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2003 FORD Mustang OEM Service and Repair Workshop Manual

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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 (telematic control unit module) 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 (telematic control unit module) self-test.

Is any DTC (diagnostic trouble code) present?

Yes	For any GSM antenna DTC (diagnostic trouble code) , GO to X19 For all other Diagnostic Trouble Codes (DTCs), REFER to the DTC (diagnostic trouble code) Chart in this section.
No	GO to X3

X3 VERIFY THE ONBOARD SERIAL NUMBER

- Ignition ON.

X6 CHECK FOR UPDATED SOFTWARE

- Ignition ON.
- Program the TCU (telematic control unit module) 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 (telematic control unit module) PID (parameter identification) :
  - Access the TCU (telematic control unit module) and monitor the CELL_SIGNAL (Cell Signal Strength) (Undefined / Not Used) PID (parameter identification)

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 (telematic control unit module) PID (parameter identification) :
  - Access the TCU (telematic control unit module) and monitor the AUTHMODE (Authorization Status) PID (parameter identification)

- 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 (integrated keyhead transmitter) or passive key.
- Wait 30 seconds.
- Unlock the vehicle using the button on the IKT (integrated keyhead transmitter) 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 (telematic control unit module) PID (parameter identification) :
  - Access the TCU (telematic control unit module) and monitor the AUTHMODE (Authorization Status) PID (parameter identification)

Is "Un-Provisioned" displayed?

Yes	GO to X21

No	GO to X13

X13 CHECK FOR CORRECT VEHICLE OPERATION

- Using a diagnostic scan tool, access the following TCU (telematic control unit module) PID (parameter identification) :
  - Access the TCU (telematic control unit module) and monitor the AUTHMODE (Authorization Status) PID (parameter identification)

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 (vehicle identification number) to the FordPass/Lincoln Way App and then authorize the vehicle.
- Using a diagnostic scan tool, access the following TCU (telematic control unit module) PID (parameter identification) :
  - Access the TCU (telematic control unit module) and monitor the AUTHMODE (Authorization Status) PID (parameter identification)

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 DTC (diagnostic trouble code) Chart in this section.

Positive Lead	Measurement / Action	Negative Lead
Primary cellular antenna cable core, pin 4 **(component side)**	V	Ground

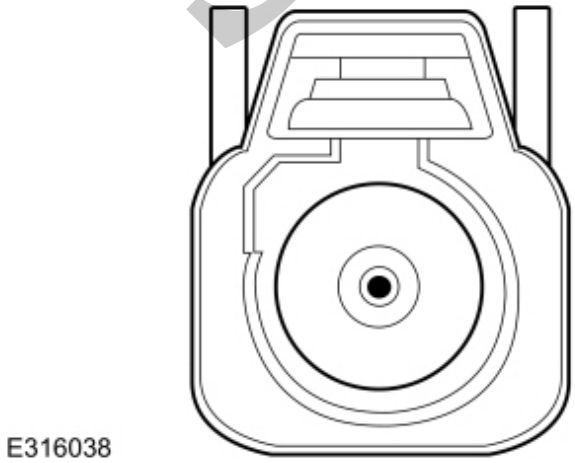
Does the voltage cycle from 0 to approximately 2.8 volts at regular intervals?

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 (telematic control unit module) .
- Disconnect primary cellular antenna cable from the GPS (global positioning system) /satellite radio/cellular antenna.
- Ignition ON.
- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E316038	V	Ground

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.

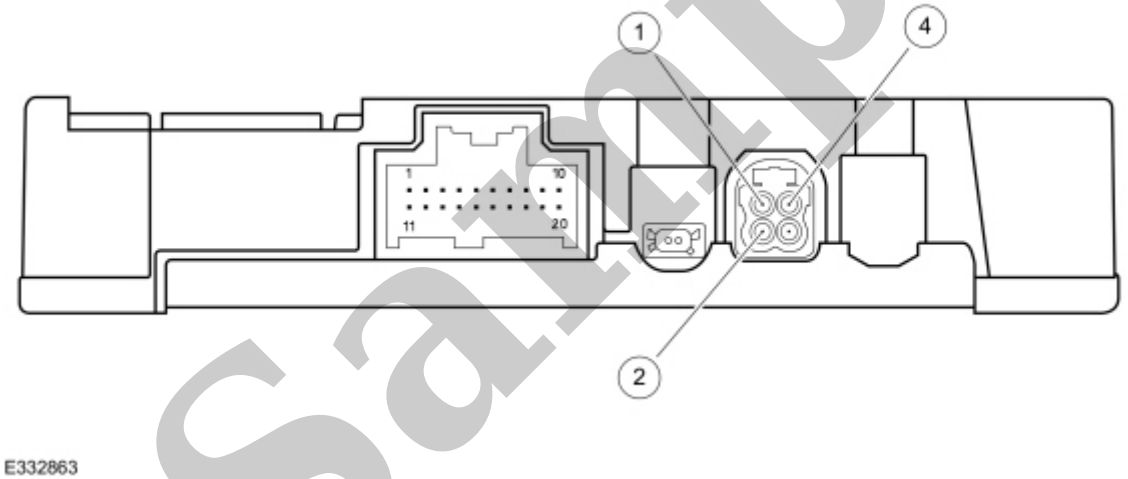
PINPOINT TEST Y : THE VEHICLE WI-FI HOTSPOT FEATURE IS INOPERATIVE, EXPERIENCING POOR DATA SPEED OR CANNOT STREAM ANY DATA

Refer to Wiring Diagrams Cell 131for 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 (telematic control unit module) Antenna Cable Connections



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

DTC Fault Trigger Conditions

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 than the second device?
50% or less

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 (telematic control unit module) .
- Ignition ON.
- **NOTE**

  Refer to the diagram at the beginning of this test to identify the correct cable connection to the TCU (telematic control unit module) .

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

Positive Lead	Measurement / Action	Negative Lead

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 - General Information, Removal and Installation).

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

- Ignition OFF.
- Inspect the TCU (telematic control unit module) 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 (telematic control unit 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 (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . 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 (telematic control unit module) . 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

The ACM (audio front control module) and the APIM (SYNC module) communicate with the PCM (powertrain control module) over the CAN (controller area network) . If messages are missing or not received from the PCM (powertrain control module) module, features such as the speed compensated volume can be inoperative.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
ACM (audio front control module) U0100:00	Lost Communication With ECM/PCM 'A': No Sub Type Information	Sets in continuous memory when the ACM (audio front control module) detects network messages are missing from the PCM (powertrain control module) for more than 5 seconds.
APIM (SYNC module) U0100:00	Lost Communication With ECM/PCM 'A': No Sub Type Information	Sets in continuous memory when the APIM (SYNC module) detects network messages are missing from the PCM (powertrain control module) for more than 5 seconds.

Possible Sources

- Network communication concern
- ACM (audio front control module) concern
- APIM (SYNC module) concern
- PCM (powertrain control module)

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 DTC (diagnostic trouble code) may have been set due to high network traffic or an intermittent fault condition.

AB2 CHECK THE NETWORK COMMUNICATION