SECTION : 415-00 Entertainment System

VEHICLE APPLICATION : 2008.0 Falcon

CONTENTS

DIAGNOSIS AND TESTING

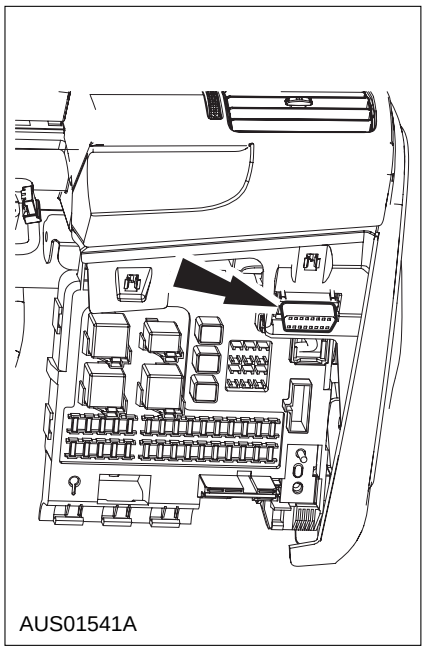
DIAGNOSIS AND TESTING

Audio System

1. Principles of Operation

The following diagnostics are available by connecting the IDS/PDS tester to the diagnostic link connector located on the right hand side of the fuse box.

NOTE: Diagnostics within the ACM module will not work unless the vehicle is mobilised and the ACM is not in Security Code Lockout state.



AUS01541A

The IDS/PDS tester will support the following modes:

- On Demand Self Test (for all purpose)
- Audio Speaker Walk around Test (Carry out by no sound)
- Antenna Connected Test (Carry out by Radio reception is poor or none.)
- Audio Network Communication Test (5 minute audio security bypass)
- Diagnostic trouble codes (DTC's)
- Parameter identifiers (PID's)
- CAN Message
- Service Procedures (Using the Data Logger
- Module configuration

Module Configuration

Module configuration is carried out by using the IDS/PDS tester.

Module Programming

The ACM has the following programming options:

- Application Software – Base (ACM Single CD) / Prestige (ACM CD6) / Premium (ACM CD6))
- ECU Calibration Software – Base (ACM Single CD / Prestige (ACM CD6) / Premium (ACM CD6))

Module Programming is carried out by using the IDS/PDS tester.

On Demand Self Tests

Diagnostics within the ACM module will not work unless the vehicle is mobilised and the ACM is not in Security Code Lockout state. If you encounter an ACM in Security Code Lockout state, follow the steps in "Security Code Error (Test N)" to unlock the ACM.

The following tests are carried out within 3 seconds, during the On Demand Self Test.

- Vehicle Operations Configuration Check
- ECU Internal Check
- Subwoofer Control Line Check
- Subwoofer Audio signal / Line level Speaker Short Circuit Check
- Telephone input detect Check
- Speaker line short circuit Check
- Audio Steering Wheel Button Stuck Check
- Phone Transceiver Active Line Check
- AUX1 Detect Line Check
- Audio Steering Wheel Button Check

How to do an On Demand Self Test

Step	Test	Action
1	* Connect IDS/PDS tester * ECU TEST ENTRY Requirements Key in Run or ACC. Battery within Normal Operating Voltage (Usually 11-16 Volts) No SWC buttons shall be pressed. Phone Mute should not be activated. Navi Mute should not be activated. AUX1 should not be activated. Turn radio on BPM sound input + 0x2E3 BPM_AudioControl : BPM_ Mute Request signal ON * Carry out self test	—
2	* On Demand Self test	—
3	* Is DTC logged?	* Refer to DTC chart

Self Test will detect the follow DTC's

B1117 Audio Steering Wheel Button Stuck

B2274 Phone Transceiver Active Circuit Failure

B2385 Navigation Mix / Mute Circuit Failure

B108A AUX1 detect Circuit Failure

B2404 Audio Steering Wheel Switch Circuit Fault

B2406 Audio Disc CD Player Internal Fault

B2477 Module Configuration Failure

B2925 Subwoofer Audio signal / Line level Speaker Short Circuit

B2965 Audio System Speaker Circuit Fault (Refer to PID 8150 (Fault PID))

U2014 Audio Subwoofer Unit is Not Responding

B2C98 Telephone input is not detect (Note that this DTC indicates missing tone from BPM module and is intended as an in-plant DTC only, please ignored during service).

Audio Speaker Walk around Test

The following tests are carried out within 10 seconds, during the Audio Speaker Walk around Test.

* Cycle sound to speakers in following sequence LF, RF, RR, LR, Subwoofer [if applicable] for 1.5 seconds each.

How to do an Audio Speaker Walk around Test

Step	Test	Action
1	* Connect IDS/PDS tester * ECU TEST ENTRY Requirements Key in Run or ACC. Battery within Normal Operating Voltage (Usually 11-16 Volts) * Carry out Speaker walk around test	* Operation initiates Speaker walk around test using IDS
2	* Audio Speaker Walk around Test	* Operator Listening * Cycle sound to speakers in following sequence (LF, RF, RR, LR, Subwoofer [if applicable]) for 1.5 seconds each

Antenna Connected Test

The following tests are carried out within 5 seconds, during the Antenna Connected Test.

* Antenna Connected Test

How to do an Antenna Connected Test

Step	Test	Action
1	* Connect IDS/PDS tester * ECU TEST ENTRY Requirements Key in Run or ACC. Battery within Normal Operating Voltage (Usually 11-16 Volts) * Carry out Antenna Connected test	* Tune Radio to a strong FM station for Sedan and AM or FM for Ute.
2	* Is test successful?	Check antenna connections.

Function Tests

Function test	Description
Steering wheel switch test	Tests steering wheel switches and wiring and identifies faulty circuit
ICC switch test	Tests audio switch functionality and identifies faulty switch or function
Input status test	
Subwoofer	Is Subwoofer connected
Auxiliary1/2	Is Auxiliary1 input connected
Navigation	Is Navigation signal present
Rear Sonar	Is ParkRearActive/ParkRearDuration/ParkRearImagePosn CAN signal set
Front Sonar	Is ParkFrontActive/ParkFrontDuration/ParkFrontImagePosn CAN signal set
Phone	Is Phone mute input enabled
BPM	Is BPM_MuteRequest Can signal enabled
Ring Tone	Is BPM_MixRequest Can signal enabled
Multi / Single CD test	Checks for presence of CD's in mechanism

DTC Chart

DTC	Description	Possible Causes	Action
B1342	ECU is Faulted - Flash ROM checksum failure - EEPROM Checksum Failure	ECU failure	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **replace ACM**. Test the system for correct operation.
B1117	Audio Steering Wheel Button Stuck	Steering Wheel Control is stuck	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **replace Steering Wheel Control**.
B1318	Battery Voltage Low	Low voltage	Document and clear the DTC's. Run vehicle for 2 mins. Read CM DTC's. If the DTC is registered again **check / correct battery**.
B2274	Phone Transceiver Active Circuit Failure	Phone Transceiver Active circuit failure - short to ground.	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **check / correct Phone Transceiver Active circuit**.
B2385	Navigation Mix / Mute Circuit Failure	Navigation Mix / Mute circuit failure - short to ground.	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **check / correct Navigation Mix / Mute circuit**.
B108B	AUX2 detect Circuit Failure	AUX2 detect circuit failure - short to ground.	Document and clear the DTC's. Carry out the self test. If the DTC is registered again Perform ACM PMI leaving ignition off when entering the PMI procedure (No Communications PMI).
B108A	AUX1 detect Circuit Failure	AUX1 detect circuit failure - short to ground.	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **check / correct AUX1 detect circuit**.
B2404	Audio Steering Wheel Switch Circuit Fault	Steering Wheel Control voltage is not within range.	Document and clear the DTC's. Read CM DTC's If the DTC is registered again **refer to symptom chart 12**.
B2406	Audio Disc CD Player Internal Fault	Mechanism not readable	Document and clear the DTC's. Remove all CD's then reload 6 CD's and play each momentarily. Read CM DTC's. If the DTC is registered again **refer symptom chart 7**
B2477	Module Configuration Failure	Configuration failure - ECU has not been configured - Configured to an inappropriate setting.	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **check / correct Module Configuration (Presets data)**.
B2925	Subwoofer Audio signal / Line level Speaker Short Circuit	Short circuit was detected.	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **refer to symptom chart 11**.
B2965	Audio System Speaker Circuit Fault	Audio System Speaker circuit fault - Open - Short to Ground - Short to Battery	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **refer to symptom chart 10**.
U2050	No Application Present	No application programmed	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **replace ACM**. Test the system for correct operation.

DTC	Description	Possible Causes	Action
U2051	One or More Calibration Files Missing / Corrupt	Module not calibrated	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **replace ACM**. Test the system for correct operation.
U2014	Audio Subwoofer Unit is Not Responding	Subwoofer is disconnected	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **refer to symptom chart 11**.
B2C98	Telephone input is not detect	Telephone input is not detect - Open - short to ground - short to battery	Document and clear the DTC's. Carry out the self test. If the DTC is registered again **refer to symptom chart 3**.
U0140	Lost Communication With Body Control Module (BEM)	Lost Communication with BEM.	Document and clear the DTC's. Run vehicle for 10 seconds. If the DTC is registered again refer to Body Control Module (BEM) section 419-10.
U0155	Lost Communication with Instrument Panel Cluster (IC) Control Panel (IC_MS)	Lost Communication with IC	Document and clear the DTC's. Run vehicle for 10 seconds. If the DTC is registered again refer to Instrument Panel Cluster (IC) Control Panel (IC_MS) section 413-01.
U0159	Lost Communication with Parking Assist Control Module (PAM)	Lost Communication with PAM.	Document and clear the DTC's. Run vehicle for 10 seconds. If the DTC is registered again refer to Parking Assist Control Module (PAM) section 413-13.
U0197	Lost Communication with Blue tooth Phone Module (BPM)	Lost Communication with BPM	Document and clear the DTC's. Run vehicle for 10 seconds. If the DTC is registered again refer to Blue tooth Phone Module (BPM) section 419-09.
U0256	Lost Communication with Front Display Module (FDM)	Lost Communication with FDM	Document and clear the DTC's. Run vehicle for 10 seconds. If the DTC is registered again refer to Front Display Module (FDM) section 413-08.
U0300	Internal Control Module Software Incompatibility	No match between hardware and software.	Document and clear the DTC's. Read CM DTC's. If the DTC is registered again **replace ACM**. Test the system for correct operation.

PID Chart

Command	Description
CCNT_ACM	Number of Continuous Trouble Codes Set
SELTESTDTC_ACM	Number of Trouble Codes Set due to Diagnostic Test
VBAT_ACM	Battery Module Voltage
ANT_SIG	Antenna Signal Strength
AUD_SECID	Audio Security Identification
MPHONE_SIG_STRGTH	Microphone Signal Strength (Bluetooth Phone)
ACM_STAT	ECU Operating State
CANDSACM	CAN Diagnostic Specification Version
CONPROACM	Configuration and Programming Version
SEC_STAT	Security Status
NAV_PRES	Navigation Input Present Signal
PHONE_TA	PTA input state
CELLPHONE	Blue tooth phone
SUB_AMP	Subwoofer Amplifier
AUX1	Audio Source1
RUN_POS	Run position
ACC_POS	ACC Position
RF_OPN	Right Front Speaker Circuit Open
RF_SHORT	Right Front Speaker Circuit Shorted
RF_SHORTB	Right Front Speaker Circuit Short to Battery
RF_SHORTG	Right Front Speaker Circuit Short to Ground
LF_OPN	Left Front Speaker Circuit Open
LF_SHORT	Left Front Speaker Circuit Shorted
LF_SHORTB	Left Front Speaker Circuit Short to Battery
LF_SHORTG	Left Front Speaker Circuit Short to Ground
RR_OPN	Right Rear Speaker Circuit Open
RR_SHORT	Right Rear Speaker Circuit Shorted
RR_SHORTB	Right Rear Speaker Circuit Short to Battery
RR_SHORTG	Right Rear Speaker Circuit Short to Ground
LR_OPN	Left Rear Speaker Circuit Open
LR_SHORT	Left Rear Speaker Circuit Shorted
LR_SHORTB	Left Rear Speaker Circuit Short to Battery
LR_SHORTG	Left Rear Speaker Circuit Short to Ground
VOL_UP	Volume + Switch
VOL_DN	Volume – Switch
PHONE_SW	Phone Switch
SEEK_UP	Seek + Switch
MODE_SW	Mode Switch
REAR_TONE	PAM to ACM request for sonar system active, refer PAM PIDs.

CAN message Chart

Command	Description
PRE1_SW	Preset 1 Switch - Refer FDM Datalogger
PRE2_SW	Preset 2 Switch - Refer FDM Datalogger
PRE3_SW	Preset 3 Switch - Refer FDM Datalogger
PRE4_SW	Preset 4 Switch - Refer FDM Datalogger
PRE5_SW	Preset 5 Switch - Refer FDM Datalogger
PRE6_SW	Preset 6 Switch - Refer FDM Datalogger
EJECT_SW	Eject Switch - Refer FDM Datalogger
LOAD_SW	Load Switch - Refer FDM Datalogger
AUD_VOL	ICC Control Dial - Refer FDM Datalogger
SCNAS_SW	Scan/AS Switch - Refer FDM Datalogger
CDAUX_SW	CD/AUX Switch - Refer FDM Datalogger
FMAM_SW	FM/AM Switch - Refer FDM Datalogger
HOME_SW	HOME Switch - Refer FDM Datalogger
OK_SW	OK Switch - Refer FDM Datalogger
MENU_SW	Menu Switch - Refer FDM Datalogger
POWER_SW	Audio ON/OFF Switch - Refer FDM Datalogger
SEEK_DN	Seek Down Switch - Refer FDM Datalogger
SEEK_UP	Seek Up Switch - Refer FDM Datalogger

2. Troubleshooting

2-1 Carry out an On Demand Self Test

2-2 Follow the Symptom Chart

Symptom Chart

No.	Condition	Possible Sources	Action
1	Audio button not working. *Internal fault	*Low system voltage	*Service Procedure: Audio Button not working. (Test A)
2	Navigation not working.	*Internal fault *Remote control fault *Navi module fault *Wiring fault	*Service Procedure: Navigation not working. (Test J)
3	Telephone input not working	*Internal fault *Wiring fault *Telephone fault	*Service Procedure: Telephone input not working. (Test K)
4	Auxiliary input not working	*Input fault *Wiring fault *Source fault	*Service Procedure: Auxiliary input not working. (Test L)
5	Sonar not operating	*Internal fault *Wiring fault *ICC not correctly configured *Sonar module fault	*Service Procedure: Sonar not operating. (Test M)
6	ICC does not turn on	*Internal fault *Wiring fault *Speaker fault	*Service Procedure: ICC does not operate. (Test E)
7	Unable to load/eject CDs	*Internal fault *Faulty CDs	*Service Procedure: Single CD player mechanical fault (Single CD: Test B) (Multi CD: Test C)
8	CD does not play	*Internal fault *Faulty CD	*Service Procedure: CD focus error (Test D)
9	Poor or no radio reception	*Internal fault *Wiring fault * Antenna fault	*Service Procedure: Poor radio reception (Test H)
10	One or more speakers not operating	*Internal fault *Speaker fault *Wiring fault	*Service Procedure: Speaker fault (Test G)
11	Subwoofer not working	*Internal fault *Wiring fault *Amplifier fault *Speaker fault	*Service Procedure: Subwoofer fault (Test F)
12	Steering Wheel audio switch not operating	*Internal fault *Wiring fault *Switch fault	*Service Procedure: Audio steering wheel switch not functioning (Test I)
13	Security Code Error	*Untrained ACM *Internal fault *PCM fault *CAN BUS fault *Cluster fault	*Service Procedure: Security Code Error (Test N)

Service Procedures

Service Procedure	Description
Audio button not working (Test A)	Tests the ICC audio switches for correct operation and identifies a fault.
Single CD player mechanical fault (Test B)	Tests the loading, ejection and operation of the single CD player and identifies a fault.
Multi CD player mechanical fault (Test C)	Tests the loading, ejection and operation of the multi CD player and identifies a fault.
CD focus error (Test D)	Tests single and multi CD players for correct operation and identifies a fault.
ICC does not operate (Test E)	Identifies a fault when the ICC does not operate.
Subwoofer fault (Test F)	Tests the subwoofer system for correct operation and identifies a fault.
Speaker fault (Test G)	Tests the speaker system for correct operation and identifies a fault.
Poor radio reception (Test H)	Tests for poor radio reception and identifies a fault.
Audio steering wheel switch not functioning (Test I)	Tests the audio steering wheel switches for correct operation and identifies a fault.
Navigation not working (Test J)	Tests for connection of the navigation system to the ICC Identifies faults.
Telephone input not working (Test K)	Checks the telephone input function and identifies a fault.
Auxiliary input not working (Test L)	Tests the auxiliary input function and identifies a fault.
Sonar not operating (Test M)	Tests for operation of the sonar function in a vehicle with sonar fitted and identifies a fault.
Security code Error (Test N)	Checks the ACM function and identifies a fault.

TEST A : AUDIO BUTTON NOT WORKING

Using the IDS/PDS data logger function, activate the following PIDs.

RUN_POS, ACC_POS, POWER_SW, EJECT_SW, LOAD_SW, AUD_VOL, SCNAS_SW, CDAUX_SW, FMAM_SW, HOME_SW, OK_SW, MENU_SW, SEEK_DN, SEEK_UP, PRE1_SW, PRE2_SW, PRE3_SW, PRE4_SW, PRE5_SW, PRE6_SW

Test Step		Result/Action to Take	Acronyms
A1	* Turn the ignition on. * Check pid's using data logger. *** Is the ignition on?**	**Yes** Go to A2 **No** Repair faulty ignition system and retest.	RUN_POS
A2	* Check that the accessories are on. * Check pid's using data logger *** Are the accessories on?**	**Yes** Go to A3 **No** Repair faulty ignition system and retest	ACC_POS
A3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to A5 **No** Go to A4	
A4	* Press the ICC audio power button. * Check CAN Message, using data logger. *** Does the ICC audio turn on?**	**Yes** Go to A5 **No** Go to test E ("ICC does not operate")	POWER_SW
A5	* Operate each audio switch / knob. *** Are any switches / knobs sticking, stuck or failing to operate?**	**Yes** Refer to FDM repair Manual (413-08) **No** Go to A6	POWER_SW, EJECT_SW, LOAD_SW, AUD_VOL, SCNAS_SW, CDAUX_SW, FMAM_SW, HOME_SW, OK_SW, MENU_SW, SEEK_DN, SEEK_UP, PRE1_SW, PRE2_SW, PRE3_SW, PRE4_SW, PRE5_SW, PRE6_SW
A6	* Check each function for each switch / knob. *** Do all functions operate?**	**Yes** No fault. ICC functioning correctly. **No** **Replace ICC and retest**.	As per acronym list step A6.

TEST B : SINGLE CD PLAYER MECHANICAL FAULT

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, CD_SWT, EJECT_SW.

Test Step		Result/Action to Take	Acronyms
B1	* Turn the ignition on. * Check pid's, using data logger. *** Is the ignition on?**	**Yes** Go to B2 **No** Repair faulty ignition system and retest.	RUN_POS
B2	* Check that the accessories are on. * Check pid's, using data logger. *** Are the accessories on?**	**Yes** Go to B3 **No** Repair faulty ignition system and retest.	ACC_POS
B3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to B5 **No** Go to B4	
B4	* Push the ICC audio power button. * Check using FDIM data logger. *** Does the ICC audio turn on?**	**Yes** Go to B5 **No** Go to test E ("ICC does not operate")	POWER_SW
B5	* Push the CD button. * Check using FDIM data logger. *** Does the CD button operate?**	**Yes** Go to B6 **No** Go to test A	CD_SWT
B6	* Check that the ICC displays "No Disc" when the CD button is pressed. *** Does the ICC display "No Disc"**	**Yes** Go to B9 **No** Go to B7	
B7	* Press the ICC eject button. * Check using FDIM data logger. *** Does the CD eject button operate?**	**Yes** Go to B8 **No** Go to test A	EJECT_SW
B8	* Check to see if the CD ejected when the eject button was pressed. *** Did the CD eject?**	**Yes** Go to B9 **No** Replace ICC and retest.	
B9	* Insert a known good original genuine CD. * Ensure that the CD is inserted with the label facing up. *** Is the CD inserted?**	**Yes** Go to B10 **No** Replace ICC and retest.	
B10	* Check that the CD plays correctly. *** Does the CD play correctly?**	**Yes** Go to B11 **No** Go to test D (CD focus error)	

Test Step		Result/Action to Take	Acronyms
B11	* Press the ICC eject button. * Check using FDIM data logger. * Does the CD eject button operate?	**Yes** Go to B12 **No** Go to B7	EJECT_SW
B12	* Check to see if the CD ejected when the eject button was pressed. * Did the CD eject?	**Yes** No fault. ICC functioning correctly. **No** Replace ICC and retest.	

TEST C : MULTI CD PLAYER MECHANICAL FAULT

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, CD_SWT, EJECT_SW, LOAD_SWT.

Test Step		Result/Action to Take	Acronyms
C1	* Turn the ignition on. * Check pid's using data logger. *** Is the ignition on?**	**Yes** Go to C2 **No** Repair faulty ignition system and retest.	RUN_POS
C2	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to C3 **No** Repair faulty ignition system and retest.	ACC_POS
C3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to C5 **No** Go to C4	
C4	* Push the ICC audio power button. * Check using FDIM data logger. *** Does the ICC audio turn on?**	**Yes** Go to C5 **No** Go to test E) "ICC does not operate."	POWER_SW
C5	* Push the CD button. * Check using FDIM data logger. *** Does the CD button operate?**	**Yes** Go to C6 **No** Go to test A.	CD_SWT
C6	* Check that the ICC displays "NO DISC" when the CD button is pressed. *** Does the ICC display "NO DISC"**	**Yes** Go to C9 **No** Go to C7	
C7	* Press the ICC eject button. * Check using FDIM data logger. *** Does the CD eject button operate?**	**Yes** Go to C8 **No** Go to test A.	EJECT_SW

Test Step		Result/Action to Take	Acronyms
C8	* Eject all CD's from the ICC. *** Did all CDs eject?**	**Yes** Go to C9 **No** Replace ICC and retest.	
C9	* Press the ICC load button. * Check using FDIM data logger. *** Does the CD load button operate?**	**Yes** Go to C10 **No** Go to test A).	LOAD_SW,
C10	* Load 6 known good original genuine CDs. * Ensure that the CDs are inserted with the label facing up. *** Did all CD's load?** (check FDM display)	**Yes** Go to C11 **No** Replace the ICC and retest.	
C11	* Check that all CDs play correctly. *** Do all the CD's play correctly?**	**Yes** Go to C12 **No** Go to test D ("CD focus error")	
C12	* Press the ICC eject button. * Check using FDIM data logger. *** Does the CD eject button operate?**	**Yes** Go to C13 **No** Replace the ACM and retest.	EJECT_SW
C13	* Eject all CD's from the ICC. *** Did all CD's eject?** (check FDM display)	**Yes** No fault. ICC functioning correctly. **No** Replace ICC and retest.	

TEST D : CD FOCUS ERROR

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, LOAD_SW.

Test Step		Result/Action to Take	Acronyms
D1	* Turn the ignition on. * Check pid's using data logger. *** Is the ignition on?**	**Yes** Go to D2 **No** Repair faulty ignition system and retest.	RUN_POS
D2	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to D3 **No** Repair faulty ignition system and retest.	ACC_POS
D3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to D5 **No** Go to D4	
D4	* Push the ICC audio power button. * Check using FDIM data logger. *** Does the ICC audio turn on?**	**Yes** Go to D5 **No** Go to test E ("ICC does not operate")	POWER_SW
D5	* Press the ICC load button. * Check using FDIM data logger. *** Does the CD load button operate?**	**Yes** Go to D6 **No** Go to test A.	LOAD_SW
D6	* Insert a known good original genuine CD. * Ensure that the CD is inserted with the label facing up. *** Is the CD inserted? (check FDM display)**	**Yes** Go to D7 **No** Replace the ICC & retest.	
D7	* Check that the CD plays correctly. *** Does the CD play correctly?**	**Yes** ICC functioning correctly. Check the problem-causing CD. **No** Replace the ICC & retest.	

TEST E : ICC DOES NOT OPERATE

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW

Test Step		Result/Action to Take	Acronyms
E1	* Turn the ignition on. * Check pid's using data logger. *** Is the ignition on?**	**Yes** Go to E2 **No** Repair faulty ignition system and retest.	RUN_POS
E2	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to E3 **No** Repair faulty ignition system and retest.	ACC_POS
E3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to E5 **No** Go to E4	
E4	* Push the ICC audio power button. * Check using FDIM data logger. *** Does the ICC audio turn on?**	**Yes** No fault. ICC functioning correctly. **No** Continue.	POWER_SW
E5	* Check to see if the ICC fuse is blown. *** Is the fuse blown?**	**Yes** Go to E6 **No** Go to E8	
E6	* Replace the blown ICC fuse with a new fuse of correct value. *** Does the fuse blow again?**	**Yes** Go to E7 **No** Retest ICC.	
E7	* Remove the ICC. * Replace the blown ICC fuse with a new fuse of correct value. *** Does the fuse blow again?**	**Yes** Repair/replace wiring as per wiring procedure Install the ICC and replace blown fuse. Retest ICC. **No** ICC is faulty. Replace with a new ICC and retest.	
E8	* Check that the battery voltage is greater than 10.5 Volts with the ignition on. *** Is the battery voltage greater than 10.5 Volts?**	**Yes** Go to E9 **No** Rectify vehicles power supply and retest.	
E9	* Remove the ICC. * Inspect both halves of the ICC self-aligning connector. *** Is the self-aligning connector damaged?**	**Yes** Go to E10 **No** Go to E12	

Test Step		Result/Action to Take	Acronyms
E10	* Inspect both halves of the ICC self-aligning connector. *** Are both halves of the connector damaged?**	**Yes** Replace the ICC. Replace the instrument panel self- aligning connector. **No** Continue.	
E11	* Inspect the self- aligning connector on the Instrument panel. *** Is this half of the connector faulty?**	**Yes** Replace the instrument panel self- aligning connector. Re-fit ICC and retest. **No** Replace ICC and retest.	
E12	* Check for a ICC supply voltage of 10.5 * Volts minimum at the ICC instrument panel self-aligning connector. * Refer to vehicle wiring diagram.	**Yes** Replace ICC and retest. **No** Repair wiring to the ICC instrument panel connector and retest.	

TEST F : SUBWOOFER FAULT

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW

Test Step		Result/Action to Take	Acronyms
F1	* Turn the ignition on. * Check pid's using data logger. *** Is the ignition on?**	**Yes** Go to F2 **No** Repair faulty ignition system and retest.	RUN_POS
F2	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to F3 **No** Repair faulty ignition system and retest.	ACC_POS
F3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to F5 **No** Go to F4	
F4	* Push the ICC audio power button. * Check using FDIM datalogger. *** Does the ICC audio turn on?**	**Yes** Go to F5 **No** Go to test E ("ICC does not operate")	POWER_SW
F5	* Tune to a known radio station. * Increase BASS Audio setting to Max *** Is the subwoofer speaker working correctly?**	**Yes** No Fault. **No** Go to F6.	
F6	* Check the subwoofer amplifier fuse. *** Is the fuse OK?**	**Yes** Go to F8. **No** Go to F7.	
F7	* Remove the faulty fuse and replace with a new fuse of correct value. *** Does the fuse blow again?**	**Yes** Go to F8. **No** Retest for correct operation.	
F8	* Check the amplifier power and ground connections. *** Are connections correct?**	**Yes** Go to F9 **No** Repair/replace wiring as required. Replace fuse if blown and retest.	
F9	* Check connections between the sub-woofer amplifier and subwoofer speaker. BTL: Pin3 SP+ out , Pin8 SP- Single end: Pin2 SP- out, Pin3 SP+ out, Pin7 SP+ out, Pin8 SP- out *** Are connections correct?**	**Yes** Go to F10. **No** Repair/replace wiring as required. Replace fuse if blown and retest.	

Test Step		Result/Action to Take	Acronyms
F10	* Check that the wiring connections between the ICC and amplifier. Pin6 Subwoofer Audio - Pin23 Subwoofer Audio + Pin 1 Subwoofer Control Pin 40 Subwoofer Detect *** Are connections correct?**	**Yes** Go to F11. **No** Repair/replace wiring as required Replace fuse if blown and retest.	
F11	* Replace the subwoofer amplifier. Replace the fuse if blown. *** Is the subwoofer speaker working correctly?**	**Yes** Original amplifier is faulty. Retest with a new amplifier. **No** Refit the original amplifier and continue.	
F12	* Replace the subwoofer speaker. * Replace the fuse if blown. *** Is the subwoofer speaker working correctly?**	**Yes** Original subwoofer is faulty. Retest with a new subwoofer. **No** Replace the ICC. Refit the original subwoofer speaker. Replace fuse if blown and retest.	

TEST G : SPEAKER FAULT

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW

Test Step		Result/Action to Take	Acronyms
G1	* Turn the ignition on. * Check pid's using data logger. *** Is the Ignition on?**	**Yes** Go to G2. **No** Repair faulty ignition system and retest.	RUN_POS
G2	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to G3. **No** Repair faulty ignition system and retest.	ACC_POS
G3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to G5. **No** Go to G4.	
G4	* Push the ICC audio power button. * Check using FDIM data logger. *** Does the ICC audio turn on?**	**Yes** Go to G5. **No** Go to test E)"ICC does not operate"	POWER_SW
G5	* Cycle the ICC balance and fade controls. * Inspect the ICC balance and fade displays. *** Do the balance and fade displays operate?**	**Yes** Go to G6. **No** Go to test A).	
G6	* Cycle the ICC balance and fade controls. * Check for correct operation of all speakers. *** Do all speakers operate correctly?**	**Yes** No fault. **No** Continue.	
G7	* Check vehicle speaker wiring for short to power or ground. * Check DTC's. *** Is wiring OK?**	**Yes** Go to G8. **No** Repair/replace wiring as required and retest	On Demand Self Test
G8	* Substitute any faulty speakers with a new speaker. *** Do all speakers operate correctly?**	**Yes** Original speaker is faulty. Fit new speaker and retest. **No** Continue.	Audio Speaker Walk around test
G9	* Remove the ICC. * Check for continuity of vehicle speaker wires between the ICC instrument panel connector and any faulty speaker. * Refer to wiring diagram. *** Are connections correct?**	**Yes** Replace ICC and retest. **No** Repair/replace wiring as required	

***Refer to following PID just after On Demand Self Test**

RF_OPN	Right Front Speaker Circuit Open
RF_SHORT	Right Front Speaker Circuit Shorted
RF_SHORTB	Right Front Speaker Circuit Short to Battery
RF_SHORTG	Right Front Speaker Circuit Short to Ground
LF_OPN	Left Front Speaker Circuit Open
LF_SHORT	Left Front Speaker Circuit Shorted
LF_SHORTB	Left Front Speaker Circuit Short to Battery
LF_SHORTG	Left Front Speaker Circuit Short to Ground
RR_OPN	Right Rear Speaker Circuit Open
RR_SHORT	Right Rear Speaker Circuit Shorted
RR_SHORTB	Right Rear Speaker Circuit Short to Battery
RR_SHORTG	Right Rear Speaker Circuit Short to Ground
LR_OPN	Left Rear Speaker Circuit Open
LR_SHORT	Left Rear Speaker Circuit Shorted
LR_SHORTB	Left Rear Speaker Circuit Short to Battery
LR_SHORTG	Left Rear Speaker Circuit Short to Ground

TEST H : POOR RADIO RECEPTION

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, ATNN_RSS

Test Step		Result/Action to Take	Acronyms
H1	* Turn the ignition on. * Check PID's using data logger. *** Is the ignition on?**	**Yes** Go to H2 **No** Repair faulty ignition system and retest.	RUN_POS
H2	* Check that the accessories are on. *** Check pid's using data logger.**	**Yes** Go to H3. **No** Repair faulty ignition system and retest.	ACC_POS
H3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to H5. **No** Go to H4.	
H4	* Push the ICC audio power button. * Check using FDIM datalogger. *** Does the ICC audio turn on?**	**Yes** Go to H5. **No** Go to test E)"ICC does not operate	POWER_SW
H5	* Turn on the heater backlight. (Sedan Vehicles only). * Check for poor AM and FM radio reception. * Check pid's using data logger. *** Is the radio reception poor?** **NOTE: Tinting of the rear window may affect radio reception.**	**Yes** Go to H6. **No** Go to H7	ATNN_RSS
H6	* Check that the rear window FM Antenna and the AM antenna are not damaged. (Sedan Vehicles only). *** Are the antennas OK?**	**Yes** Go to H7 **No** Replace / rectify faulty antenna.	
H7	* Check that the Pole Antenna mast is in the upright position (not folded flat) and screwed on tight. (Utility Vehicles Only).	**Yes** Go to H8 **No** Orient mast correctly and tighten mast to base.	
H8	* Check reception with engine running. * Start the vehicles engine. * Check pid's using data logger. *** Is the radio reception poor?**	**Yes** Go to H9 **No** Correct operation.	RUN_POS, ATNN_RSS

Test Step		Result/Action to Take	Acronyms
H9	* Check / repair the vehicles suppressor and the antenna module ground connection. (<5 ohms between mounting bolt and vehicle body). Sedan vehicles only → Ensure antenna mounting torque 12Nm + / - 1.8Nm Utility vehicles only → Ensure antenna mounting torque 6.2Nm +/- 1.0 Nm * Check PID's using data logger. *** Is the radio reception poor?**	**Yes** Go to H10. **No** Fault rectified. Retest ICC.	ATNN_RSS
H10	* Check that the on glass antenna module / roof antenna has power connected. *** Is there power to the module?**	**Yes** Go to H14. **No** Continue.	
H11	* Check the antenna fuse. *** Is the fuse blown?**	**Yes** Go to H12. **No** Go to H14.	
H12	* Remove the faulty fuse and replace with a new fuse of correct rating. *** Does the fuse blow?**	**Yes** Go to H13. **No** Retest.	
H13	* Check for a short in the antenna module wiring. *** Is the wiring OK?**	**Yes** Replace the antenna module and retest.Ensure that the faulty fuse is replaced. **No** Repair/replace wiring as per wiring procedure. Ensure that the faulty fuse is replaced.	
H14	* Check the antenna module by substituting with another module. * Check pid's using data logger. *** Is the radio reception poor?**	**Yes** Install original antenna module and Go to H15. **No** Original antenna module is faulty. Replace Antenna module & retest.	ATNN_RSS
H15	* Check antenna rear coaxial cable and connection at left hand cowl side. *** Is cable / connection OK.**	**Yes** Go to H16. **No** Rectify faulty cable / connection and retest.	

Test Step		Result/Action to Take	Acronyms
H16	* Remove the ICC to see the antenna connection. * Check that the coaxial cable and connections to the ICC are OK. *** Is cable / connection OK?**	Yes Replace ICC and retest. **No** Rectify faulty cable / connection and retest.	
H17	* Check antenna coaxial cable and connection at antenna module on LHS C Pillar (Sedan Vehicles Only). *** Is cable / connection OK.**	**Yes** Go to H18. **No** Rectify faulty cable / connection and retest.	
H18	* Check antenna coaxial cable and connection at Headliner on front LHS (Ute Vehicles Only). *** Is cable / connection OK.**	**Yes** Repair / Replace faulty antenna. Go to antenna installation & removal section. **No** Rectify faulty cable / connection and retest.	

***Refer to following PID**

ATNN_RSS Antenna Signal Strength

TEST I : AUDIO STEERING WHEEL SWITCH NOT FUNCTIONING

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, VOL_UP, VOL_DN, SEEK_BTN, MODE_SW, PHONE_SW

Test Step		Result/Action to Take	Acronyms
I1	* Turn the ignition on. * Check pid's using data logger. *** Is the ignition on?**	**Yes** Go to I2. **No** Repair faulty ignition system and retest.	RUN_POS
I2	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to I3. **No** Repair faulty ignition system and retest.	ACC_POS
I3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to I5. **No** Go to I4.	
I4	* Push the ICC audio power button. * Check using FDIM datalogger. *** Does the ICC audio turn on?**	**Yes** Go to I5. **No** Go to test E)"ICC does not operate" in the symptom chart.	POWER_SW
I5	* Check that each steering wheel audio switch functions correctly. * Check pid's using data logger. *** Does each switch function correctly?**	**Yes** Correct operation **No** Continue	VOL_UP, VOL_DN , SEEK_BTN, MODE_SW, PHONE_SW
I6	* Check DTC whether Audio Steering Wheel Button is stuck or not. * Check DTC's using data logger. *** DTC B1117 is detected?**	**Yes** Replace steering remote control, clear DTC, wait for more than 2 mins & retest. **No** Continue	B1117
I7	* Check DTC whether Audio Steering Wheel Switch Circuit is faulty or not. * Check DTC's using data logger. *** DTC B2404 is detected?**	**Yes** Replace steering remote control, clear DTC, wait for more than 2 mins & retest. **No** Continue	B2404

Test Step		Result/Action to Take	Acronyms
I8	* Remove steering wheel airbag as per airbag removal procedure. * Disconnect audio steering wheel connection. * Do switch resistance check • Volume- 51.1 Ohm • Volume+ 119.2 Ohm • Seek 210.1 Ohm • Media 334.1 Ohm • PHONE 508.1 Ohm *** Is switch resistance correct**	**Yes** Go to I9 **No** Replace switches	
I9	* Check wiring connection between ICC Instrument panel connector and steering column *** Is wiring OK?**	**Yes** Go to I10 **No** Repair/replace wiring as per wiring procedure	
I10	* Check wiring connection between steering wheel clock spring and audio steering wheel switches. *** Is wiring OK?**	**Yes** Go to I11 **No** Repair/replace wiring as per wiring procedure	
I11	* Remove ICC (refer to section 413-08) and check resistance readings at ICC instrument panel connector. *** Are resistance readings correct?**	**Yes** Replace faulty ICC with a new ICC and retest. **No** Replace original ICC and retest.	

***Refer to following DTC's**

B1117 Audio Steering Wheel Button Stuck

B2404 Audio Steering Wheel Switch Circuit Fault

TEST J : NAVIGATION NOT WORKING

Using the IDS/PDS data logger function, activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, NAV_PRES

Test Step		Result/Action to Take	Acronyms
J1	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to J2 **No** Repair faulty ignition system and retest.	ACC_POS
J2	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to J4 **No** Go to J3	
J3	* Push the ICC audio power button. * Check using FDIM datalogger. *** Does the ICC audio turn on?**	**Yes** Go to K5 **No** Go to test E)"ICC does not operate" in the symptom chart.	POWER_SW
J4	* Turn on the navigation display using the navigation remote control. (Press OK button on remote). * Check using FDIM datalogger. *** Does the navigation display appear?**	**Yes** ICC functioning correctly. **No** Continue	NAV_PRES
J5	* Check that the navigation system / wiring is correct as per navigation procedures. *** Is the system / wiring O.K**	**Yes** Replace ICC and retest. **No** Rectify faulty system / wiring and retest.	
J6	* Press " + " and " – " buttons on remote control. *** Confirm audible voice "Louder" & "Softer" can be heard?**	**YES** ICC is functioning correctly **No** Continue	
J7	At the completion of the steps above, refer to the navigation diagnostics procedure in the Navigation section of the workshop Manual		

TEST K : TELEPHONE INPUT NOT WORKING

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, PHONE_TA

Test Step		Result/Action to Take	Acronyms
K1	* Turn the ignition on. * Check pid's using data logger. *** Is the ignition on?**	**Yes** Go to K2 **No** Repair faulty ignition system and retest.	RUN_POS
K2	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to K3 **No** Repair faulty ignition system and retest.	ACC_POS
K3	* Check to see if the ICC audio is turned on *** Is the audio on?**	**Yes** Go to K5 **No** Go to K4	
K4	* Push the ICC audio power button. * Check using FDIM datalogger. *** Does the ICC audio turn on?**	**Yes** Go to K5 **No** Go to test E)"ICC does not operate" in the symptom chart.	POWER_SW
K5	* Check that the FDM display changes to phone MODE, when a telephone signal is inputted. * Does FDM switch to phone MODE?	**Yes** No fault. ICC functioning correctly. **No** Continue	
K6	* Check that the telephone input system / wiring is correct. *** Is the system / wiring OK?**	**Yes** Go to K7. **No** Rectify Wiring	
K7	* Check PID's, using datalogger.	**Yes** Go to K8. **NO** Replace ICC and retest	PHONE _TA
K8	* Check that the FDM is OK per procedures by referring to FDM repair manual (413-08).		

TEST L : AUXILIARY INPUT NOT WORKING

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, AUX1_STAT

Test Step		Result/Action to Take	Acronyms
L1	* Turn the ignition on. * Check pid's using data logger. *** Is the ignition on?**	**Yes** Go to L2 **No** Repair faulty ignition system and retest.	RUN_POS
L2	* Check that the accessories are on. * Check pid's using data logger. *** Are the accessories on?**	**Yes** Go to L3 **No** Repair faulty ignition system and retest.	ACC_POS
L3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to L5 **No** Go to L4	
L4	* Push the ICC audio power button. * Check using FDIM datalogger. *** Does the ICC audio turn on?**	**Yes** Go to L5 **No** Go to test E)"ICC does not operate" in the symptom chart.	POWER_SW
L5	* Check that the ICC auxiliary input function operates. * Check pid's using data logger. *** Does the auxiliary input function operate?**	**Yes** No fault. ICC functioning correctly. **No** Continue	AUX1_STAT
L6	* Check that ICC can work for other audio resources such as CD or AM/FM Radio? * Check the Audio output from CD or AMFM Radio *** Does the other audio sources output correctly?**	**Yes** Continue **NO** GO to test G Speaker fault.	
L7	* Check that the auxiliary input system / wiring is correct as per procedures. *** Is the system (Audio Sources such as AIM etc) /wiring between Audio Source and ICC OK?**	**Yes** Replace ICC and retest. **No** Repair faulty system /wiring and retest.	

TEST M : SONAR NOT OPERATING

Using the IDS/PDS data logger function activate the following acronyms.

RUN_POS, ACC_POS, POWER_SW, REVRS_INP

Test Step		Result/Action to Take	Acronyms
M1	* Turn the ignition on. * Check pid's, using data logger. *** Is the ignition on?**	**Yes** Go to M2 **No** Repair faulty ignition system and retest	RUN_POS
M2	* Check that the accessories are on. * Check pid's, using data logger. *** Are the accessories on?**	**Yes** Go to M3 **No** Repair faulty ignition system and retest.	ACC_POS
M3	* Check to see if the ICC audio is turned on. *** Is the audio on?**	**Yes** Go to M5 **No** Go to M4	
M4	* Push the ICC audio power button. * Check using FDIM datalogger. *** Does the ICC audio turn on?**	**Yes** Go to M5 **No** Go to test E)"ICC does not operate"	POWER_SW
M5	* Check that the sonar system / wiring is correct as per procedures. *** Is the system / wiring OK?**	**Yes** Continue **No** Repair faulty system / wiring and retest.	
M6	* Check that all speakers mute and a sonar beeping alert sounds when the vehicle is placed in reverse. *** Does the sonar operate correctly?**	**Yes** No fault. ICC functioning correctly. **No** Continue	
M7	With vehicle in park verify that REAR_ TONE is 'Inactive' Shift vehicle to reverse and verify REAR_ TONE is displaying 'ACTIVE' for less than a second and revert to Inactive. *** Did this happen?**	**Yes** Replace ICC and retest. **No** *Check the sonar module by referring to the Sonar Section of the Workshop Manual.	REAR_TONE

TEST N: Security Code Error

Note that a temporary security bypass method exists in order to be able to run diagnostic tests even if the ACM is in security lock mode. If you wish to run ACM diagnostics before diagnosing the cause of the security code error message, follow the below method.

5 minutes audio security bypass mode

When FDM displays “security Code Error”, ACM can run a security bypass mode

Using IDS initiate ACM Security Bypass function.

In this mode all functions including diagnostics are allowed to work in the security state for 5 minutes.

Exit security bypass mode: Turn Ignition OFF or wait for 5 minutes.

Follow the steps in Test N.

Test Step		Result/Action to Take	Acronyms
N1	Enter security Bypass on ACM	Hold FM and seek up buttons for 5 seconds	
N2	Read ACM DTC’s are their any communication error logged with PCM or Cluster (self test will work in security bypass)	**Yes** Go to N3 **No** Go to N4	
N3	Rectify CAN Buss communications error.	Check MS-CAN and MS-CAN wiring. PCM and Cluster operation	
N4	Is Vehicle Mobilised?	**Yes** Go to N5 **No** Mobilise vehicle and go on to N5	
N5	Perform radio enable function using IDS, IS ICC now functioning?	**Yes** If a new ACM or PCM has been fitted to the vehicle. Perform module configuration as required. **No** Go to N6	
N6	PCM may be faulty, follow service procedure for fitting a new PCM to the vehicle and retrain Audio. Did retraining ACM unlock security code error?	**Yes** PCM was faulty. **No** Go to N7	
N7	Is the high speed CAN bus working and operational, follow service procedure for verifying integrity of high speed CAN bus and retrain ACM. Did retraining ACM unlock security code error?	**Yes** High Speed CAN bus was faulty. **No** Go to N8	
N8	Is the cluster’s gateway function from high speed to medium speed bus working properly? Follow service procedure for verifying gateway function within cluster and retrain ACM. Did retraining ACM unlock security code error?	**Yes** Cluster was faulty. **No** Replace ICC and retest.	