

Information and Entertainment System - General Information - Cellular Phone

Diagnosis and Testing

Principles of Operation

For a detailed description of the Cellular Phone systems, refer to the relevant Description and Operation section in the workshop manual. REFER to: [Cellular Phone](#) (415-01 Information and Entertainment System, Description and Operation).

Inspection and Verification



CAUTION: Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault, and may also cause additional faults in the vehicle being tested and/or the donor vehicle.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage and system integrity.

Visual Inspection

Mechanical	Electrical
• Microphone • Bluetooth antenna	• Electrical connectors • Wiring harness for damage or corrosion • Fuses

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, verify the concern and refer to the Symptom Chart, alternatively check for Diagnostic Trouble Codes (DTCs) and refer to relevant DTC Index.

Symptom Chart

Symptom	Action
Unable to pair	• GO to Pinpoint Test A.
Not Auto Connecting	• GO to Pinpoint Test B.
No Audio to 3rd Party	• GO to Pinpoint Test C.
No Audio from 3rd Party	• GO to Pinpoint Test D.
No Audio	• GO to Pinpoint Test E.

DTC Index

• NOTE: If the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual (section B1.2), or determine if any prior approval programme is in operation, prior to the installation of a new module/component.

• NOTE: Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give extra information read by the manufacturer-approved diagnostic system).

• NOTE: When performing voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places and with a current calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.

• NOTE: Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.

• NOTE: If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

For a complete list of all Diagnostic Trouble Codes (DTCs) that could be logged on this vehicle, please refer to Section 100-00.

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Cellular Telephone Control Module \(Bluetooth Telephone Module\) \(BPM\)](#) (100-00 General Information, Description and Operation).

Pinpoint Tests

PINPOINT TEST A : UNABLE TO PAIR	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: 'NO PHONE FITTED' DISPLAY	

• NOTE: Prior to continuing with any diagnosis, ensure that the Customer telephone and level of software is included on the JLR approved list, the telephone battery is fully charged and in a serviceable condition, the bluetooth function is activated and the telephone handset is placed within the vehicle cabin area.	
	1 Carry out checks to determine if 'No Phone Fitted' is shown on vehicle display.
	Is 'No Phone Fitted' displayed? Yes GO to A2. No Locate the connected telephone and if not Customer telephone, disconnect from the system.
A2: TELEPHONE BLUETOOTH DEVICE SEARCH	
	1 Carry out Bluetooth device search using Customer handset.
	Is 'Land Rover' identified in Bluetooth device list? Yes Select device from list, then continue with diagnosis.GO to A3. No Carry out further Bluetooth device search, to a maximum of 4 times, waiting approximately 20 seconds between searches. If 'Land Rover' still not identified in Bluetooth device list, set ignition status to OFF, wait approximately 30 seconds and set ignition status to ON. Carry out further Bluetooth device search, to a maximum of 4 times, waiting approximately 20 seconds between searches. If 'Land Rover' still not identified in Bluetooth device list, contact your local in market support for further assistance.
A3: TELEPHONE HANDSET ERROR	
	1 Check for any error shown on the telephone handset when 'Land Rover' is selected from the Bluetooth device list.
	Was an error immediately shown on the telephone handset? Yes Wait approximately 10 seconds then re-attempt selection, to a maximum of 4 times, waiting approximately 10 seconds between each attempt. If error still being displayed, contact your local in market support for assistance. No Enter PIN '2121' then continue with diagnosis.GO to A4.
A4: PIN ENTRY STATUS	
	1 Check for successful PIN entry.
	Was PIN entry successful? Yes GO to A5. No Wait approximately 10 seconds then re-attempt PIN entry, to a maximum of 4 times, waiting approximately 10 seconds between each attempt. If PIN entry is still un-successful, contact your local in market support for assistance.
A5: 'NO PHONE FITTED' DISPLAY	
	1 Carry out checks to determine if 'No Phone Fitted' is still shown on vehicle display.
	Is 'No Phone Fitted' still displayed? Yes From the telephone handset, select the connect option for the 'Land Rover' device identified in the Bluetooth device list. If 'No Phone Fitted' is still displayed, suspect a telephone handset fault. Carry out Pinpoint test again using known good telephone handset. No The telephone is paired and connected to the system. No further action is required for this symptom.

PINPOINT TEST B : NOT AUTOMATICALLY CONNECTING

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: BLUETOOTH MODULE PAIRED DEVICE LIST	
• NOTE: Prior to continuing with any diagnosis, ensure that the Customer telephone and level of software is included on the JLR approved list, the telephone battery is fully charged and in a serviceable condition, the bluetooth and auto connect functions are activated and the telephone handset is placed within the vehicle cabin area.	
	1 Carry out checks to determine if the Customer telephone is shown in the Bluetooth Module paired device list.
	Is the Customer telephone in the Bluetooth Module paired device list? Yes GO to B2. No Carry out Unable to Pair Pinpoint Test.GO to A.
B2: CUSTOMER HANDSET PAIRED DEVICE LIST	
	1 Carry out checks to determine if the Bluetooth Module is shown in the Customer telephone paired device list.
	Is the Bluetooth Module in the Customer telephone paired device list? Yes GO to B3. No Carry out Unable to Pair Pinpoint Test.GO to A.
B3: CUSTOMER TELEPHONE IN POSITION 1	
	1 Carry out checks to determine if the Customer telephone is in position 1 in the Bluetooth Module paired device list.
	Is the Customer telephone in position 1? Yes GO to B4. No Advise Customer that auto connection will only be attempted with the device that is shown in position 1 in Bluetooth Module paired device list.
B4: CHECK FOR DTC B1A56-13	

	1 Using Manufacturer approved diagnostic system, check for DTC B1A56-13. Is DTC B1A56-13 logged? Yes Carry out remedial actions as outlined in DTC Index. If symptom remains, contact your local in market support for assistance. No GO to B5.
B5: BLUETOOTH CONNECTION	
	1 Carry out checks to determine if Bluetooth connection icon is shown on Customer Bluetooth telephone screen but shows 'No Phone Fitted' on vehicle screen. Is Bluetooth connection icon shown on the Customer handset but 'No Phone Fitted' displayed on vehicle screen? Yes GO to B9. No GO to B6.
B6: 'LAND ROVER' AUTHORISATION	
• NOTE: Some handsets may require operator intervention to manually authorise connection.	
	1 Carry out checks to determine if 'Land Rover' is authorised in the Customer Bluetooth telephone device list menu. Is 'Land Rover' authorised in the Customer Bluetooth telephone device list menu? Yes GO to B7. No Advise customer that 'Land Rover' needs to be authorised in the Customer Bluetooth telephone device list menu, or operator intervention may be required to manually authorise connection.
B7: SEARCH FOR DEVICES SCREEN	
	1 Select the search for devices button on the vehicle display. Does pressing the search for devices button bring up the searching screen on the vehicle display? Yes Contact your local in market support for assistance. No GO to B8.
B8: CYCLE IGNITION AND CHECK SEARCH FOR DEVICES SCREEN	
	1 Lock vehicle (wait 60s) before unlocking and turning Ignition status back to ON. Does pressing the search for devices button bring up the searching screen on the vehicle display? Yes No further action required for this Symptom. Possible intermittent fault. No Contact your local in market support for assistance.
B9: PAIRED DEVICE	
	1 Check Customer telephone paired device list to establish which device the Customer telephone is connected to. Is the Customer telephone connected to the vehicle? Yes Lock vehicle (wait 60s) before unlocking and turning Ignition status back to ON. If Not Automatically Connecting, contact you local in market support for assistance. No Using the Customer telephone controls, disconnect from the currently connected device and delete from paired device list. Lock vehicle (wait for 60s) before unlocking and turning Igiton status to ON. If Not Automatically Connecting, contact your local in market support for assistance.

PINPOINT TEST C : NO AUDIO TO THIRD PARTY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C1: MICROPHONE DIAGNOSTIC TROUBLE CODES (DTCs)	
• NOTE: Prior to continuing with any diagnosis, ensure that the Customer telephone and level of software is included on the JLR approved list, the telephone battery is fully charged and in a serviceable condition, the telephone is placed within the vehicle cabin area and is connected to the vehicle via bluetooth.	
	1 Using the Manufacturer approved diagnostic system, check for any logged microphone DTCs in Audio Front Control module. Is DTC B1D79-01 logged? Yes Carry out diagnosis of electrical failure as advised in Action column of DTC Index. No Contact your local in market support for assistance.

PINPOINT TEST D : NO AUDIO FROM THIRD PARTY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D1: 'IN CALL' DISPLAY	
• NOTE: Prior to continuing with any diagnosis, ensure that the Customer telephone and level of software is included on the JLR approved list, the telephone battery is fully charged and in a serviceable condition, the telephone is placed within the vehicle cabin area and is connected to the vehicle via bluetooth.	
	1 Carry out checks to determine if 'In Call' is shown on the vehicle display. Is vehicle display showing 'In Call'? Yes Contact your local in market support for assistance. No Call has ended. No further action is required for this symptom.

PINPOINT TEST E : NO AUDIO

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: AUDIO FROM THIRD PARTY	
• NOTE: Prior to continuing with any diagnosis, ensure that the Customer telephone and level of software is included on the JLR approved list, the telephone battery is fully charged and in a serviceable condition, the telephone is placed within the vehicle cabin area and is connected to the vehicle via bluetooth.	
	1 Establish from Customer feedback/symptom if there is Audio from the Third Party.
	Is there Audio from the Third Party? Yes GO to E2. No Refer to the 'No Audio From Third Party' Pinpoint test.GO to D.
E2: AUDIO TO THIRD PARTY	
	1 Establish from Customer feedback/symptom if there is Audio to the Third Party.
	Is there Audio to the Third Party? Yes GO to E3. No Refer to the 'No Audio To Third Party' Pinpoint test.GO to C.
E3: CD OR RADIO AUDIO	
	1 Establish from Customer feedback/symptom if there is Audio from the CD or Radio.
	Is there Audio from the CD or Radio? Yes GO to E4. No Suspect MOST ring fault, refer to electrical circuit diagrams and check/rectify MOST ring as necessary.
E4: TELEPHONE HANDSET AUDIO	
	1 Establish from Customer feedback/symptom if there is Audio from the telephone handset.
	Is there Audio from the telephone handset? Yes Ensure vehicle is parked. Disconnect and reconnect handset. If issue not resolved, contact your local in market support for assistance. No Contact you local in market support for assistance.

Information and Entertainment System - General Information - Information and Entertainment System

Diagnosis and Testing

Principles of Operation

For a detailed description of the Information and Entertainment systems, refer to the relevant Description and Operation section in the workshop manual. REFER to:

[Audio System](#) (415-01 Information and Entertainment System, Description and Operation),
[Speakers](#) (415-01 Information and Entertainment System, Description and Operation),
[Navigation System](#) (415-01 Information and Entertainment System, Description and Operation),
[Antenna](#) (415-02 Antenna, Description and Operation).

Inspection and Verification



CAUTION: Diagnosis by substitution from a donor vehicle is **NOT** acceptable. Substitution of control modules does not guarantee confirmation of a fault, and may also cause additional faults in the vehicle being tested and/or the donor vehicle.

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage and system integrity.

Visual Inspection

Mechanical	Electrical
● Integrated audio module ● Information and entertainment module ● Audio amplifier ● Compact disc player jammed, not loading ● Scratched/dirty compact discs ● Speakers ● Navigation system DVD player mechanism	● Fuses ● Wiring harness ● Correct engagement of electrical connectors ● Loose or corroded connector(s) ● Routing of fibre optic harnesses ● Correct engagement of optical connectors ● Correct placement of optical connectors (ring order) ● Correct assembly of optical connectors (backout, etc) ● Damage to fibre (chafing, abrasion, kinking, cuts, etc) ● Integrated audio module ● Information and entertainment module ● Audio amplifier ● Speakers ● Navigation system display ● Navigation system module ● GPS antenna ● Wiring harness for damage and corrosion ● ABS Module ● Audio unit

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the cause is not visually evident, check for Diagnostic Trouble Codes (DTCs) and refer to relevant DTC Index.

Navigation System Symptom Chart

Symptom	Possible Cause	Action
Poor satellite reception	● Electrical harness open/short circuit, dis-connected ● Component failure ● No reception from satellite	GO to Pinpoint Test B.
Map disc will not insert/eject	● Electrical harness open/short circuit, dis-connected ● Component failure ● Map disc failure	GO to Pinpoint Test C.
Black screen (navigation map screen does not display)	● Electrical harness open/short circuit, dis-connected ● Component failure ● GVIF cable	GO to Pinpoint Test D.
Navigation map screen color is abnormal	● Electrical harness open/short circuit, dis-connected ● Component failure ● GVIF cable	GO to Pinpoint Test E.
Vehicle's current position is not updated independently	● Electrical harness open/short circuit, dis-connected ● Component failure ● Vehicle on a turntable in a parking building	GO to Pinpoint Test F.

• NOTE: If the control module or a component is suspected in the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual (Section 512), or determine if any prior approval programme is in operation, prior

to the installation of a new module/component.

- NOTE: Generic scan tools may not read the codes listed, or may read only five digit codes. Match the five digits from the scan tool to the first five digits of the seven digit code listed to identify the fault (the last two digits give extra information read by the manufacturer-approved diagnostic system).
- NOTE: When performing voltage or resistance tests, always use a digital multimeter (DMM) accurate to three decimal places and with a current calibration certificate. When testing resistance, always take the resistance of the DMM leads into account.
- NOTE: Check and rectify basic faults before beginning diagnostic routines involving pinpoint tests.
- NOTE: Inspect connectors for signs of water ingress, and pins for damage and/or corrosion.
- NOTE: If DTCs are recorded and, after performing the pinpoint tests, a fault is not present, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

Information and Entertainment Module (Low Line)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Infotainment Control Module \(ICM\) - Low Line](#) (100-00 General Information, Description and Operation).

Information and Entertainment Module (High Line)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Infotainment Control Module \(ICM\) - High Line](#) (100-00 General Information, Description and Operation).

Audio Front Control Module (ACM)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Audio Front Control Module \(ACM\)](#) (100-00 General Information, Description and Operation).

Audio Amplifier Module (AAM)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Audio Amplifier Module \(AAM\)](#) (100-00 General Information, Description and Operation).

Front Control Display Interface Module (FCDIM) (high level display front)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Front Controls Display Interface Module \(FCDIM\) - Front Integrated Control Panel](#) (100-00 General Information, Description and Operation).

Navigation Control Module (NCM)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Navigation Control Module \(NAV\)](#) (100-00 General Information, Description and Operation).

Satellite Radio Module (SRM)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Satellite Digital Audio Radio System Module \(SARM\)](#) (100-00 General Information, Description and Operation).

Digital Audio Broadcast Module (DAB)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: Digital Audio Broadcast Module \(DABM\)](#) (100-00 General Information, Description and Operation).

High Definition Tuner Module (HDR)

REFER to: [Diagnostic Trouble Code \(DTC\) Index - DTC: High Definition Radio Module \(HDR\)](#) (100-00 General Information, Description and Operation).

Pinpoint Tests

- NOTE: Visually inspect for any of the following conditions and rectify any fault identified prior to carrying out any tests on the MOST Network.
 - Any sharp bends in the optical fibre harness (check for this before disturbing any module or connector)
 - Incorrect engagement of any optical connectors
 - Incorrect engagement of any electrical connectors
 - Damage to the optical fibre harness (chafing, abrasion, kinking, cuts, break, etc)
 - Incorrect assembly of the optical network
- NOTE: Unless otherwise stated, ensure vehicle ignition status is set to 'ON' when carrying out MOST Network tests.

PINPOINT TEST A : MOST NETWORK TESTS	
TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
A1: CHECK HLDF DISPLAY	
1	Check HLDF display
	Is the HLDF showing a flashing Land Rover logo, or a blank screen?
Yes	GO to A2.
No	No ring break fault has occurred. Suspect invalid Car Configuration File parameter faults, check modules on MOST Network for related DTCs and refer to the relevant DTC Index.

A2: CHECK RD1 RING BREAK LINK	
	1 Check the RD1 Ring Break link in Auxiliary Junction Box (AJB) is not disconnected or open circuit. Is the RD1 Ring Break link in Auxiliary Junction Box (AJB) disconnected or open circuit? Yes Rectify the fault condition and re-test vehicle. No GO to A3.
A3: INITIATE RING BREAK DIAGNOSTIC (RBD) & READ DTCS	
	1 Ensure RD1 Ring Break link is in AJB. 2 Ensure remote key is inserted into key holder. 3 Set vehicle ignition status from 'OFF' to 'ON'. 4 Clear all DTCS. 5 Remove RD1 Ring Break link from AJB, wait at least ten seconds, re-insert RD1 Ring Break link into AJB. 6 Wait at least 30 seconds for RBD to initiate and complete. 7 Read all DTCS.
	Is DTC U1A1587 logged? Yes GO to A4. No Check HLDF for additional DTCS and refer to relevant DTC Index.
A4: CHECK FOR FAILURE AT INTERMEDIATE CONNECTOR C23T PIN 2	
	1 Disconnect the MOST network intermediate connector C23T. Is the bright red light visible at MOST intermediate connector C23T pin 2? Yes GO to A5. No GO to A6.
A5: CHECK FOR FAILURE AT FIRST HALF OF MOST NETWORK	
	1 Connect the Optical Bus Tester (OBT) to intermediate connector C23T using adaptor lead supplied. 2 Switch OBT 'ON' and set to 2+0 option. 3 Select the visible LED option.
	Is the Rx lamp/LED permanently 'ON' and the HLDF screen permanently displaying 'Home menu screen' or Land Rover logo? Yes Fault is in second half of MOST Network. Disconnect OBT and re-connect intermediate connector. GO to A13. No Disconnect OBT from intermediate connector C23T and connect optical LINK provided GO to A10.
A6: CHECK FOR FAILURE AT INFORMATION AND ENTERTAINMENT MODULE	
	1 Disconnect MOST connector C2ME05B from information and entertainment module. Is the bright red light visible at module side of connector C2ME05B pin 2? Yes If there is a HLDF installed to the vehicle. GO to A7. If there is no HLDF installed, the fault is in the optical fibre between C2ME05B pin 2 and C23T pin 2, rectify the fault and re-test the vehicle. No Install a new information and entertainment module and re-test vehicle.
A7: CHECK FOR FAILURE OF OPTICAL FIBRE TO HLDF	
	1 Re-connect MOST connector C2ME05B to information and entertainment module. 2 Disconnect MOST connector C2MN08C from HLDF.
	Is the bright red light visible at harness side of MOST connector C2MN08C pin 1? Yes GO to A8. No Fault is in optical fibre harness between C2ME05B pin 2 and C2MN08C pin 1, rectify the fault and re-test vehicle.
A8: CHECK FOR FAILURE OF OPTICAL FIBRE FROM HLDF	
	1 Connect OBT to HLDF MOST connector C2MN08C. 2 Switch OBT 'ON' and set to 2+0 option. 3 Select the visible LED option.
	Is the bright red light visible at MOST intermediate connector C23T pin 2? Yes GO to A9. No Fault is in optical fibre harness between C23T pin 2 and C2MN08C pin 2, rectify the fault and re-test vehicle.
A9: CHECK FOR FAILURE AT HLDF	
	1 Connect the optical Link provided to MOST intermediate connector C23T. Is the Rx lamp/LED permanently 'ON' and the HLDF permanently displaying blank screen? Yes Check/repair power feed and ground lines to HLDF. If power feed and ground lines ok, install a new HLDF. REFER to: Video Display (415-01 Information and Entertainment System, Removal and Installation). No Check integrity of intermediate connector C23T connections, and re-test vehicle.
A10: CHECK FOR FAILURE OF OPTICAL FIBRE TO INTEGRATED AUDIO MODULE	
	1 Disconnect MOST connector C2ME44B from integrated audio module.

	Is the bright red light visible at harness side of MOST connector C2ME44B pin 1? Yes GO to A11. No Fault is in optical fibre harness between C23T pin 1 and C2ME44B pin 1, rectify the fault and re-test vehicle.
A11: CHECK FOR FAILURE AT INTEGRATED AUDIO MODULE	
	1 Connect OBT to integrated audio module MOST connector C2ME44B. 2 Switch OBT 'ON' and set to 2+0 option. 3 Select the visible LED option.
	Is the Rx lamp/LED permanently 'ON' and the HLDF screen permanently displaying Land Rover logo? Yes Check/repair power feed and ground lines to integrated audio module. If power feed and ground lines ok, install a new integrated audio module. No GO to A12.
A12: CHECK FOR FAILURE OF OPTICAL FIBRE FROM INTEGRATED AUDIO MODULE	
	1 Disconnect MOST connector C2ME05B from information and entertainment module. 2 Switch OBT 'ON' and set to 2+0 option. 3 Press red 'TEST' button on OBT and observe harness side of connector C2ME05B pin 1
	Is the bright red light visible at harness side of connector C2ME05B pin 1? Yes Install a new information and entertainment control module. No Fault is in optical fibre harness between C2ME05B pin 1 and C2ME44B pin 2, rectify the fault and re-test vehicle.
A13: CHECK FOR INSTALLATION OF NAVIGATION MODULE	
	1 Check for installation of Navigation module.
	Is there a Navigation module installed to vehicle? Yes GO to A14. No GO to A16.
A14: CHECK FOR FAILURE OF OPTICAL FIBRE TO NAVIGATION MODULE	
	1 Disconnect MOST connector C3MN08C from the navigation module.
	Is the bright red light visible at harness side of connector C3MN08C pin 1? Yes GO to A15. No Fault is in optical fibre harness between C3MN08C pin 1 and C23S pin 2, rectify the fault and re-test vehicle.
A15: CHECK FOR FAILURE AT NAVIGATION MODULE	
	1 Connect OBT to navigation module MOST connector C3MN08C. 2 Switch OBT 'ON' and set to 2+0 option. 3 Select the visible LED option.
	Is the Rx lamp/LED permanently 'ON' and the HLDF screen permanently displaying 'Home screen menu' or Land Rover logo? Yes Check/repair power feed and ground lines to navigation module. If power feed and ground lines ok, install a new navigation module. REFER to: Navigation System Digital Versatile Disc (DVD) Unit (415-01 Information and Entertainment System, Removal and Installation). No Disconnect OBT and reconnect navigation module MOST connector C3MN08C.GO to A16.
A16: CHECK FOR FAILURE OF OPTICAL FIBRE TO AUDIO AMPLIFIER MODULE	
	1 Disconnect MOST connector C4ME27C from the audio amplifier module.
	Is the bright red light visible at harness side of connector C4ME27C pin 1? Yes GO to A17. No Fault is in optical fibre harness between C3MN08C pin 2 (or C23S pin 2, if Navigation module not installed to vehicle) and C4ME27C pin 1, rectify the fault and re-test vehicle.
A17: CHECK FOR FAILURE AT AUDIO AMPLIFIER MODULE	
	1 Connect OBT to audio amplifier module MOST connector C4ME27C. 2 Switch OBT 'ON' and set to 2+0 option. 3 Select the visible LED option.
	Is the Rx lamp/LED permanently 'ON' and the HLDF screen permanently displaying 'Home screen menu' or Land Rover logo? Yes Check/repair power feed and ground lines to audio amplifier module. If power feed and ground lines ok, install a new audio amplifier module. REFER to: Subwoofer Amplifier (415-01 Information and Entertainment System, Removal and Installation). No Disconnect OBT and reconnect audio amplifier module MOST connector C4ME27C.GO to A18.
A18: CHECK FOR INSTALLATION OF BLUETOOTH MODULE	
	1 Check for installation of bluetooth module.

	Is there a bluetooth module installed to the vehicle? Yes GO to A19. No GO to A21.
A19: CHECK FOR FAILURE OF OPTICAL FIBRE TO BLUETOOTH MODULE	
	1 Disconnect MOST connector C4MM22B from the bluetooth module.
	Is the bright red light visible at harness side of connector C4MM22B pin 1? Yes GO to A20. No Fault is in optical fibre harness between C4ME27C pin 2 and C4MM22B pin 1, rectify the fault and re-test vehicle.
A20: CHECK FOR FAILURE AT BLUETOOTH MODULE	
	1 Connect OBT to bluetooth module MOST connector C4MM22B.
	2 Switch OBT 'ON' and set to 2+0 option.
	3 Select the visible LED option.
	Is the Rx lamp/LED permanently 'ON' and the HLDF screen permanently displaying 'Home screen menu' or Land Rover logo? Yes Check/repair power feed and ground lines to bluetooth module. If power feed and ground lines ok, install a new bluetooth module. REFER to: Bluetooth Module (415-01 Information and Entertainment System, Removal and Installation). No Disconnect OBT and reconnect bluetooth module MOST connector C4MM22B. GO to A21.
A21: CHECK FOR INSTALLATION OF DIGITAL AUDIO BROADCAST/SATELLITE RADIO MODULE	
	1 Check for installation of digital audio broadcast/satellite radio module.
	Is there a digital audio broadcast/satellite radio module installed to the vehicle? Yes GO to A22. No GO to A24.
A22: CHECK FOR FAILURE OF OPTICAL FIBRE TO DIGITAL AUDIO BROADCAST/SATELLITE RADIO MODULE	
	1 Disconnect MOST connector C4ME43B from the digital audio broadcast/satellite radio module.
	Is the bright red light visible at harness side of connector C4ME43B pin 1? Yes GO to A23. No Fault is in optical fibre harness between C4MM22B pin 2 (or C4ME27C pin 2, if bluetooth module not installed) and C4ME43B pin 1, rectify the fault and re-test vehicle.
A23: CHECK FOR FAILURE AT DIGITAL AUDIO BROADCAST/SATELLITE RADIO MODULE	
	1 Connect OBT to digital audio broadcast/satellite radio module MOST connector C4ME43B.
	2 Switch OBT 'ON' and set to 2+0 option.
	3 Select the visible LED option.
	Is the Rx lamp/LED permanently 'ON' and the HLDF screen permanently displaying 'Home screen menu' or Land Rover logo? Yes Check/repair power feed and ground lines to digital audio broadcast/satellite radio module. If power feed and ground lines ok, install a new digital audio broadcast/satellite radio module. REFER to: Satellite Radio Tuner (415-01 Information and Entertainment System, Removal and Installation). No GO to A24.
A24: CHECK FOR FAILURE OF OPTICAL FIBRE TO INTERMEDIATE CONNECTOR C23S PIN 1	
	1 Disconnect intermediate connector C23S.
	2 Switch OBT 'ON' and set to 2+0 option.
	3 Press red 'TEST' button on OBT and observe harness side of connector C23S pin 1.
	Is the bright red light visible at harness side of connector C23S pin 1? Yes No fault is indicated with the MOST Network, check all connectors and re-test vehicle. No Fault is in optical fibre harness between C4ME43B pin 2, if digital audio broadcast/satellite radio module is installed (or C4MM22B pin 2, if digital audio broadcast/satellite radio module not installed or C4ME27C pin 2, if bluetooth module not installed), and C23S pin 1, rectify the fault and re-test vehicle.

Navigation System Pinpoint Tests

• NOTE: If the control module or a component is suspect and the vehicle remains under manufacturer warranty, refer to the Warranty Policy and Procedures manual (section B1.2), or determine if any prior approval Program is in operation, prior to the installation of a new module/component.

• NOTE: Navigation Diagnostic Screen Access

- 1. With the vehicle at rest, place the ignition switch in either "ACC", "ON", or start the engine.
- 2. On the "Menu" screen, press the top center of the screen for more than three seconds.
- 3. Enter the PIN code, and then touch "OK". 660: Diagnosis Menu screen 661: System Check screen (DTC code verification screen) 662: GPS Information screen.
- 4. The diagnostics screen will be displayed.

PINPOINT TEST B : POOR SATELLITE RECEPTION

• NOTE: Move the vehicle to an open area, radio waves from satellites may not be received inside buildings.

• NOTE: Correct the vehicle cursor to the current location.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
B1: SYSTEM CHECK FOR DTCs	
	1 Check the system for DTCs which may be logged.
	Are any system DTCs logged? Yes Carry out repair actions to correct the DTCs logged. Check satellite reception. GO to B3. No GO to B2.
B2: RETRO-INSTALL INSTALLATIONS CHECK	
	1 Check to see if there are any retro-install installations (anti-theft, radar, etc.)
	Are there any retro-install installations? Yes Aftermarket items may cause either electrical or radio frequency interference that can cause satellite reception to deteriorate. Remove the power supply (including backup power supplies) from any aftermarket items installed. If reception returns to normal after disconnection of aftermarket items, carry out the following. Alter the installation position of any aftermarket items. Check satellite reception. GO to B3. No GO to B3.
B3: SATELLITE RECEPTION CHECKS	
	1 Check the 'ST' column of the navigation diagnostics GPS information screen (PIN code 662) after 10 minutes have passed. There must be more than 4 'P's displayed for accurate positioning. Check the 'HDOP' value, this must be less than 5.
	Are there more than 4 'P's displayed and is HDOP less than 5? Yes Satellite reception is normal. No Confirm the GPS antenna is connected to the navigation module. Refer to the electrical circuit wiring diagrams and check the integrity of the coaxial cable and connectors from the Navigation Control Module (NCM) to the GPS antenna. Install a new GPS antenna or coaxial cable as required. Re-check satellite reception.

PINPOINT TEST C : MAP DISC WILL NOT INSERT/EJECT

• NOTE: Ensure the parking brake is applied, and ignition status is set to Auxiliary or ON.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
C1: CHECK NAVIGATION DISC SLOT SHUTTER	
	1 Check the navigation map disc slot shutter is open.
	Is the navigation map disc slot shutter is open? Yes GO to C2. No Open the map disc slot shutter. GO to C2.
C2: CHECK NAVIGATION MAP DISC WILL INSERT/EJECT	
	1 Check that it is possible to insert/eject navigation map disc.
	Is it possible to insert/eject navigation map disc? Yes Operation is normal. No Refer to the electrical circuit diagrams and check power supply and ground connections to the Navigation Control Module (NCM). If power supply and ground connections are good, install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index.

PINPOINT TEST D : BLACK SCREEN (NAVIGATION MAP SCREEN DOES NOT DISPLAY)

• NOTE: Ensure the parking brake is applied, and ignition status is set to Auxiliary or ON.

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
D1: CHECK SCREEN SAVER FUNCTION	
	1 Check the screen saver function operation.
	Does the screen saver function operate? Yes Press the display panel button. GO to D2. No GO to D2.
D2: CHECK DISPLAY BACKLIGHT	
	1 Check the display backlight operation.
	Does the display backlight operate? Yes Refer to the electrical circuit diagrams and check the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected. If the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected, check and install a new GVIF cable as required. Refer to the new module/component installation note

	at top of DTC Index. If the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected and NOT damaged, check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index. Re-check the system.
No	Check the HLDF display. Re-check the system.

PINPOINT TEST E : NAVIGATION MAP SCREEN COLOUR IS ABNORMAL

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
E1: COLOUR BAR CHECK	
1	Carry out the display diagnostics 'colour bar check' (PIN code 660).
	Are the results of the display diagnostics 'colour bar check' normal?
Yes	Check the HLDF display. Re-check the system.
No	Check the condition of the map disc for dirt or scratches. Refer to the electrical circuit diagrams and check the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected. If the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected, check and install a new GVIF cable as required. Refer to the new module/component installation note at top of DTC Index. If the GVIF cable between Navigation Control Module (NCM) and HLDF screen is properly connected and NOT damaged, check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index. Re-check the system.

PINPOINT TEST F : VEHICLE'S CURRENT POSITION MARK TURNS INDEPENDENTLY

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
F1: VEHICLES CURRENT POSITION MARK TURNS INDEPENDENTLY	
1	Determine if the ignition status was turned to Auxiliary or On, while the vehicle was in motion with steering turned such as after an engine stall.
	Was ignition status set to Auxiliary or On?
Yes	The angular speed of the vehicle at the time of the ignition status change will be logged as the standard value. To re-set the standard value, turn ignition status to 'OFF' then to 'Auxiliary' or 'On' with the vehicle stationary. Re-test the vehicle.
No	Check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index.

PINPOINT TEST G : CAR CURRENT POSITION NOT STABLE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
G1: SYSTEM CHECK FOR DTCs	
1	Check the system for DTCs which may be logged.
	Are any system DTCs logged?
Yes	Carry out repair actions to correct the DTCs logged. Re-check the system for car current position not stable.
No	GO to G2.
G2: VEHICLE SPEED INPUT CHECK	
1	Select the Vehicle Sensor from the navigation diagnostic menu screen (PIN code 660), check Current speed. The current speed must match the speedometer.
	From the Vehicle Sensor screen, does the current speed must match the speedometer?
Yes	GO to G3.
No	Carry out MOST ring circuit checks. Check the Anti-Lock Brake System Module for related DTCs and refer to the relevant DTC Index. Carry out network integrity tests using the manufacturer approved diagnostic system. Refer to electrical circuit diagrams and check CAN circuits if required. Repair wiring harness as required.
G3: CHECK NUMBER OF SATELLITES	
1	From the navigation diagnostic GPS information screen (PIN code 662), check the number of satellites displayed.
	Is the number of satellites displayed on the screen 0?
Yes	Carry out pinpoint test A "Poor Satellite Reception"
No	GO to G4.
G4: CHECK IF SYMPTOMS ARE OCCURRING IN PARTICULAR LOCATIONS	
1	Confirm if the 'car current position not stable' symptom is occurring in particular locations.

	Is the 'car current position not stable' symptom occurring in particular locations? Yes Signal reflections from buildings or a particular location may be responsible. No Carry out pinpoint test A "Poor Satellite Reception"
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PINPOINT TEST H : MAP DISPLAY IS INCOMPLETE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
H1: SYSTEM CHECK FOR DTCS	
	1 Check the system for DTCS which may be logged. Are any system DTCS logged? Yes Carry out repair actions to correct the DTCS logged. Re-check the system for 'Map display is incomplete'. No GO to H2.
H2: CHECK MAP DISC	
	1 Check map disc for contamination, deformation, cracks, scratches or non-genuine disc and correct market. Has a fault been identified with the map disc? Yes Replace the map disc. Re-check the system for 'Map display is incomplete'. No Check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index.

PINPOINT TEST I : NO NAVIGATION VOICE GUIDANCE

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
I1: CHECK ALL AUDIO OUTPUT SYSTEMS	
	1 Check audio output across all systems. Is there sound output across all systems? Yes GO to I2. No GO to I3.
I2: CHECK VOICE GUIDANCE SOFT KEY	
	1 Check navigation screen menu, voice guidance soft key is not set to OFF position. Is the voice guidance soft key set to OFF position? Yes Set the voice guidance soft key to ON position. Re-check the system No GO to I3.
I3: VOLUME LEVEL CHECK	
	1 Check the volume level is not set too low. Is the volume level set too low? Yes Increase the volume level and re-test vehicle. No Refer to electrical circuit diagrams and check integrity of amplifier and speaker system wiring harness and connectors. GO to I4.
I4: NAVIGATION VOICE ONLY NOT AUDIBLE	
• NOTE: Only the navigation voice cannot be heard.	
	1 Press the 'Navigation voice repeat' soft key. After the navigation voice repeat soft key is pressed, can voice still not be heard even though it has become louder? Yes Check and install a new Navigation Control Module (NCM) as required. Refer to the new module/component installation note at top of DTC Index. No Operation is normal.

PINPOINT TEST J : NO RESPONSE TO PRESSING NAVIGATION MENU

TEST CONDITIONS	DETAILS/RESULTS/ACTIONS
J1: NO RESPONSE TO PRESSING NAVIGATION MENU	
• NOTE: 15 minutes are required for the program to update. If the engine is accidentally turned OFF, start the engine again, and wait for 15 minutes.	
	1 Check that the engine was not turned 'OFF' during a navigation software update. Was the engine turned 'OFF' during a navigation software update? Yes Check the correct map disc is inserted into the Navigation Control Module (NCM). Start the engine and allow to idle for 15 minutesTurn the engine 'OFF', and then start the engine again.Verify that the navigation screen displays. Navigation was in the program update mode. No GO to J3.

J2: NO RESPONSE TO PRESSING NAVIGATION MENU	
	1 Check that the engine was not turned 'OFF' after inserting the new map disc.
	Was the engine turned 'OFF' after inserting the new map disc? Yes Check the correct map disc is inserted into the Navigation Control Module (NCM). Start the engine and allow to idle for 15 minutes. Turn the engine 'OFF', and then start the engine again. No GO to J3.
J3: NO RESPONSE TO PRESSING NAVIGATION MENU	
	1 Check the "Loading" button on the navigation diagnostics screen (PIN code 660) has been pressed, and "YES" has been selected.
	Has the "Loading" button on the navigation diagnostics screen been pressed, and has "YES" been selected? Yes Check the correct map disc is inserted into the Navigation Control Module (NCM). Start the engine and allow to idle for 15 minutes. Turn the engine 'OFF', and then start the engine again. No Refer to electrical circuit diagrams and check integrity of navigation system wiring harness and connectors. GO to J4.
J4: SYSTEM CHECK FOR DTCS	
	1 Check the system for DTCS which may be logged.
	Is DTC U300055 logged? Yes Using the manufacturer approved diagnostic system check/amend the Car Configuration File parameter in block 2, byte 127 to match vehicle market/specification. If the DTC remains check navigation system module part number and ensure the correct component is installed to vehicle market/specification. No GO to J5.
J5: NO RESPONSE TO PRESSING NAVIGATION MENU	
	1 Turn the engine 'OFF', wait for a moment, and then turn the engine 'ON' again.
	Does the navigation screen fail to display even if the navigation button is pressed? Yes Check the HLDF is installed correctly. Check the Navigation Control Module (NCM) is installed correctly. No Operation is normal.