Sources

- Network communication concern
- ACM concern
- DSP concern
- TCU concern
- BCM

AD1 VERIFY THE CONCERN

- Ignition ON.
- Verify an observable symptom present.

Is an observable symptom present?

Yes	GO to AD2
No	CLEAR the <u>DTC</u> . The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AD2 CHECK THE NETWORK COMMUNICATION

- Using a diagnostic scan tool, carry out the network test.

Does the BCM pass the network test?

Yes	GO to AD3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

AD3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the self-test for the module in question (ACM, DSP, TCU) setting the DTC.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AD4

AD4 CHECK FOR NON-NETWORK BCM (BODY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the BCM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the Master DTC Chart.
No	GO to AD5

AD5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0140:00

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question (ACM, DSP, TCU) setting the DTC.
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question (ACM, DSP, TCU) setting the DTC.

Is **DTC U0140:00** still present?

Yes	GO to AD6
No	The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AD6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.

- Check the vehicle service history for recent service actions related to the BCM and the module in question (ACM , DSP , TCU) setting the DTC . If recent service history is found:
 - verify correct replacement module was installed
 - vehicle parts build list may be used to verify correct part fitment
 - verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
 - verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to AD7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AD7 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the BCM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the BCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>BCM</u> . REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AE : U0146 (TCU (TELEMATIC CONTROL UNIT MODULE))

Normal Operation and Fault Conditions

The TCU communicates with the GWM over the CAN . If messages are missing or not received from the GWM , Ford Pass features and over the air updates may be inoperative.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>TCU</u> U0146:09	Lost Communication With Serial Data Gateway 'A': Component Failures	Sets in continuous memory when the <u>TCU</u> detects network messages are missing from the <u>GWM</u> over the Ethernet for more than 5 seconds.

Possible Sources

- Network communication concern
- TCU concern
- GWM

AE1 VERIFY THE CONCERN

- Ignition ON.
- Verify an observable symptom present.

Is an observable symptom present?

Yes	GO to AE2
No	CLEAR the <u>DTC</u> . The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AE2 CHECK THE NETWORK COMMUNICATION

- Using a diagnostic scan tool, carry out the network test.

Does the GWM pass the network test?

Yes	GO to AE3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

AE3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the self-test for the module in question (TCU) setting the DTC.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AE4

AE4 CHECK FOR GWM (GATEWAY MODULE A) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the GWM self-test.

Are any GWM Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the Master DTC Chart.
No	GO to AE5

AE5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0146:09

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question (TCU) setting the DTC.
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question (TCU) setting the DTC.

Is DTC U0146:09 still present?

Yes	GO to AE6
No	The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AE6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.

- Check the vehicle service history for recent service actions related to the GWM and the module in question (TCU) setting the DTC. If recent service history is found:
 - verify correct replacement module was installed
 - vehicle parts build list may be used to verify correct part fitment
 - verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
 - verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to AE7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AE7 CHECK FOR CORRECT GWM (GATEWAY MODULE A) OPERATION

- Disconnect and inspect the GWM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the GWM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>GWM</u> . REFER to: Information and Entertainment System - System Operation and Component Description (415-00 Information and Entertainment System - General Information, Description and Operation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AF : U0155 (ACM (AUDIO FRONT CONTROL MODULE) , DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE))

Normal Operation and Fault Conditions

The ACM and the DSP communicate with the IPC over the CAN. If messages are missing or not received from the IPC, features such as the display illumination or warning chimes may not operate correctly.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>ACM</u> U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	Sets in continuous memory when the <u>ACM</u> detects network messages are missing from the <u>IPC</u> for more than 5 seconds.
<u>DSP</u> U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	Sets in continuous memory when the <u>DSP</u> detects network messages are missing from the <u>IPC</u> for more than 5 seconds.

Possible Sources

- Network communication concern
- ACM concern
- DSP concern
- IPC

AF1 VERIFY THE CONCERN

- Ignition ON.
- Verify an observable symptom present.

Is an observable symptom present?

Yes	GO to AF2
No	CLEAR the <u>DTC</u> . The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AF2 CHECK THE NETWORK COMMUNICATION

- Using a diagnostic scan tool, carry out the network test.

Does the IPC pass the network test?

Yes	GO to AF3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

AF3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the self-test for the module in question (ACM, DSP) setting the DTC.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AF4

AF4 CHECK FOR NON-NETWORK IPC (INSTRUMENT PANEL CLUSTER) DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the IPC self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	REFER to the Master DTC Chart.
No	GO to AF5

AF5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0155:00

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question (ACM , DSP) setting the DTC .
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question (ACM , DSP) setting the DTC .

Is DTC U0155:00 still present?

Yes	GO to AF6
No	The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AF6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.

- Check the vehicle service history for recent service actions related to the IPC and the module in question (ACM , DSP) setting the DTC . If recent service history is found:
 - verify correct replacement module was installed
 - vehicle parts build list may be used to verify correct part fitment
 - verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
 - verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to AF7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AF7 CHECK FOR CORRECT IPC (INSTRUMENT PANEL CLUSTER) OPERATION

- Ignition OFF.
- Disconnect and inspect the IPC connector.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the IPC connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>IPC</u> . REFER to: Instrument Panel Cluster (IPC) (413-01 Instrumentation, Message Center and Warning Chimes, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AG : U0184 (DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE))**Normal Operation and Fault Conditions**

The DSP communicates with the ACM over the CAN . If messages are missing or not received from the ACM , the display unit may be blank.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
DSP U0184:00	Lost Communication With Radio: No Sub Type Information	Sets in continuous memory when the <u>DSP</u> detects network messages are missing from the <u>ACM</u> for more than 5 seconds.

Possible Sources

- Network communication concern
- DSP concern
- ACM

AG1 VERIFY THE CONCERN

- Ignition ON.
- Verify an observable symptom present.

Is an observable symptom present?

Yes	GO to AG2
No	CLEAR the <u>DTC</u> . The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AG2 CHECK THE NETWORK COMMUNICATION

- Using a diagnostic scan tool, carry out the network test.

Does the ACM pass the network test?

Yes	GO to AG3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

AG3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the self-test for the module in question (DSP) setting the DTC.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AG4

AG4 CHECK FOR NON-NETWORK ACM (AUDIO FRONT CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the ACM self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AG5

AG5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0184:00

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question (DSP) setting the DTC.
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question (DSP) setting the DTC.

Is DTC U0184:00 still present?

Yes	GO to AG6
No	The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AG6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.

- Check the vehicle service history for recent service actions related to the ACM and the module in question (DSP) setting the DTC. If recent service history is found:
 - verify correct replacement module was installed

- vehicle parts build list may be used to verify correct part fitment
- verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
- verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to AG7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AG7 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the ACM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AH : U0198 (ACM (AUDIO FRONT CONTROL MODULE) , DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE))

Normal Operation and Fault Conditions

The ACM and the DSP communicate with the TCU over the CAN. If messages are missing or not received from the TCU, the FordPass feature may not operate correctly.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>ACM</u> U0198:00	Lost Communication With Telematic Control Module 'A': No Sub Type Information	Sets in continuous memory when the <u>ACM</u> detects network messages are missing from the <u>TCU</u> for more than 5 seconds.
<u>DSP</u> U0198:00	Lost Communication With Telematic Control Module 'A': No Sub Type Information	Sets in continuous memory when the <u>DSP</u> detects network messages are missing from the <u>TCU</u> for more than 5 seconds.

Possible Sources

- Network communication concern
- ACM concern
- DSP concern
- TCU

AH1 VERIFY THE CONCERN

- Ignition ON.
- Verify an observable symptom present.

Is an observable symptom present?

Yes	GO to AH2
No	CLEAR the <u>DTC</u> . The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AH2 CHECK THE NETWORK COMMUNICATION

- Using a diagnostic scan tool, carry out the network test.

Does the TCU pass the network test?

Yes	GO to AH3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

AH3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the self-test for the module in question ([ACM](#) , [DSP](#)) setting the [DTC](#) .

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AH4

AH4 CHECK FOR NON-NETWORK TCU (TELEMATIC CONTROL UNIT MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the [TCU](#) self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AH5

AH5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0198:00

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module ([ACM](#) , [DSP](#)) in question setting the [DTC](#) .
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question ([ACM](#) , [DSP](#)) setting the [DTC](#) .

Is [DTC U0198:00](#) still present?

Yes	GO to AH6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

AH6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: If new modules were installed prior to the [DTC](#) being set, the module configuration can be incorrectly set during the [PMI](#) or the [PMI](#) may not have been carried out.

- Check the vehicle service history for recent service actions related to the [TCU](#) and the module in question ([ACM](#) , [DSP](#)) setting the [DTC](#) . If recent service history is found:
 - verify correct replacement module was installed
 - vehicle parts build list may be used to verify correct part fitment
 - verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
 - verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to AH7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AH7 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the [TCU](#) connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the [TCU](#) connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern,
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	DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new TCU. REFER to: Telematics Control Unit (TCU) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AI : U0238 (ACM (AUDIO FRONT CONTROL MODULE))

Normal Operation and Fault Conditions The <u>ACM</u> communicates with the audio <u>DSP</u> module over the <u>CAN</u> . If messages are missing or not received from the <u>DSP</u> , features such as the <u>ANC</u> may not operate correctly.							
DTC Fault Trigger Conditions							
<table border="1"> <thead> <tr> <th>DTC</th> <th>Description</th> <th>Fault Trigger Condition</th> </tr> </thead> <tbody> <tr> <td>ACM U0238:00</td> <td>Lost Communication With Digital Audio Control Module 'D': No Sub Type Information</td> <td>Sets in continuous memory when the <u>ACM</u> detects network messages are missing from the <u>DSP</u> for more than 5 seconds.</td> </tr> </tbody> </table>	DTC	Description	Fault Trigger Condition	ACM U0238:00	Lost Communication With Digital Audio Control Module 'D': No Sub Type Information	Sets in continuous memory when the <u>ACM</u> detects network messages are missing from the <u>DSP</u> for more than 5 seconds.	
DTC	Description	Fault Trigger Condition					
ACM U0238:00	Lost Communication With Digital Audio Control Module 'D': No Sub Type Information	Sets in continuous memory when the <u>ACM</u> detects network messages are missing from the <u>DSP</u> for more than 5 seconds.					
Possible Sources • Network communication concern • <u>ACM</u> concern • <u>DSP</u>							
AI1 VERIFY THE CONCERN							
• Ignition ON. • Verify an observable symptom present.							
Is an observable symptom present?							
Yes	GO to AI2						
No	CLEAR the DTC. The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.						
AI2 CHECK THE NETWORK COMMUNICATION							
• Using a diagnostic scan tool, carry out the network test.							
Does the <u>DSP</u> pass the network test?							
Yes	GO to AI3						
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).						
AI3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCS)							
• Using a diagnostic scan tool, carry out the self-test for the module in question (<u>ACM</u>) setting the <u>DTC</u>.							
Are any non-network Diagnostic Trouble Codes (DTCs) present?							
Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.						
No	GO to AI4						
AI4 CHECK FOR NON-NETWORK DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)							
• Using a diagnostic scan tool, carry out the <u>DSP</u> self-test.							
Are any non-network Diagnostic Trouble Codes (DTCs) present?							
Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.						
No	GO to AI5						
AI5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0238:00							
• Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question (<u>ACM</u>) setting the <u>DTC</u>.							

- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question ([ACM](#)) setting the [DTC](#).

Is [DTC U0238:00](#) still present?

Yes	GO to AI6
No	The system is operating correctly at this time. The DTC may have been set due to high network traffic or an intermittent fault condition.

AI6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: If new modules were installed prior to the [DTC](#) being set, the module configuration can be incorrectly set during the [PMI](#) or the [PMI](#) may not have been carried out.

- Check the vehicle service history for recent service actions related to the audio [DSP](#) module and the module in question ([ACM](#)) setting the [DTC](#). If recent service history is found:
 - verify correct replacement module was installed
 - vehicle parts build list may be used to verify correct part fitment
 - verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
 - verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

Yes	GO to AI7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AI7 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the [DSP](#) connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the [DSP](#) connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new DSP . REFER to: Audio Digital Signal Processing (DSP) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AJ : U0253 (ACM (AUDIO FRONT CONTROL MODULE) , DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE))

Normal Operation and Fault Conditions

The [ACM](#) and the [DSP](#) communicate with the [APIM](#) over the [CAN](#). If messages are missing or not received from the [APIM](#), the display is blank.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
ACM U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	Sets in continuous memory when the ACM detects network messages are missing from the APIM for more than 5 seconds.
DSP U0253:00	Lost Communication With Accessory Protocol Interface Module: No Sub Type Information	Sets in continuous memory when the DSP detects network messages are missing from the APIM for more than 5 seconds.

Possible Sources

- Network communication concern
- [ACM](#) concern
- [DSP](#) concern

- [APIM](#)

AJ1 VERIFY THE CONCERN

- Ignition ON.
- Verify an observable symptom present.

Is an observable symptom present?

Yes	GO to AJ2
No	CLEAR the <u>DTC</u> . The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AJ2 CHECK THE NETWORK COMMUNICATION

- Using a diagnostic scan tool, carry out the network test.

Does the [APIM](#) pass the network test?

Yes	GO to AJ3
No	REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).

AJ3 CHECK FOR NON-NETWORK DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the self-test for the module in question ([ACM](#) , [DSP](#)) setting the DTC .

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AJ4

AJ4 CHECK FOR NON-NETWORK APIM (SYNC MODULE) DIAGNOSTIC TROUBLE CODES (DTCs)

- Using a diagnostic scan tool, carry out the [APIM](#) self-test.

Are any non-network Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE these Diagnostic Trouble Codes (DTCs) first. REFER to the Diagnostic Trouble Code (DTC) Chart in this section.
No	GO to AJ5

AJ5 RECHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) U0253:00

- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question ([ACM](#) , [DSP](#)) setting the DTC .
- Ignition OFF.
- Ignition ON.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question ([ACM](#) , [DSP](#)) setting the DTC .

Is DTC U0253:00 still present?

Yes	GO to AJ6
No	The system is operating correctly at this time. The <u>DTC</u> may have been set due to high network traffic or an intermittent fault condition.

AJ6 CHECK FOR OTHER CAUSES OF NETWORK COMMUNICATION CONCERN

NOTE: If new modules were installed prior to the DTC being set, the module configuration can be incorrectly set during the PMI or the PMI may not have been carried out.

- Check the vehicle service history for recent service actions related to the [APIM](#) and the module in question ([ACM](#) , [DSP](#)) setting the DTC . If recent service history is found:
 - verify correct replacement module was installed
 - vehicle parts build list may be used to verify correct part fitment
 - verify the configuration of replacement module was correct
 - re-configure module using as-built data if prior configuration is suspect
 - verify the module was not obtained from a like vehicle and installed into vehicle with concern
 - return the swapped module to source vehicle and obtain new replacement module
- Operate the system and determine if the observable symptom is still present.

Is the observable symptom still present?

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Yes	GO to AJ7
No	The system is operating correctly at this time. The concern may have been due to incorrect parts replacement procedures or incorrect module configuration.

AJ7 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the [APIM](#) connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the [APIM](#) connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AK : MODULE LOW VOLTAGE CONCERN (ACM (AUDIO FRONT CONTROL MODULE) , APIM (SYNC MODULE) , DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) , TCU (TELEMATIC CONTROL UNIT MODULE))

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

Normal Operation and Fault Conditions

The modules monitor the supplied voltage and set a [DTC](#) if it falls below a threshold.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
ACM U3003:16	Battery Voltage: Circuit Voltage Below Threshold	Sets in continuous memory and during the on-demand self-test when the ACM detects the supply voltage below 10 volts.
APIM U3003:16	Battery Voltage: Circuit Voltage Below Threshold	Sets in continuous memory and during the on-demand self-test when the APIM detects the supply voltage below 10 volts.
DSP U3003:16	Battery Voltage: Circuit Voltage Below Threshold	Sets in continuous memory and during the on-demand self-test when the DSP detects the supply voltage below 10 volts.
TCU U3003:16	Battery Voltage: Circuit Voltage Below Threshold	Sets in continuous memory and during the on-demand self-test when the TCU detects the supply voltage below 10 volts.

Possible Sources

- Previous low battery voltage
- Wiring, terminals, or connectors
- Charging system concern
- [ACM](#)
- [APIM](#)
- [DSP](#)
- [TCU](#)

AK1 RECHECK FOR LOW VOLTAGE DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question setting the low voltage [DTC](#).
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question setting the low voltage [DTC](#).

Is [DTC U3003:16](#) still present?

Yes	GO to AK2
No	The system is operating correctly at this time. The DTC may have been set due to a previous low battery voltage condition.

AK2 CHECK FOR CHARGING SYSTEM DIAGNOSTIC TROUBLE CODES (DTCS)

- Using a diagnostic scan tool, carry out the [PCM KOEO](#) and [KOER](#) self-tests.

Are any voltage-related Diagnostic Trouble Codes (DTCs) present?

Yes	DIAGNOSE the charging system concern. REFER to the appropriate Diagnosis and Testing in section 414-00.
No	GO to AK3

AK3 CHECK THE BATTERY CONDITION AND STATE OF CHARGE

- Ignition OFF.
- Check the battery condition and verify the battery is fully charged.
REFER to: [Battery](#) (414-01 Battery, Mounting and Cables, Diagnosis and Testing).

Is the battery OK and fully charged?

Yes	GO to AK4
No	DIAGNOSE the battery. REFER to: Battery (414-01 Battery, Mounting and Cables, Diagnosis and Testing).

AK4 COMPARE THE SUSPECT MODULE VOLTAGE SUPPLY PID (PARAMETER IDENTIFICATION) TO THE BATTERY VOLTAGE

- Ignition ON.
- Measure and record the battery voltage.
- For the suspect module, monitor the voltage supply PID:
 - ACM:
Access the ACM and monitor the VPWR(V) PID
 - APIM:
Access the APIM and monitor the VPWR(V) PID
 - DSP:
Access the DSP and monitor the VPWR(V) PID
 - TCU:
Access the TCU and monitor the VPWR(V) PID

Is the voltage reading within 0.2 volt of the recorded battery voltage?

Yes	For the <u>ACM</u> , GO to AK7 For the <u>APIM</u> , GO to AK8 For the <u>DSP</u> , GO to AK9 For the <u>TCU</u> , GO to AK10
No	GO to AK5

AK5 CHECK THE MODULE VOLTAGE SUPPLY CIRCUIT FOR HIGH RESISTANCE

- Ignition OFF.
- Disconnect the suspect module.
- Ignition ON.
- Measure and record the battery voltage.
- For the suspect module, measure:

ACM

Positive Lead	Measurement / Action	Negative Lead
C240A-1		Ground

APIM

Positive Lead	Measurement / Action	Negative Lead
C2383A-1		Ground

DSP - 8 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3154B-4	$\overline{\overline{V}}$	Ground
C3154B-8	$\overline{\overline{V}}$	Ground

DSP - 18 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3155B-4	$\overline{\overline{V}}$	Ground
C3155B-8	$\overline{\overline{V}}$	Ground

TCU

Positive Lead	Measurement / Action	Negative Lead
C4803A-1	$\overline{\overline{V}}$	Ground

Is the voltage reading within 0.2 volt of the recorded battery voltage?

Yes	GO to AK6
No	REPAIR the circuit for high resistance.

AK6 CHECK THE SUSPECT MODULE GROUND CIRCUIT FOR HIGH RESISTANCE

- For the suspect module, measure:

ACM

Positive Lead	Measurement / Action	Negative Lead
C240A-1	$\overline{\overline{V}}$	C240A-4

APIM

Positive Lead	Measurement / Action	Negative Lead
C2383A-1	$\overline{\overline{V}}$	C2383A-37

DSP - 8 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3154B-4	$\overline{\overline{V}}$	C3154B-1
C3154B-8	$\overline{\overline{V}}$	C3154B-5

DSP - 18 Speaker System

Positive Lead	Measurement / Action	Negative Lead
C3155B-4	$\overline{\overline{V}}$	C3155B-1
C3155B-8	$\overline{\overline{V}}$	C3155B-5

TCU

Positive Lead	Measurement / Action	Negative Lead
C4803A-1		C4803A-9

Is the voltage reading within 0.2 volt of the recorded battery voltage?

Yes	For the <u>ACM</u> , GO to AK7 For the <u>APIM</u> , GO to AK8 For the <u>DSP</u> , GO to AK9 For the <u>TCU</u> , GO to AK10
No	REPAIR the circuit for high resistance.

AK7 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

AK8 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the APIM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the APIM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

AK9 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the DSP connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the DSP connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>DSP</u> . REFER to: Audio Digital Signal Processing (DSP) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).

No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.
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AK10 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the TCU connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the TCU connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>TCU</u> . REFER to: Telematics Control Unit (TCU) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AL : MODULE HIGH VOLTAGE CONCERN (ACM (AUDIO FRONT CONTROL MODULE) , APIM (SYNC MODULE) , DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) , TCU (TELEMATIC CONTROL UNIT MODULE))

Normal Operation and Fault Conditions

The modules monitor the supplied voltage and set a DTC if it rises above a threshold.

DTC Fault Trigger Conditions

<u>DTC</u>	Description	Fault Trigger Condition
<u>ACM</u> U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets in continuous memory and during the on-demand self-test when the <u>ACM</u> detects the supply voltage is greater than 16 volts.
<u>APIM</u> U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets in continuous memory and during the on-demand self-test when the <u>APIM</u> detects the supply voltage is greater than 16 volts.
<u>DSP</u> U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets in continuous memory and during the on-demand self-test when the <u>DSP</u> detects the supply voltage is greater than 16 volts.
<u>TCU</u> U3003:17	Battery Voltage: Circuit Voltage Above Threshold	Sets in continuous memory and during the on-demand self-test when the <u>TCU</u> detects the supply voltage is greater than 16 volts.

Possible Sources

- Charging system concern
- ACM
- APIM
- DSP
- TCU

NOTE: DTC U3003:17 may be stored in the module memory due to past battery charging or vehicle jump starting events.

AL1 CHECK FOR HIGH VOLTAGE DIAGNOSTIC TROUBLE CODES (DTCS) SET IN OTHER MODULES

- Ignition ON.
- Using a diagnostic scan tool, retrieve the Continuous Memory Diagnostic Trouble Codes (CMDTCs).

Are any charging or over-voltage related voltage Diagnostic Trouble Codes (DTCs) present in multiple modules?

Yes	DIAGNOSE the overcharging condition. REFER to the appropriate Diagnosis and Testing in section 414-00.
No	GO to AL2

AL2 CHECK THE BATTERY VOLTAGE WITH THE ENGINE RUNNING

- Turn off all interior/exterior lights and accessories.
- Start and run the engine at approximately 2,000 RPM for 3 minutes while monitoring the battery voltage.

Does the battery voltage rise to 15.5 volts or higher?

Yes	DIAGNOSE the overcharging condition. REFER to the appropriate Diagnosis and Testing in section 414-00.
No	GO to AL3

AL3 RECHECK FOR THE HIGH VOLTAGE DTC (DIAGNOSTIC TROUBLE CODE)

- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, clear the DTC for the suspect module.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the suspect module setting the high voltage DTC.

Is DTC U3003:17 still present?

Yes	For the <u>ACM</u> , GO to AL4 For the <u>APIM</u> , GO to AL5 For the <u>DSP</u> , GO to AL6 For the <u>TCU</u> , GO to AL7
No	The system is operating correctly at this time. The <u>DTC</u> may have been set previously during battery charging or while jump starting the vehicle.

AL4 CHECK FOR CORRECT ACM (AUDIO FRONT CONTROL MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the ACM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the ACM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>ACM</u> . REFER to: Audio Front Control Module (ACM) - Vehicles With: 8 Inch Center Display Screen/12 Inch Center Display Screen (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

AL5 CHECK FOR CORRECT APIM (SYNC MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect the APIM connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the APIM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, GO to Pinpoint Test AV
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

AL6 CHECK FOR CORRECT DSP (AUDIO DIGITAL SIGNAL PROCESSING MODULE) OPERATION

- Ignition OFF.
- Disconnect and inspect all the DSP connectors.
- Repair:
 - corrosion (install new connectors or terminals - clean module pins)
 - damaged or bent pins - install new terminals pins
 - pushed-out pins - install new pins as necessary
- Reconnect the DSP connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK <u>OASIS</u> for any applicable service articles: TSB , GSB , SSM or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>DSP</u> . REFER to: Audio Digital Signal Processing (DSP) Module (415-00 Information and Entertainment System - General Information,
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	Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

AL7 CHECK FOR CORRECT TCU (TELEMATIC CONTROL UNIT MODULE) OPERATION	
- Ignition OFF. - Disconnect and inspect the <u>TCU</u> connectors. - Repair: - corrosion (install new connectors or terminals - clean module pins) - damaged or bent pins - install new terminals pins - pushed-out pins - install new pins as necessary - Reconnect the <u>TCU</u> connectors. Make sure they seat and latch correctly. - Operate the system and determine if the concern is still present.	
Is the concern still present?	
Yes	CHECK OASIS for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>TCU</u> . REFER to: Telematics Control Unit (TCU) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

PINPOINT TEST AM : BUS OFF

Refer to Wiring Diagrams Cell 131 for schematic and connector information.

DTC Fault Trigger Conditions

<u>DTC</u>	Description	Fault Trigger Condition
<u>TCU</u> U0001:09	High Speed CAN Communication Bus: Component Failures	The module could not communicate on the network at a point in time. The fault is not currently present since the module had to communicate with the diagnostic scan tool to report this <u>DTC</u> .

Possible Sources

- Intermittent fault with the CAN

AM1 DIAGNOSE THE INTERMITTENT FAULT

NOTE: *The module was unable to communicate on the network at a point in time. The fault is not currently present since the module had to communicate with the diagnostic scan tool to report this DTC.*

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the module in question.
- Wait at least 10 seconds.
- Using a diagnostic scan tool, carry out the self-test for the module in question.
- Verify the integrity of the connectors and wiring for the CAN.

Is the DTC still present?

Yes	DIAGNOSE the <u>CAN</u> in question. REFER to: Controller Area Network (CAN) Module Communications Network (418-00A Controller Area Network (CAN) Module Communications Network, Diagnosis and Testing).
No	The system is operating correctly at this time. VERIFY the integrity of the connectors and wiring for the <u>CAN</u> in question.

PINPOINT TEST AN : INVALID DATA RECEIVED

DTC Fault Trigger Conditions

<u>DTC</u>	Description	Fault Trigger Condition
<u>DSP</u> U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	Sets when the <u>DSP</u> receives invalid network data from the <u>BCM</u> .
<u>DSP</u> U0423:00	Invalid Data Received from Instrument Panel Cluster Control Module: No Sub Type Information	Sets when the <u>DSP</u> receives invalid network data from the <u>IPC</u> .
<u>TCU</u> U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	Sets when the <u>TCU</u> receives invalid network data from the <u>BCM</u> .

Possible Sources

- Suspect module

AN1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS) FROM THE MODULE SENDING INVALID DATA

- Ignition ON.
- Using a diagnostic scan tool, carry out the self-test for the module in question sending the invalid data.

Are any Diagnostic Trouble Codes (DTCs) present from the module sending the invalid data?

Yes	DIAGNOSE the module sending the invalid data. REFER to the appropriate section in the Workshop Manual.
No	DIAGNOSE the observable symptom present. REFER to the appropriate Symptom chart in this section.

PINPOINT TEST AO : MODULE CONFIGURATION FAULT

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
ACM U201A:51	Control Module Main Calibration Data: Not Programmed	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
ACM U201B:04	Control Module Calibration Data #2: System Internal Failures	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
ACM U201B:51	Control Module Calibration Data #2: Not Programmed	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
ACM U201B:55	Control Module Calibration Data #2: Not Configured	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
ACM U2024:00	Control Module Cal-Config Data: No Sub Type Information	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
ACM U2024:57	Control Module Cal-Config Data: Invalid/Incompatible Software Component	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
ACM U2026:54	Control Module Cal-Config Data #3: Missing Calibration	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
ACM U2100:00	Initial Configuration Not Complete: No Sub Type Information	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
ACM U2101:00	Control Module Configuration Incompatible: No Sub Type Information	Sets due to an incomplete or incorrect <u>ACM PMI</u> .
DSP U201A:51	Control Module Main Calibration Data: Not Programmed	Sets due to an incomplete or incorrect <u>DSP PMI</u> .
DSP U2024:41	Control Module Cal-Config Data: General Checksum Failure	Sets due to an incomplete or incorrect <u>DSP PMI</u> .
DSP U2024:48	Control Module Cal-Config Data: Supervision Software Failure	Sets due to an incomplete or incorrect <u>DSP PMI</u> .
DSP U2024:51	Control Module Cal-Config Data: Not Programmed	Sets due to an incomplete or incorrect <u>DSP PMI</u> .
DSP U2100:00	Initial Configuration Not Complete: No Sub Type Information	Sets due to an incomplete or incorrect <u>DSP PMI</u> .
DSP U2101:00	Control Module Configuration Incompatible: No Sub Type Information	Sets due to an incomplete or incorrect <u>DSP PMI</u> .
TCU U1A01:09	Communication Link: Component Failures	Sets due to an internal fault, incomplete or incorrect <u>TCU PMI</u> .
TCU U2100:00	Initial Configuration Not Complete: No Sub Type Information	Sets due to an incomplete or incorrect <u>TCU PMI</u> .
TCU U2101:00	Control Module Configuration Incompatible: No Sub Type Information	Sets due to an incomplete or incorrect <u>TCU PMI</u> .
TCU U2101:56	Control Module Configuration Incompatible: Invalid/Incompatible Configuration	Sets due to an incomplete or incorrect <u>TCU PMI</u> .

Possible Sources

- Incomplete or incorrect module PMI

AO1 CARRY OUT THE PMI (PROGRAMMABLE MODULE INSTALLATION) FOR THE SUSPECT MODULE

- Ignition ON.
- Using a diagnostic scan tool, carry out the PMI procedure for the suspect module as directed by the diagnostic scan tool.
 - For the APIM, refer to
REFER to: [Module Programming](#) (418-01A Module Configuration, General Procedures).
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the suspect module.
- Using a diagnostic scan tool, carry out the self-test for the suspect module.

Is the original DTC still present?

Yes	INSTALL a new module in question. REFER to the appropriate Removal and Installation procedure in this section.
No	The repair is complete.

PINPOINT TEST AP : INTERNAL MODULE FAILURE

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>ACM</u> U3000:41	Control Module: General Checksum Failure	Sets when the <u>ACM</u> detects an internal fault.
<u>ACM</u> U3000:42	Control Module: General Memory Failure	Sets when the <u>ACM</u> detects an internal fault.
<u>ACM</u> U3000:92	Control Module: Performance Or Incorrect Operation	Sets when the <u>ACM</u> detects an internal fault.
<u>ACM</u> U3000:94	Control Module: Unexpected Operation	Sets when the <u>ACM</u> detects an internal fault.
<u>ACM</u> U3000:96	Control Module: Component Internal Failure	Sets when the <u>ACM</u> detects an internal fault.
<u>DSP</u> U3000:41	Control Module: General Checksum Failure	Sets when the <u>DSP</u> detects an internal fault.
<u>DSP</u> U3000:42	Control Module: General Memory Failure	Sets when the <u>DSP</u> detects an internal fault.
<u>TCU</u> B116C:04	External SIM Cable/SIM Card: System Internal Failures	Sets when the <u>TCU</u> detects an internal fault.
<u>TCU</u> B116C:57	External SIM Cable/SIM Card: Invalid/Incompatible Software Component	Sets when the <u>TCU</u> detects an internal fault.
<u>TCU</u> U1A01:92	Communication Link: Performance Or Incorrect Operation	Sets when the <u>TCU</u> detects an internal fault.
<u>TCU</u> U1A01:93	Communication Link: No Operation	Sets when the <u>TCU</u> detects an internal fault.
<u>TCU</u> U1A4B:52	Control Module Processor B: Not Activated	Sets when the <u>TCU</u> detects an internal fault.
<u>TCU</u> U2200:00	Control Module Configuration Memory Corrupt: No Sub Type Information	Sets when the <u>TCU</u> detects an internal fault.
<u>TCU</u> U3000:09	Control Module: Component Failures	Sets when the <u>TCU</u> detects an internal fault.
<u>TCU</u> U3000:43	Control Module: Special Memory Failure	Sets when the <u>TCU</u> detects an internal fault.
<u>TCU</u> U3000:96	Control Module: Component Internal Failure	Sets when the <u>TCU</u> detects an internal fault.

Possible Sources

- Suspect module

AP1 INSTALL A NEW SUSPECT MODULE

- Ignition ON.
- Using a diagnostic scan tool, clear the Diagnostic Trouble Codes (DTCs) for the suspect module.
- Using a diagnostic scan tool, carry out the self-test for the suspect module.

Is the original DTC still present?

Yes	INSTALL a new module in question. REFER to the appropriate Removal and Installation procedure in this section.
No	The repair is complete.

PINPOINT TEST AQ : TCU (TELEMATIC CONTROL UNIT MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U3000:04

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>TCU</u> U3000:04	Control Module: System Internal Failures	Sets when the <u>TCU</u> detects an internal fault.

Possible Sources

- TCU software
- TCU

AQ1 CLEAR THE DTC (DIAGNOSTIC TROUBLE CODE) AND RECHECK THE SYSTEM

- Ignition ON.
- Using a diagnostic scan tool, clear the TCU DTC.
- Wait 10 seconds.
- Using a diagnostic scan tool, carry out the TCU self-test.

Is the DTC still present?

Yes	GO to AQ2
No	The repair is complete.

AQ2 PROGRAM THE TCU (TELEMATIC CONTROL UNIT MODULE)

- Ignition OFF.

- Disconnect the battery.
 - Wait 5 minutes.
 - Connect the battery.
 - Ignition ON.
 - Program the TCU with the latest software level.
 - **NOTE:** Make sure the SYNC system is connected to the internet before retesting.
- Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS and follow any instructions for the applicable TSB, GSB, SSM or FSA. INSTALL a new TCU. REFER to: Telematics Control Unit (TCU) Module (415-00 Information and Entertainment System - General Information, Removal and Installation).
No	The repair is complete.

PINPOINT TEST AR : TCU (TELEMATIC CONTROL UNIT MODULE) DTC (DIAGNOSTIC TROUBLE CODE) U3000:57

Normal Operation and Fault Conditions

Carry out a Master Reset of the SYNC system using the touchscreen display interface.

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>TCU</u> U3000:57	Control Module: Invalid/Incompatible Software Component	Sets when the <u>TCU</u> detects an internal configuration concern.

Possible Sources

- Corrupt module configuration

Diagnostic steps are not provided for this symptom or DTC. REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

PINPOINT TEST AS : APIM (SYNC MODULE) LOST COMMUNICATION TO A MODULE

DTC Fault Trigger Conditions

DTC	Description	Fault Trigger Condition
<u>APIM</u> U0121:00	Lost Communication With Anti-Lock Brake System (ABS) Control Module 'A': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>ABS</u> module for more than 5 seconds.
<u>APIM</u> U0140:00	Lost Communication With Body Control Module: No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>BCM</u> for more than 5 seconds.
<u>APIM</u> U0151:00	Lost Communication With Restraints Control Module: No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects messages from the <u>RCM</u> are missing for more than 5 seconds.
<u>APIM</u> U0155:00	Lost Communication With Instrument Panel Cluster (IPC) Control Module: No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>IPC</u> for more than 5 seconds.
<u>APIM</u> U0159:00	Lost Communication With Parking Assist Control Module 'A': No Sub Type Information	Set in continuous memory when the <u>APIM</u> detects parking aid network messages are missing from the <u>IPMA</u> for more than 5 seconds.
<u>APIM</u> U0232:00	Lost Communication With Side Obstacle Detection Control Module 'A': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects left cross traffic alert network messages are missing from the <u>IPMA</u> for more than 5 seconds.
<u>APIM</u> U0233:00	Lost Communication With Side Obstacle Detection Control Module 'B': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects right cross traffic alert network messages are missing from the <u>IPMA</u> for more than 5 seconds when the ignition is on.
<u>APIM</u> U023B:00	Lost Communication With Image Processing Module B: No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects image processing data network messages are missing from the <u>IPMA</u> for more than 5 seconds when the ignition is on.
<u>APIM</u> U0184:00	Lost Communication With Radio: No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>ACM</u> for more than 5 seconds.
<u>APIM</u> U0198:00	Lost Communication With Telematic Control Module 'A': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>TCU</u> for more than 5 seconds.
<u>APIM</u> U0208:00	Lost Communication With 'Seat Control Module A': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>SCME</u> for more than 5 seconds.
<u>APIM</u> U020C:00	Lost Communication with Wireless Accessory Charging Module 'A': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>WACM</u> for more than 5 seconds.
<u>APIM</u> U0212:00	Lost Communication With Steering Column Control Module: No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>SCCM</u> / <u>SASM</u> for more than 5 seconds.

APIM U0238:00	Lost Communication With Digital Audio Control Module 'D': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>DSP</u> for more than 5 seconds.
APIM U024B:00	Lost Communication with Seat Control Module 'G': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>SCMG</u> for more than 5 seconds.
APIM U024C:00	Lost Communication with Seat Control Module 'H': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>SCMH</u> for more than 5 seconds.
APIM U0293:00	Lost Communication With Hybrid/EV Powertrain Control Module 'A': No Sub Type Information	Sets in continuous memory when the <u>APIM</u> detects network messages are missing from the <u>SOBDMC</u> for more than 5 seconds.
APIM U3000:88	Control Module: Bus Off	The module could not communicate on the network at a point in time. The fault is not currently present since the module had to communicate with the diagnostic scan tool to report this <u>DTC</u> .

Possible Sources

- Communication from sending module concern
- Intermittent CAN failure concern



COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.



To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure **SYNC Touchscreen/Information and Entertainment Display**.

PINPOINT TEST AT : APIM (SYNC MODULE) INVALID DATA RECEIVED

DTC Fault Trigger Conditions		
DTC	Description	Fault Trigger Condition
APIM U0415:00	Invalid Data Received from Anti-Lock Brake System (ABS) Control Module 'A': No Sub Type Information	Sets when the <u>APIM</u> receives invalid network data from the <u>ABS</u> module.
APIM U0415:94	Invalid Data Received from Anti-Lock Brake System (ABS) Control Module 'A': Unexpected Operation	Sets when the <u>APIM</u> receives invalid network data from the <u>ABS</u> module.
APIM U0422:00	Invalid Data Received From Body Control Module: No Sub Type Information	Sets when the <u>APIM</u> receives invalid network data from the <u>BCM</u> .
APIM U0452:00	Invalid Data Received From Restraints Control Module: No Sub Type Information	Sets when the <u>APIM</u> receives invalid network data from the <u>RCM</u> .

Possible Sources

- Corrupt or invalid data received from sending module

COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.

To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure **SYNC Touchscreen/Information and Entertainment Display**.

PINPOINT TEST AU : APIM (SYNC MODULE) CONFIGURATION

DTC Fault Trigger Conditions		
DTC	Description	Fault Trigger Condition
APIM B156D:54	TCU Customer Connectivity Settings Synchronization With HMI: Missing Calibration	Sets due to an incomplete or incorrect <u>APIM</u> <u>PML</u> .
APIM B156D:89	TCU Customer Connectivity Settings Synchronization With HMI: Data Transfer Failure	Sets due to an incomplete or incorrect <u>APIM</u> <u>PML</u> .
APIM B15EB:57	Consumer Apps: Invalid/Incompatible Software Component	Sets due to an incomplete or incorrect <u>APIM</u> <u>PML</u> .
APIM U0121:55	Lost Communication With Anti-Lock Brake System (ABS) Control Module 'A': Not Configured	Sets due to an incomplete or incorrect <u>APIM</u> <u>PML</u> .
APIM U2017:45	Control Module Software #2: Program Memory Failure	Sets due to an incomplete or incorrect <u>APIM</u> <u>PML</u> .
APIM U2017:51	Control Module Software #2: Not Programmed	Sets due to an incomplete or incorrect <u>APIM</u> <u>PML</u> .
APIM U2017:52	Control Module Software #2: Not Activated	Sets due to an incomplete or incorrect <u>APIM</u> <u>PML</u> .

APIM U2017:54	Control Module Software #2: Missing Calibration	Sets due to an incomplete or incorrect APIM PML .
APIM U2100:00	Initial Configuration Not Complete: No Sub Type Information	Sets due to an incomplete or incorrect APIM PML .
APIM U2101:00	Control Module Configuration Incompatible: No Sub Type Information	Sets due to an incomplete or incorrect APIM PML .
APIM U3000:57	Control Module: Invalid/Incompatible Software Component	Sets due to an incomplete or incorrect APIM PML .

Possible Sources

- Corrupt module configuration



COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.



To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure **SYNC Touchscreen/Information and Entertainment Display**.

PINPOINT TEST AV : APIM (SYNC MODULE) INTERNAL MODULE CONCERN

DTC Fault Trigger Conditions

<u>DTC</u>	Description	Fault Trigger Condition
APIM U3000:04	Control Module: System Internal Failures	Sets when the APIM detects an internal fault.
APIM U3000:05	Control Module: System Programming Failures	Sets when the APIM detects an internal fault.
APIM U3000:09	Control Module: Component Failures	Sets when the APIM detects an internal fault.
APIM U3000:41	Control Module: General Checksum Failure	Sets when the APIM detects an internal fault.
APIM U3000:43	Control Module: Special Memory Failure	Sets when the APIM detects an internal fault.

Possible Sources

- Corrupt module firmware



COMPLETE THE FDRS GUIDED ROUTINE

NOTE: This procedure must be completed using FDRS. Do not clear DTCs until the FDRS procedure has completed.



To complete the diagnosis, navigate to the FDRS Guided Routine tab and carry out the procedure **SYNC Touchscreen/Information and Entertainment Display**.