## TRANSPONDER - ADJUSTMENT/TEST

*EFFECTIVITY: ALL*

1. General

   A. This section gives the procedures to do the Transponder system functional check and operational test.

   B. The operational test is a fast check of the Transponder system and no test equipment is necessary to do it.

   C. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

| *TASK NUMBER* | *DESCRIPTION* | *EFFECTIVITY* |
|---|---|---|
| 34-52-00-700-801-A ♦ | TRANSPONDER SYSTEM - FUNCTIONAL CHECK | ALL |
| 34-52-00-700-802-A | TRANSPONDER SYSTEM - OPERATIONAL TEST | ALL |

TASK 34-52-00-700-801-A
*EFFECTIVITY: ALL*

2. TRANSPONDER SYSTEM - FUNCTIONAL CHECK

A. General

(1) This task gives the procedures to do the functional check of the Mode-S Transponder system.

(2) This task is applicable to aircraft equipped with one or two transponders. If only one transponder is installed, ignore the steps related to transponder 2.

(3) This procedure has the potential to cause interference with the local air traffic. Notify the local ATC (Air Traffic Controller) that the transponder test is in progress, if applicable.

(4) RF I/O Coax Connector Assy (GSE 476) must be used in the procedure if it is required to avoid possible interferences with local air traffic when simulate aircraft on flight.

(5) Either ATC-601 (GSE 125 or GSE 303) or IFR6000 (GSE 475) Test Sets can be used to simulate interrogation modes and analyze reply puses.

(6) (AIRCRAFT POST-MOD S.B.145-34-0089 or POST-MOD S.B. 145-34-0096) Either TCAS-201 (GSE 190 or GSE 304) or IFR6000 (GSE 475) Test Sets can be used to simulate air traffic.

(7) The S.B.145-34-0089 refers to Mode S Transponder for Elementary Surveillance.

(8) The S.B.145-34-0096 refers to Mode S Transponder for Enhanced Surveillance.

B. References

| *REFERENCE* | *DESIGNATION* |
|---|---|
| AMM SDS 23-31-00/1 | |
| AMM SDS 23-51-00/1 | |
| AMM SDS 23-81-00/1 | |
| AMM SDS 31-51-00/1 | |
| AMM SDS 34-15-00/1 | |
| AMM SDS 34-21-00/1 | |
| AMM SDS 34-22-00/1 | |
| AMM SDS 34-27-00/1 | |
| AMM SDS 34-31-00/1 | |
| AMM SDS 34-43-00/1 | |
| AMM SDS 34-51-00/1 | |
| AMM SDS 34-52-00/1 | |
| AMM SDS 34-61-00/1 | |
| AMM SDS 34-62-00/1 | |
| AMM TASK 20-40-01-860-801-A/200 | ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE |

(Continued)

| *REFERENCE* | *DESIGNATION* |
|---|---|
| AMM TASK 34-13-00-000-801-A/400 | PITOT/STATIC-SYSTEM TEST SET - DISCONNECTION |
| AMM TASK 34-13-00-400-801-A/400 | PITOT/STATIC-SYSTEM TEST SET - CONNECTION |
| AMM TASK 34-31-00-800-801-A/200 | RADIO ALTIMETER - RIGGING |
| S.B.145-34-0089 | - |
| S.B.145-34-0096 | - |

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

| *ITEM* | *DESCRIPTION* | *PURPOSE* | *QTY* |
|---|---|---|---|
| GSE 128 | Kit - Air Data | To connect GSE 129 to the aircraft | |
| GSE 129 | Pitot/static system test set | To simulate altitude | |
| GSE 125 | ATC Transponder Ramp Test Set ATC-601 - 115 V AC | To simulate interrogation modes and analyze reply pulses | |
| GSE 303 | ATC Transponder Ramp Test Set ATC-601 - 220 V AC | To simulate interrogation modes and analyze reply pulses | |
| GSE 190 | TCAS Ramp Test Set TCAS-201 - 115 V AC | To simulate air traffic | |
| GSE 304 | TCAS Ramp Test Set TCAS-201 - 220 V AC | To simulate air traffic | |
| GSE 475 | Transponder/TCAS Ramp Test Set IFR6000 | To simulate interrogation modes, analyze reply pulses and simulate air traffic | |
| GSE 476 | RF I/O Coax Connector Assy | To do direct connection between Test Set and Transponder Computer | |

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

| *QTY* | *FUNCTION* | *PLACE* |
|---|---|---|
| 1 | Does the task | Cockpit |
| 1 | Does the task | Outside the aircraft |

I. Preparation

*SUBTASK 841-002-A*

(1) Energize the aircraft with the External DC power supply ( AMM TASK 20-40-01-860-801-A/200).

(2) Connect the pitot/static-system test set (GSE 129) ( AMM TASK 34-13-00-400-801-A/400).

NOTE: Make sure that the pitot/static-system test set (GSE 129) simulates the local ground altitude, for the test not to interfere with the air traffic.

(3) Make sure that the systems below are serviceable and on:

- Passenger Address & Cabin Interphone System (AMM SDS 23-31-00/1).
- Airborne Audio System (AMM SDS 23-51-00/1).
- Radio Management System (AMM SDS 23-81-00/1).
- Aural Warning System (AMM SDS 31-51-00/1).
- ADC System (AMM SDS 34-15-00/1).
- AHRS System (AMM SDS 34-21-00/1) or IRS (AMM SDS 34-27-00/1).
- EFIS (AMM SDS 34-22-00/1).
- Radio Altimeter System (AMM SDS 34-31-00/1).
- TCAS System (AMM SDS 34-43-00/1).
- DME System (AMM SDS 34-51-00/1).
- Transponder System (AMM SDS 34-52-00/1).
- FMS/GPS Systems (AMM SDS 34-61-00/1 or AMM SDS 34-62-00/1).

(4) Applicable to procedure using ATC-601 Test Set (GSE 125 or GSE 303):

(a) Put the ATC-601 Ramp-Test Antenna on a tripod approximately 4 ft (1.22 m) high from the ground and with a range of 33 ft (10.06 m) from the transponder antennas.

NOTE: The ATC-601 Ramp-Test-Set antenna must be in the line of sight of the ATC antennas.

(b) Connect the coaxial cable of ATC-601 test-set antenna to the ANTENNA connector of ATC-601 Ramp-test set (GSE 125 or GSE 303).

(c) On ATC-601 (GSE 125 or GSE 303), push the POWER key. The display comes on.

(d) On ATC-601 (GSE 125 or GSE 303), push the SELF TEST key then the RUN/STOP key. Make sure that the test set display shows PASSED.

(e) On ATC-601 (GSE 125 or GSE 303), push the SETUP key to enter the SETUP menu as shown in the Setup Menu table.

NOTE: On ATC-601 (GSE 125 or GSE 303), use the SELECT keys for items and SLEW key for values.

Table 501 - SETUP MENU

| SETUP MENU | | |
|---|---|---|
| **UUT ANTENNA:** | **RANGE** | **HEIGHT** |
| TOP = | 35 | 12 |
| BOTTOM = | 33 | 5 |
| SELECTED = BOTTOM | | |
| GAIN_1030 = 9.4 | GAIN_1090 = 9.7 | LOSS = 1.3 |

(5) Applicable to procedure using IFR6000 Test Set (GSE 475):

(a) Mount the directional Antenna on IFR6000 and connect the short RF coaxial cable between antenna connector and the IFR6000 ANT connector.

(b) Put the IFR6000 less than 50 ft (15.24 m) from and in line of sight with Transponder antenna (top or bottom).

(c) On IFR6000 (GSE 475), push the POWER key to power up the test set.

NOTE: Make sure that the IFR6000 battery is charged or it is connected to the power.

(d) Press SETUP Control Key on IFR6000 to display the setup screens. Continue pressing SETUP Control Key to cycle to SETUP-XPDR screen.

NOTE: Use NEXT PARAM and PREV PARAM Soft Keys to select each parameter on SETUP screen. Use DATA Keys (arrows) to slew the data.

(e) Configure the parameters as follows:

1 Select ANTENNA: Set to TOP or BOTTOM depending on which aircraft antenna the IFR6000 is pointing towards.

2 Select RF PORT: Set to ANTENNA.

3 Select ANT RANGE: Set to the horizontal range from IFR6000 antenna to Transponder antenna (SETUP-GENERAL screen determines if this value is entered in meters or feet).

4 Select ANT HEIGHT: Set to the height range from IFR6000 antenna to Transponder antenna (SETUP-GENERAL screen determines if this value is entered in meters or feet).

5 Select ANT CABLE LOSS: Set to cable loss found on cable.

6 Select ANT GAIN (dBi): Set 1.03 GHz and 1.09 GHz antenna gain to figures marked on supplied directional antenna.

7 Select UUT ADDRESS: Set to AUTO.

8 Select DIVERSITY: Set to OFF.

9 Select CHECK CAP: Set to YES.

10 Select PWR LIM: Set to FAR 43.

(6) (AIRCRAFT POST-MOD S.B.145-34-0089 or POST-MOD S.B. 145-34-0096) If using TCAS-201 for air traffic simulation, do as follows:

NOTE: Either TCAS-201 (GSE 190 or GSE 304) or IFR6000 (GSE 475) Test Sets can be used to simulate air traffic.

(a) Put TCAS Ramp Test Set TCAS-201 antenna on a tripod approximately 4 ft (1.22 m) high from the ground and with a range of 4 ft (1.22 m) from TCAS antennas.

NOTE: TCAS Ramp Test Set TCAS-201 antenna must be in the line of sight of the TCAS antennas.

(b) Connect the coaxial cable of TCAS Ramp Test Set TCAS-201 antenna to the ANTENNA connector of TCAS Ramp Test Set TCAS-201 (GSE 190 or GSE 304).

(7) On the overhead panel, set the BATT1 and BATT2 switches to the OFF position.

(8) Make sure that the LG AIR/GND FAIL caution message is shown on the EICAS display.

(9) On the reversionary panels, make sure that the ADC pushbuttons are not pushed (striped bars off).

(10) (Aircraft equipped with two transponders) On the circuit breaker panel, open the XPDR 2 circuit breaker (Location tip: DC BUS 2/NAV/XPDR 2).

(11) (Aircraft equipped with two transponders) On RMU2, the ATC/TCAS window shows dashes.

(12) On RMU1, set the cursor to the ATC/TCAS window.

(13) Set the ATC/TCAS window to XPDR #1.

(14) Push the line select key to put the cursor on the select mode.

(15) Turn the TUNE knob to select "1 ATC ON" (green).

(16) Do the self-test below:

(a) On RMU1, push and hold the TST key.

Result:

1 On RMU1, ATC/TCAS window shows in sequence:

1. TEST.

2. SYS TEST and, at the same time, the "TCAS TEST" aural message is heard.

3. ATC PASS.

4. The TCAS TEST PASS aural message is heard.

(17) (Aircraft equipped with two transponders) On the circuit breaker panel, close the XPDR 2 circuit breaker (Location tip: DC BUS 2/NAV/XPDR 2) and open the XPDR 1 circuit breaker (Location tip: DC BUS 1/NAV/XPDR 1).

On RMU1, the ATC/TCAS window shows dashes.

NOTE: • The TCAS FAIL message will appear if XPDR 1 circuit breaker is opened with the ATC/TCAS window, on the RMU, not set to the TA/RA or TA Only mode.

• If a TCAS FAIL indication appears, on RMU2 select the “2 TA ONLY” to the message goes out from view.

(18) (Aircraft equipped with two transponders) On RMU2, set the cursor to the ATC/TCAS window.

(19) (Aircraft equipped with two transponders) On RMU2, push the 1/2 key to select "2 ATC ON".

(20) (Aircraft equipped with two transponders) Turn the TUNE knob to select "ATC ALT" (green).

(21) (Aircraft equipped with two transponders) Do the self-test below:

(a) On RMU2, push and hold the TST key.

Result:

1 On RMU2, the ATC/TCAS window shows in sequence:

1. TEST.
2. SYS TEST and, at the same time, the "TCAS TEST" aural message is heard.
3. ATC PASS.
4. The TCAS TEST PASS aural message is heard.

(22) (Aircraft equipped with two transponders) On the circuit breaker panel, close the XPDR 1 circuit breaker (Location tip: DC BUS 1/NAV/XPDR 1) and open the XPDR 2 circuit breaker (Location tip: DC BUS 2/NAV/XPDR 2).

On RMU2, the ATC/TCAS window shows dashes.

(23) On the circuit breaker panel, on the cockpit ceiling, open the AIR/GND A, B, C and D circuit breakers to put the aircraft in the flight configuration.

Circuit breaker location tips:

- AIR/GND A: DC BUS 1 / LDG GEAR / AIR/GND A.
- AIR/GND B: ESSENTIAL DC BUS 1 / LDG GEAR / AIR/GND B.
- AIR/GND C: DC BUS 2 / LDG GEAR / AIR/GND C.
- AIR/GND D: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D.

J. Functional Check of the Transponder System with ATC-601 (GSE 125 or GSE 303) (Figure 501) (Figure 502) (Figure 503) (Figure 504) (Figure 505)

*SUBTASK 720-002-A*

NOTE:
- (AIRCRAFT POST-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096) For this test, the software version of ATC-601 (GSE 125 or GSE 303) must be 2.30R and on.
- (AIRCRAFT POST-MOD S.B.145-34-0096) For this test, the software version of ATC-601 (GSE 125 or GSE 303) must be 3.00R and on.
- In the instructions below, consider RMU1 to test Transponder 1 and RMU2 to test Transponder 2, if installed.

(1) On RMU, set the cursor to the ATC/TCAS window.

(2) (Aircraft equipped with two transponders) On RMU, push the 1/2 key to select the correct system under test.

(3) On RMU, turn the TUNE knob to set "ATC ALT" (green).

(4) On the bezels of PFD1 and 2, push the STD pushbuttons to set the baro reference to 29.92 inches of mercury (1013 HPa).

(5) On RMU, use the line select key to put the cursor on the ATC/TCAS window.

(6) Use the dual concentric TUNE knob to insert the necessary ATC ID code.

NOTE: Do not use emergency codes (7500, 7600, 7700, and 7777).

(7) The selected code is shown on RMU.

(8) ATC-601 (GSE 125 or GSE 303) AUTO TEST:

(a) On ATC-601 (GSE 125 or GSE 303), push the AUTO TEST key.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that the display shows "PASSED".

(9) REPLY DELAY TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the REPLY DELAY TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that the reply delay is:

For mode S and ITM, 128.00 µs (± 0.25 µs).

For ATC A and C, 3.00 µs (± 0.50 µs).

2 On RMU, at the right corner of the ATC/TCAS window top, make sure that the reply annunciator is illuminated.

(10) REPLY JITTER TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the REPLY JITTER TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that the reply jitter is:

For mode S, ≤ 0.05 µs.

For ITM A and C, ≤ 0.06 µs.

For ATC A and C, ≤ 0.1 µs.

(11) ATCRBS REPLY TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the ATCRBS REPLY TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

F1-to-F2 pulse spacing is 20.3 µs (± 0.10 µs).

F1 and F2 pulse duration is 0.45 µs (± 0.10 µs).

(12) SLS LEVEL TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the SLS LEVEL TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

The REPLY is received when the SLS pulse is - 9 dB.

The NO REPLY is received when the SLS pulse is 0 dB.

(13) (AIRCRAFT POST-MOD. S.B.145-34-0089 or POST-MOD. S.B. 145-34-0096) FLIGHT ID TEST:

NOTE: Make sure that the Flight ID is configured in the RMU.

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the FLIGHT ID TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS1 (B-Definition Subfield) = 02.

BDS2 (B-Definition Subfield) = 00.

AIS (Comm-A Capability Subfield) = "XXXXXXXXXXXXXX"

FLIGHT ID = shows the aircraft identification

ADDRESS = aircraft address.

(14) ATC ONLY ALL-CALL TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the ATC ONLY ALL-CALL TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that no reply is received from the mode-S transponder. The display shows "PASSED TEST".

(15) MODE S ALL-CALL TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S ALL-CALL TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that the display shows "PASSED" and the aircraft address.

(16) INVALID ADDRESS TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the INVALID ADDRESS TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that no reply is received from the mode-S transponder. The display shows "PASSED TEST".

(17) SPR ON/OFF TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the SPR ON/OFF TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

SPR ON = REPLY

SPR OFF = NO REPLY

(18) MODE S UF0 TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF0 TEST.

(b) On RMU, make sure that the ATC ALT mode (green) is set.

(c) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 0.

VS (Vertical Status) = 0.

RI (Reply Information) = C.

AC (Aircraft altitude) = aircraft altitude as shown on the PFD.

ADDRESS = aircraft address.

(19) MODE S UF4 TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF4 TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 4.

FS (Flight Status) = 0.

DR (Downlink Request) = 00.

UM (Utility Message) = 00.

AC (Aircraft altitude) = aircraft altitude as shown on the PFD.

ADDRESS = aircraft address.

(20) MODE S UF5 TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF5 TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 5.

FS (Flight Status) = 0.

DR (Downlink Request) = 00.

UM (Utility Message) = 00.

ID (Identification code) = XPDR identification code.

ADDRESS = aircraft address.

(21) (AIRCRAFT POST-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096) MODE S UF5 TEST:

NOTE: This step is a continuance of the step before to be performed only if the aircraft is POST-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096.

(a) On the circuit breaker panel, on the cockpit ceiling, close the AIR/GND A, B, C, and D circuit breakers in 10 seconds maximum to put the aircraft in the ground configuration.

Circuit breaker location tips:

- AIR/GND A: DC BUS 1 / LDG GEAR / AIR/GND A.
- AIR/GND B: ESSENTIAL DC BUS 1 / LDG GEAR / AIR/GND B.
- AIR/GND C: DC BUS 2 / LDG GEAR / AIR/GND C.
- AIR/GND D: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D.

(b) Make sure that the LG AIR/GND FAIL caution message is not shown on the EICAS display.

(c) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 5.

FS (Flight Status) = 1.

DR (Downlink Request) = 00.

UM (Utility Message) = 00.

ID (Identification code) = XPDR identification code.

ADDRESS = aircraft address.

(d) On the circuit breaker panel, on the cockpit ceiling, open the AIR/GND A, B, C, and D circuit breakers to put the aircraft in the flight configuration.

(e) On RMU, push the ID key.

(f) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 5.

FS (Flight Status) = 5.

DR (Downlink Request) = 00.

UM (Utility Message) = 00.

ID (Identification code) = XPDR identification code.

ADDRESS = aircraft address.

(22) MODE S UF11 TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF11 TEST.

(b) (AIRCRAFT PRE-MOD S.B.145-34-0096 or AIRCRAFT NOT LISTED ON THIS S.B. EFFECTIVITY) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

NOTE: Refer to the applicable Illustrated Tool and Equipment Manual (ITEM) for information on ATC-601 SB 4 effectivity.

Result:

1 (GSE 125 or GSE 303 PRE-MOD ATC-601 SB 4) Make sure that:

DF (Downlink format) = 11.

CA (Transponder Capability) = range from 0 to 7.

(AIRCRAFT POST-MOD S.B.145-34-0089) CA (Transponder Capability) = range from 2 to 7.

AA (Aircraft address) = aircraft address.

PI (Parity/Interrogator Identity) = 0000XX (where X represents any hexadecimal digit).

2 (GSE 125 or GSE 303 POST-MOD ATC-601 SB 4) Make sure that:

DF (Downlink format) = 11.

CA (Transponder Capability) = range from 0 to 7.

(AIRCRAFT POST-MOD S.B.145-34-0089) CA (Transponder Capability) = range from 2 to 7.

AA (Aircraft address) = aircraft address.

PI (Parity/Interrogator Identity) = 0000XX (where X represents any hexadecimal digit).

II (Interrogator Identify) CODE = PASSED.

SI (Surveillance Identifier) CODE = PASSED.

(c) (AIRCRAFT POST-MOD S.B.145-34-0096) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 11.

CA (Transponder Capability) = range from 2 to 7.

AA (Aircraft address) = aircraft address.

PI (Parity/Interrogator Identity) = 0000XX (where X represents any hexadecimal digit).

II (Interrogator Identify) CODE = PASSED.

SI (Surveillance Identifier) CODE = PASSED.

(23) MODE S UF16 TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF16 TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 16.

VS (Vertical Status) = 0.

SL (Sensitivity Level) = "XX"

RI (Reply Information) = "0" or "2".

MV (Comm-V Message) = "XXXXXXXXXXXXXX"

AC (Aircraft altitude) = aircraft altitude as shown on the PFD.

ADDRESS = aircraft address.

CAUTION: TO PREVENT DAMAGE TO THE EQUIPMENT, DO NOT CONNECT THE TRANSPONDER TO ANTENNA CONNECTOR OF ATC-601.

(24) (Applicable to procedure with GSE 476) Configure the ATC-601 to direct connection, connecting the RF I/O Coaxial Harness (GSE 476) as follows (Figure 505):

NOTE: GSE 476 must be used if it is required to avoid possible interferences with local air traffic, when simulate aircraft on flight.

1. Disconnect the coaxial cable from the ATC-601 Ramp-test set (GSE 125 or GSE 303).

2. In the forward electronic compartment, disconnect the XPDR bottom antenna cable from connector J0745.

3. Connect the Termination Load (AGE 04084) to the XPDR bottom antenna cable.

4. In the forward electronic compartment, disconnect the XPDR top antenna cable from connector J0746.

5. Connect the connector J0001 of RF I/O Coaxial Cable (AGE 04083) to the XPDR top antenna cable.

6. Connect the connector P0001 of RF I/O Coaxial Cable (AGE 04083) to RF I/O connector of ATC-601 Ramp-test set (GSE 125 or GSE 303).

7. On ATC-601 (GSE 125 or GSE 303), push the SETUP key to enter the SETUP menu and set the range of top and bottom antennas to zero (use SELECT key for items and SLEW key for values).

(25) (AIRCRAFT PRE-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096, or AIRCRAFT NOT LISTED ON THESE S.B.'s EFFECTIVITY) Altitude Simulation:

(a) MODE S UF0:

1 On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF0 TEST.

2 On RMU, make sure that the ATC ALT mode (green) is set.

3 On the Pitot Static Test Set (GSE 129), simulate a 3000 ft altitude.

4 On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP, push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

5 Make sure that the parameter AC (Aircraft altitude) indicates the altitude as shown on the PFD.

(b) MODE S UF4 TEST:

1 On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF4 TEST.

2 On the Pitot-Static Test Set (GSE 129), simulate a 10000 ft altitude.

3 On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

4 Make sure that the parameter AC (Aircraft altitude) indicates the altitude as shown on the PFD.

(c) MODE S UF16 TEST:

1 On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF16 TEST

2 On the Pitot-Static Test Set (GSE 129), simulate a 5000 ft altitude.

3 On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

4 Make sure that the parameter AC (Aircraft altitude) indicates the altitude as shown on the PFD.

(26) (AIRCRAFT POST-MOD S.B.145-34-0096 or POST-MOD S.B. 145-34-0096) Altitude Simulation:

(a) On the Pitot Static System Test Set (GSE 129), simulate the altitudes shown in the table below:

Table 502

| ALTITUDE (ft) | | | |
|---|---|---|---|
| 5000 | 10050 | 20075 | 30100 |
| 5025 | 10075 | 20100 | 39000 |
| 5075 | 10100 | 30000 | 39025 |
| 5100 | 20000 | 30025 | 39050 |
| 10000 | 20025 | 30050 | 39075 |
| 10025 | 20050 | 30075 | 39100 |

(b) For each simulated altitude, do the UF0, UF4 and UF16 tests on ATC-601, as described below.

(c) UF0:

1 On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF0 TEST.

2 On RMU, make sure that the ATC ALT mode (green) is set.

3 On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

4 Make sure that the parameter AC (Aircraft Altitude) indicates the altitude as shown on the PFD.

(d) UF4:

1 On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF4 TEST.

2 On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

3 Make sure that the parameter AC (Aircraft Altitude) indicates the altitude as shown on the PFD.

4 When the altitude on the Pitot-Static Test Set (GSE 129) is 39100 ft, push the ADC pushbutton on the pilot reversionary panel for XPDR1 test and on the copilot reversionary panel for XPDR2 test.

- On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.
- The parameter AC (Aircraft Altitude) must be kept at 39100 ft.
- On the reversionary panel, push the ADC pushbutton again.

(e) (AIRCRAFT POST-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096) UF16:

1 On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF16 TEST.

2 On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

3 Make sure that the parameter AC (Aircraft Altitude) indicates the altitude as shown on the PFD.

4 Make sure that the parameter RI is "0" or "2".

5 When 10000 ft altitude is selected on the Pitot-Static System Test Set (GSE 129), proceed as follows:

- On TCAS Ramp Test Set TCAS-201 (GSE 190 or GSE 304), set the SCENERY as follows:
  INTRUDER TYPE = MODE S
  RANGE = 5 NM
  ALT = 10000 FT
  STATUS = XXXX
  TIME = XX:XX:XX
  RATE = + 360 KT
  RATE = 0 FPM.
- Simulate a radio altitude of more than 1,500 ft on radio altimeter system. Refer to AMM TASK 34-31-00-800-801-A/200.
- On RMU, set the cursor to the ATC/TCAS window.
- On RMU, turn the TUNE knob to select "TA/RA" (green).
- On the TCAS Ramp Test Set TCAS-201 (GSE 190 or GSE 304), push the RUN key to start the test.
- On ATC-601 (GSE 125 or GSE 303), make sure that:
  DF (Downlink format) = 16.
  VS (Vertical Status) = 0.
  SL (Sensitivity Level) ≥ 01
  RI (Reply Information) = changes from "0" to "3" or from "2" to "3".
  MV (Comm-V Message) = "XXXXXXXXXXX".
  AC (Aircraft altitude) = aircraft altitude as shown on the PFD.
  ADDRESS = aircraft address.

(f) (AIRCRAFT POST-MOD S.B.145-34-0096) UF16:

1 On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF16 TEST.

2 Simulate a radio altitude of more than 1,500 ft on radio altimeter system. Refer to AMM TASK 34-31-00-800-801-A/200.

3 On RMU, set the cursor to the ATC/TCAS window.

4 On RMU, turn the TUNE knob to select "TA/RA" (green).

5 On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test. Make sure that:

DF (Downlink format) = 16.

VS (Vertical Status) = 0.

SL (Sensitivity Level) ≥ 01

RI (Reply Information) = 2 or 3 .

MV (Comm-V Message) = "XXXXXXXXXXXXXX"

AC (Aircraft altitude) = aircraft altitude as shown on the PFD.

ADDRESS = aircraft address.

(27) (AIRCRAFT POST-MOD S.B.145-34-0096) MODE S UF5 TEST with air traffic simulation:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MODE S UF5 TEST.

(b) On the Pitot-static-system test (GSE 129), simulate a 2000-ft altitude.

(c) On TCAS Ramp Test Set TCAS-201 (GSE 190 or GSE 304), set the SCENERY as follows:

INTRUDER TYPE = MODE S

RANGE = 5 NM

ALT = 2000 FT

STATUS = XXXX

TIME = XX:XX:XX

RATE = + 360 KT

RATE = 0 FPM.

(d) Simulate a radio altitude of 2000 ft in the radio altimeter system. Refer to AMM TASK 34-31-00-800-801-A/200.

(e) On TCAS Ramp Test Set TCAS-201 (GSE 190 or GSE 304), push the RUN/STOP key to start the test.

(f) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 5.

FS (Flight Status) = 0.

DR (Downlink Request) ≥ 02.

UM (Utility Message) = 00.

ID (Identification code) = XPDR identification code.

ADDRESS = aircraft address.

NOTE: The Downlink Request (DR) value will change at the same time as the Aural RA messages are heard in the cockpit.

(g) On the circuit breaker panel, on the cockpit ceiling, close the AIR/GND A, B, C, and D circuit breakers in 10 seconds maximum to put the aircraft in the ground configuration.

Circuit breaker location tips:

- AIR/GND A: DC BUS 1 / LDG GEAR / AIR/GND A.
- AIR/GND B: ESSENTIAL DC BUS 1 / LDG GEAR / AIR/GND B.
- AIR/GND C: DC BUS 2 / LDG GEAR / AIR/GND C.
- AIR/GND D: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D.

(h) Make sure that the LG AIR/GND FAIL caution message is not shown on the EICAS display.

(i) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 5.

FS (Flight Status) = 1.

DR (Downlink Request) ≥ 02.

UM (Utility Message) = 00.

ID (Identification code) = XPDR identification code.

ADDRESS = aircraft address.

NOTE: The Downlink Request (DR) value will change at the same time as the Aural RA messages are heard in the cockpit.

(j) On the circuit breaker panel, on the cockpit ceiling, open the AIR/GND A, B, C, and D circuit breakers to put the aircraft in the flight configuration.

(k) On RMU, push the ID key.

(l) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 5.

FS (Flight Status) = 5.

DR (Downlink Request) ≥ 02.

UM (Utility Message) = 00.

ID (Identification code) = XPDR identification code.

ADDRESS = aircraft address.

NOTE: The Downlink Request (DR) value will change at the same time as the Aural RA messages are heard in the cockpit.

(28) (AIRCRAFT POST-MOD S.B.145-34-0089 or POST-MOD S.B. 145-34-0096) Put the radio altitude system back. Refer to AMM TASK 34-31-00-800-801-A/200.

(29) (AIRCRAFT POST-MOD S.B.145-34-0096) HEADING & SPEED REPORT:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the HEADING & SPEED REPORT.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 6,0

AA (Address Announced) = aircraft address.

MAG HDG = MAG HDG as shown on the MFD.

(c) On the Pitot-static-system test (GSE 129), simulate a 450 Kts speed.

(d) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 6,0

AA (Address Announced) = aircraft address.

IND AIR SPEED = Ind. AIr Speed. (IAS) em Kts as shown on the PFD.

(e) On the Pitot-static-system test (GSE 129), simulate a 0.50 mach speed.

(f) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 6,0

AA (Address Announced) = aircraft address.

MACH = IAS (mach) as shown on the PFD.

(g) On the Pitot-static-system test (GSE 129), simulate a + 3000 ft/min on the adjust rate.

(h) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 6,0

AA (Address Announced) = aircraft address.

BARO ALTE RATE = baro alt rate (VSI) as shown on the PFD.

(30) (AIRCRAFT POST-MOD S.B.145-34-0096) TRACK & TURN REPORT:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the TRACK & TURN REPORT.

(b) (AIRCRAFT WITH AHRS SYSTEM INSTALLED) Make sure that AHRS1 and AHRS2 circuit breakers are closed.

(c) (AIRCRAFT IRS SYSTEM INSTALLED) Make sure that the IRS1 and IRS2 circuit breakers are closed.

(d) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 5,0

Roll Angle = In this field, the ATC show a value DEG.

(e) (AIRCRAFT WITH HONEYWELL FMS INSTALLED) On the FMS Control Display Unit (CDU), push NAV function key (Figure 504).

Result:

1 The NAV INDEX page is shown.

(f) (AIRCRAFT WITH HONEYWELL FMS INSTALLED) On the FMS Control Display Unit (CDU), push the NEXT function key, until the MAINTENANCE line select is shown.

(g) (AIRCRAFT WITH HONEYWELL FMS INSTALLED) On the FMS Control Display Unit (CDU), push the MAINTENANCE line select key.

Result:

1 The MAINTENANCE page is shown.

(h) (AIRCRAFT WITH HONEYWELL FMS INSTALLED) On the FMS Control Display Unit (CDU), push the NEXT function key, until the ACTIVE HDG MODE and SELECTED HDG MODE are shown.

Result:

1 Make sure that the ACTIVE HDG MODE is selected TRUE, if not, adjust the ACTIVE HDG MODE to TRUE (Figure 504).

(i) (AIRCRAFT WITH HONEYWELL FMS INSTALLED) On the FMS Control Display Unit (CDU), push PROG function key.

Result:

1 The PROGRESS page is shown.

NOTE: To the PROGRESS page be shown, make sure that there is an active flight plan loaded in the FMS.

(j) (AIRCRAFT WITH HONEYWELL FMS INSTALLED) On the FMS Control Display Unit (CDU), push the NEXT function key, until the TRACK line select key is shown. (Figure 504).

(k) (AIRCRAFT WITH HONEYWELL FMS INSTALLED) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 5,0

T TRACK ANGLE = TRACK as shown on the FMS Control Display Unit (CDU) in the PROGRESS page, TRACK line select key (Figure 504).

(l) (AIRCRAFT WITH UNIVERSAL SINGLE FMS INSTALLED) On the circuit breaker panel, open the FMS/GPS 1 circuit breakers.

(m) (AIRCRAFT WITH UNIVERSAL DUAL FMS INSTALLED) On the circuit breaker panel, open the FMS/GPS 1 and FMS/GPS 2 circuit breakers.

(n) (AIRCRAFT WITH UNIVERSAL FMS INSTALLED) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 5,0

T TRACK ANGLE = In this field, the ATC shows "N/A"

(o) (AIRCRAFT WITH UNIVERSAL SINGLE FMS INSTALLED) On the circuit breaker panel, close the FMS/GPS 1 circuit breakers.

(p) (AIRCRAFT WITH UNIVERSAL DUAL FMS INSTALLED) On the circuit breaker panel, close the FMS/GPS 1 and FMS/GPS 2 circuit breakers.

(q) (AIRCRAFT WITH UNIVERSAL FMS INSTALLED) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 5,0

T TRACK ANGLE = In this field, the ATC show a value of the T TRACK ANGLE.

(r) (AIRCRAFT WITH HONEYWELL SINGLE FMS INSTALLED) On the circuit breaker panel, open the CMPTR and GPS circuit breakers.

(s) (AIRCRAFT WITH HONEYWELL DUAL FMS INSTALLED) On the circuit breaker panel, open the FMC1, FMC2 and GPS1, GPS2 circuit breakers.

(t) (AIRCRAFT WITH UNIVERSAL SINGLE FMS INSTALLED) On the circuit breaker panel, open the FMS/GPS 1 circuit breakers.

(u) (AIRCRAFT WITH UNIVERSAL DUAL FMS INSTALLED) On the circuit breaker panel, open the FMS/GPS 1 and FMS/GPS 2 circuit breakers.

(v) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 5,0

GND SPEED = In this field, the ATC shows "N/A".

(w) (AIRCRAFT WITH HONEYWELL SINGLE FMS INSTALLED) On the circuit breaker panel, close the CMPTR and GPS circuit breakers.

(x) (AIRCRAFT WITH HONEYWELL DUAL FMS INSTALLED) On the circuit breaker panel, close the FMC1, FMC2 and GPS1, GPS2 circuit breakers.

(y) (AIRCRAFT WITH UNIVERSAL SINGLE FMS INSTALLED) On the circuit breaker panel, close the FMS/GPS 1 circuit breakers.

(z) (AIRCRAFT WITH UNIVERSAL DUAL FMS INSTALLED) On the circuit breaker panel, close the FMS/GPS 1 and FMS/GPS 2 circuit breakers.

(aa) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 5,0

GND SPEED = In this field, the ATC show a value of the GND SPEED.

(31) (AIRCRAFT POST-MOD S.B.145-34-0096) SEL VERT INTENT RPT #1:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the SEL VERT INTENT RPT #1.

(b) On the flight guidance controller (GC-550), with the ASEL knob, select the altitude of 14,000 ft, on the top right corner of the PFD (Figure 503).

Result:

1 On the PFD, the selected altitude is shown.

(c) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

DF (Downlink format) = 20.

BDS (B-Definition Subfield) = 4,0

MCP/FCU SEL ATL = Sel Alt (ASEL) as shown on the PFD.

(32) (Applicable to procedure with GSE 476) On the Pitot-static-system test set (GSE 129), simulate the local ground altitude.

(33) (Applicable to procedure with GSE 476) Disconnect the RF I/O Coax Connector Assy (GSE 476) as follows (Figure 505):

1. On ATC-601 (GSE 125 or GSE 303), push the SETUP key to enter the SETUP menu and set the range of antennas to 35 (top antenna) and 33 (bottom antenna). Use SELECT key for items and SLEW key for values.
2. In the forward electronic compartment, disconnect the Termination Load (AGE 04084) from the XPDR bottom antenna cable.
3. Connect the XPDR bottom antenna cable to connector J0745.
4. In the forward electronic compartment, disconnect the RF I/O Coaxial Cable (AGE 04083) from the XPDR top antenna cable.
5. Connect the XPDR top antenna cable to connector J0746 .
6. Disconnect the RF I/O Coaxial Cable (AGE 04083) from RF I/O connector of ATC-601 Ramp-test set (GSE 125 or GSE 303).
7. Connect the coaxial cable of ATC-601 test-set antenna to the ANTENNA connector of ATC-601 Ramp-test set (GSE 125 or GSE 303).

(34) SQUITTER TEST:

(a) On ATC-601 (GSE 125 or GSE 303) use the SELECT key to set the SQUITTER TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that the squitter period is between 0.8 and 2.4 seconds.

(35) FREQUENCY TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the FREQUENCY TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that the frequency of transponder is 1090 MHz ± 3 MHz.

(36) DIVERSITY TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the DIVERSITY TEST.

NOTE: Make sure that the top ATC antenna is not in the line of sight of the test set antenna. To have ≥ 20 dB dynamic range, the test must be done at a distance of 50 ft (15.24 m) from the UUT Antenna in test. Do the test many times with the test set at different locations until you get valid results.

(b) On ATC-601 (GSE 125 or GSE 303), push the Setup key on the test set and enter the correct range for the top and bottom antennas when you change the location of the test set antenna.

(c) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that the diversity isolation is ≥ 20 dB.

(37) MTL DIFFERENCE TEST:

(a) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the MTL DIFFERENCE TEST.

(b) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that the MODE A MTL - MODE C MTL ≤ 1.0 dB.

(38) PWR TEST:

(a) On ATC-601 (GSE 125 or GSE 303), push the PWR TEST key on the test set.

NOTE: Make sure that the top ATC antenna is not in the line of sight of the test set antenna during the POWER TEST.

(b) On ATC-601 (GSE 125 or GSE 303), use the SELECT key to set the bottom antenna.

(c) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

The power output of transponder (ERP) is between 48.5 dBm to 57.0 dBm.

The Minimum Threshold Level (MTL) sensitivity is - 73 dBm (± 4 dBm).

(d) Use the Antenna Shield to cover the bottom ATC antenna.

(e) Move the ATC-601 Ramp-Test-Set Antenna to put it in the line of sight of the top ATC antenna.

(f) On ATC-601 (GSE 125 or GSE 303), push the Setup key on the test set and enter the correct range for the top antenna and push the SELECT key to set the top antenna.

(g) On ATC-601 (GSE 125 or GSE 303), push the PWR TEST key on the test set.

(h) On ATC-601 (GSE 125 or GSE 303), push the RUN/STOP key to start the test and, after 10 seconds, push the RUN/STOP key again to stop the test.

Result:

1 Make sure that:

The power output of transponder (ERP) is between 48.5 dBm to 57.0 dBm.

The Minimum Threshold Level (MTL) sensitivity is - 73 dBm (± 4 dBm).

(i) Remove the Antenna Shield from the bottom ATC antenna.

(39) (Aircraft equipped with two transponders) On the circuit breaker panel, close the XPDR 2 circuit breaker (Location tip: DC BUS 2/NAV/XPDR 2) and open the XPDR 1 circuit breaker (Location tip: DC BUS 1/NAV/XPDR 1).

On RMU1, the ATC/TCAS window shows dashes.

(40) (Aircraft equipped with two transponders) Repeat the test for Transponder 2.

K. Functional Check of the Transponder System with IFR6000 (GSE 475) (Figure 501) (Figure 502) (Figure 503) (Figure 504) (Figure 506)

*SUBTASK 720-003-A*

NOTE: In the instructions below, consider RMU1 to test Transponder 1 and RMU2 to test Transponder 2, if installed.

(1) On RMU, set the cursor to the ATC/TCAS window.

(2) (Aircraft equipped with two transponders) On RMU, push the 1/2 key to select the correct system under test.

(3) On RMU, turn the TUNE knob to set "ATC ALT" (green).

(4) On the bezels of PFD1 and 2, push the STD pushbuttons to set the baro reference to 29.92 inches of mercury (1013 HPa).

(5) On RMU, use the line select key to put the cursor on the ATC/TCAS window.

(6) Use the dual concentric TUNE knob to insert the necessary ATC ID code.

NOTE: Do not use emergency codes (7500, 7600, 7700, and 7777).

(7) The selected code is shown on RMU.

(8) On IFR6000, press XPDR key to go to XPDR Auto Test Screen.

NOTE: Make sure that the parameter CONFIG is set to GENERIC MODE S.

(9) On IFR6000, press RUN TEST soft key. Wait for the end of all tests.

NOTE: The IFR6000 antenna must be in the line of sight of Transponder antenna.

(10) On IFR6000, press TEST LIST soft key. Make sure that the following tests passed:

NOTE: At this moment, the POWER/FREQ test can be failed.

(a) A/C DECDR/SLS

(b) A/C F1/F2 SPACE/WIDTH

(c) S ALL-CALL

(d) S REPLY TIMING

(e) S REPLY

(f) UF0

(g) UF4

(h) UF5

(i) UF11

(j) UF16

(k) (AIRCRAFT POST-MOD S.B.145-34-0089 or POST-MOD S.B. 145-34-0096) ELEMENTRY SURV1

(l) (AIRCRAFT POST-MOD S.B.145-34-0089 or POST-MOD S.B. 145-34-0096) ELEMENTRY SURV2

(m) (AIRCRAFT POST-MOD S.B.145-34-0096) ENHANCED SURV

(11) A/C DECDR/SLS:

(a) On TEST LIST screen, select A/C DECDR/SLS test and press SELECT TEST soft key.

(b) Verify that the test is passed for all parameters.

(c) Verify the following parameters:

1 A CODE = XPDR identification code

2 C ALT = Altitude as shown on PFD

(d) On IFR6000, press RETURN soft key

(12) A/C F1/F2 SPACE WIDTH:

(a) On TEST LIST screen, select A/C F1/F2 SPACE/WIDTH test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 F1 WIDTH = A, C: 0.45 µs (± 0.10 µs)

2 F2 WIDTH = A, C: 0.45 µs (± 0.10 µs)

3 F1 - F2 = A, C: 20.30 µs (± 0.10 µs)

4 REPLY DELAY = A, C: 3.00 µs (± 0.50 µs)

5 REPLY JITTER = A, C ≤ 0.1 µs

6 ATCRBS ALL-CALL = A, C: PASS

(d) On IFR6000, press RETURN soft key.

(13) S ALL-CALL:

(a) On TEST LIST screen, select S ALL-CALL test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 ITM REPLY DELAY = A,C: 128.00 µs (± 0.25 µs)

2 ITM REPLY JITTER = A, C ≤ 0.06 µs

3 ITM REPLY ADDRESS = A, C: Aircraft address

4 MODE S ALL-CALL = PASS

5 ADDRESS = Aircraft address

(d) On IFR6000, press RETURN soft key.

(14) S REPLY TIMING:

(a) On TEST LIST screen, select S REPLY TIMING test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 REPLY DELAY = 128.00 µs (± 0.25 µs)

2 REPLY JITTER ≤ 0.05 µs

(d) On IFR6000, press RETURN soft key.

(15) S REPLY:

(a) On TEST LIST screen, select S REPLY test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 SQTR DF11 PERIOD = 0.8 to 2.4 s

2 INVALID AA = PASS

(d) On IFR6000, press RETURN soft key.

(16) UF0:

(a) On TEST LIST, select UF0 test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 VS = 0

2 AC = Aircraft altitude as shown on the PFD

3 AA = Aircraft address

(d) On IFR6000, press RETURN soft key.

(17) UF4:

(a) On TEST LIST screen, select UF4 test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 FS = 0

2 AC = Aircraft altitude as shown on the PFD

3 AA = Aircraft address

(d) On IFR6000, press RETURN soft key.

(18) UF5:

(a) On TEST LIST screen, select UF5 test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 FS = 0

2 DR = 0

3 UM = 0

4 ID = XPDR identification code

5 AA = Aircraft address

(d) On IFR6000, press RETURN soft key.

(19) (AIRCRAFT POST-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096) UF5:

NOTE: This step is a continuance of the step before to be performed only if the aircraft is POST-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096.

(a) On TEST LIST screen, select UF5 test and press SELECT TEST soft key.

(b) On the circuit breaker panel, on the cockpit ceiling, close the AIR/GND A, B, C and D circuit breakers in 10 seconds maximum to put the aircraft in the ground configuration.

Circuit breaker location tips:

- AIR/GND A: DC BUS 1 / LDG GEAR / AIR/GND A.
- AIR/GND B: ESSENTIAL DC BUS 1 / LDG GEAR/ AIR/GND B.
- AIR/GND C: DC BUS 2 / LDG GEAR / AIR/GND C.
- AIR/GND D: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D.

(c) Make sure that the LG AIR/GND FAIL caution message is not shown on the EICAS display.

(d) On IFR6000, on XPDR-UF5 screen, press RUN TEST soft key.

(e) Verify that the test passes.

(f) Verify the following parameters:

- FS = 1
- DR = 0
- UM = 0
- ID = XPDR identification code
- AA = Aircraft address

(g) On the circuit breaker panel, on the cockpit ceiling, open the AIR/GND A, B, C and D circuit breakers to put the aircraft in the flight configuration.

(h) On RMU, push the ID key.

(i) On IFR6000, on XPDR-UF5 screen, press RUN TEST soft key.

(j) Verify that the test passes.

(k) Verify the following parameters:

- FS = 5
- DR = 0
- UM = 0
- ID = XPDR identification code
- AA = Aircraft address

(l) On IFR6000, press RETURN soft key.

(20) UF11:

(a) On TEST LIST screen, select UF11 test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 CA = range from 0 to 7.

2 (AIRCRAFT POST-MOD S.B.145-34-0089 or POST-MOD S.B. 145-34-0096) CA = range from 2 to 7.

3 AA = Aircraft address.

(d) On IFR6000, press RETURN soft key.

(21) UF16:

(a) On TEST LIST screen, select UF16 test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 VS = 0

2 RI = 0 or 2

3 AC = Aircraft altitude as shown on PFD

4 AA = Aircraft address

(d) On IFR6000, press RETURN soft key.

(22) (AIRCRAFT POST-MOD S.B.145-34-0089 OR POST-MOD S.B. 145-34-0096) ELEMENT SURV1:

(a) On TEST LIST screen, select ELEMENTRY SURV1 test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) On IFR6000, press RETURN soft key.

(23) (AIRCRAFT POST-MOD S.B.145-34-0089 OR POST-MOD S.B. 145-34-0096) ELEMENT SURV2:

(a) On TEST LIST screen, select ELEMENTRY SURV2 test and press SELECT TEST soft key.

(b) Verify that the test is passed.

(c) Verify the following parameters:

1 FLIGHT ID = Aircraft flight ID

NOTE: To this parameter be correct, the Flight ID must be configured in RMU.

(d) On IFR6000, press RETURN soft key.

CAUTION: TO PREVENT DAMAGE TO THE EQUIPMENT, DO NOT CONNECT THE TRANSPONDER TO ANTENNA CONNECTOR OF IFR6000.

(24) (Applicable to procedure using GSE 476) Configure IFR6000 to direct connection, connecting the RF I/O Coaxial Harness (GSE 476) as follows (Figure 506):

NOTE: GSE 476 must be used if it is required to avoid possible interferences with local air traffic, when simulate aircraft on flight.

(a) On IFR6000, press the POWER key to power off the test set.

(b) Disconnect the coaxial cable from ANT connector of IFR6000.

(c) In the forward electronic compartment, disconnect the XPDR bottom antenna cable from connector J0745.

(d) Connect the Termination Load (AGE 04084) to the XPDR bottom antenna cable.

(e) In the forward electronic compartment, disconnect the XPDR top antenna cable from connector J0746.

(f) Connect the connector J0001 of RF I/O Coaxial Cable (AGE 04083) to the XPDR top antenna cable.

(g) Connect the connector P0001 of RF I/O Coaxial Cable (AGE 04083) to RF I/O connector of IFR6000.

(h) On IFR6000, press the POWER key to power on the test set.

(i) On IFR6000, press SETUP Control Key to display setup screens. Continue pressing SETUP Control Key to cycle to SETUP-XPDR screen.

NOTE: Use NEXT PARAM and PREV PARAM Soft Key to select each parameter on SETUP screen. Use DATA Keys (arrows) to slew the data.

(j) Configure the parameters as follows:

1 Select RF PORT: Set to DIRECT CONNECT.

2 Select DIR CABLE LOSS: Set to 1.5 dB.

(k) On IFR6000, press XPDR key to go to XPDR Auto Test Screen.

(l) On IFR6000, press TEST LIST soft key to go to TEST LIST Screen.

(25) (AIRCRAFT PRE-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096, or AIRCRAFT NOT LISTED ON THESE S.B.'s EFFECTIVITY) Altitude Simulation:

(a) UF0:

1 On the TEST LIST screen, select UF0 test and press SELECT TEST soft key.

2 On RMU, make sure that the ATC ALT mode (green) is set.

3 On the Pitot Static Test Set (GSE 129), simulate a 3000 ft altitude.

4 Press RUN TEST soft key on IFR6000.

5 Verify that the test passes and that the parameter AC is the same altitude showed on the PFD.

6 On IFR6000, press RETURN soft key.

(b) UF4:

1 On the TEST LIST screen, select UF4 test and press SELECT TEST soft key.

2 On the Pitot Static Test Set (GSE 129), simulate a 10000 ft altitude.

3 Press RUN TEST soft key on IFR6000.

4 Verify that the test passes and that the parameter AC is the same altitude showed on the PFD.

5 On IFR6000, press RETURN soft key.

(c) UF16:

1 On the TEST LIST screen, select UF16 test and press SELECT TEST soft key.

2 On the Pitot Static Test Set (GSE 129), simulate a 5000 ft altitude.

3 Press RUN TEST soft key on IFR6000.

4 Verify that the test passes and that the parameter AC is the same altitude showed on the PFD.

5 On IFR6000, press RETURN soft key.

(26) (AIRCRAFT POST-MOD S.B.145-34-0089 or POST-MOD S.B. 145-34-0096) Altitude Simulation:

(a) On the Pitot-Static System Test-Set (GSE 129), simulate the altitudes shown in the table below:

Table 503

| ALTITUDE (ft) | | | |
|---|---|---|---|
| 5000 | 10050 | 20075 | 30100 |
| 5025 | 10075 | 20100 | 39000 |
| 5075 | 10100 | 30000 | 39025 |
| 5100 | 20000 | 30025 | 39050 |
| 10000 | 20025 | 30050 | 39075 |
| 10025 | 20050 | 30075 | 39100 |

(b) For each simulated altitude, do the UF0, UF4 and UF16 tests on IFR6000, as described below.

(c) UF0:

1 On the TEST LIST screen, select UF0 test and press SELECT TEST soft key.

2 On RMU, make sure that the ATC ALT mode (green) is set.

3 Press RUN TEST soft key on IFR6000.

4 Verify that the test passes and that the parameter AC is the same altitude showed on the PFD.

5 On IFR6000, press RETURN soft key.

(d) UF4:

1 On the TEST LIST screen, select UF4 test and press SELECT TEST soft key.

2 Press RUN TEST soft key on IFR6000.

3 Verify that the test passes and that the parameter AC is the same altitude showed on the PFD.

4 When the altitude on the Pitot-Static Test Set is 39100 ft, push the ADC pushbutton on the pilot reversionary panel for XPDR1 test and on the copilot reversionary panel for XPDR2 test.

- Press RUN TEST soft key on IFR6000.
- Verify that the test passes and that the parameter AC is kept at 39100 ft.
- On the reversionary panel, push the ADC pushbutton again.

5 On IFR6000, press RETURN soft key.

(e) UF16:

1 On the TEST LIST screen, select UF16 test and press SELECT TEST soft key.

2 Press RUN TEST soft key on IFR6000.

3 (AIRCRAFT POST-MOD S.B.145-34-0096) Simulate a radio altitude of more than 1,500 ft on radio altimeter system. Refer to AMM TASK 34-31-00-800-801-A/200.

4 (AIRCRAFT POST-MOD S.B.145-34-0096) On RMU, set the cursor to the ATC/TCAS window.

5 (AIRCRAFT POST-MOD S.B.145-34-0096) On RMU, turn the TUNE knob to select "TA/RA" (green).

6 Verify that the test passes and the following parameters:

- SL ≥ 1.

- (AIRCRAFT PRE-MOD S.B.145-34-0096) RI = 0 or 2.
- (AIRCRAFT POST-MOD S.B.145-34-0096) RI = 2 or 3.
- AC = Aircraft altitude as shown on the PFD.

7 On IFR6000, press RETURN soft key.

(27) (AIRCRAFT POST-MOD S.B.145-34-0089 and PRE-MOD S.B. 145-34-0096) UF16 with air traffic simulation:

(a) Simulate a radio altitude of more than 1,500 ft on radio altimeter system. Refer to AMM TASK 34-31-00-800-801-A/200.

(b) On RMU set the cursor to the ATC/TCAS window.

(c) On RMU turn the TUNE knob to select "TA/RA" (green).

(d) On the Pitot-Static System Test-Set (GSE 129), simulate 10000 ft altitude.

(e) To simulate air traffic using another IFR6000, proceed as follows:

NOTE: It is necessary to use two IFR6000 units, one to simulate the traffic and other to get the test results.

1 Mount the directional Antenna on another IFR6000 (GSE 475) and connect the short RF coaxial cable between antenna connector and IFR6000 ANT connector.

2 Press the POWER key to power up the test set.

3 Press SETUP Control Key on IFR6000 to display the setup screens. Continue pressing SETUP Control Key to cycle to SETUP-TCAS screen.

4 Set the parameters:

- RF PORT = ANTENNA
- ANT RANGE = range for TCAS antenna
- ANT HEIGHT = height for TCAS antenna
- UUT ADDRESS = AUTO
- ANT CABLE LOSS = Set to cable loss found on cable
- DISPLAYED ALT = ABSOLUTE

5 On IFR6000, press TCAS Control Key to enter TCAS screen.

6 Set the parameters as follows:

- SCENARIO = CUSTOM
- TCAS TYPE = TCAS II
- INTRUDER TYPE = MODE S
- RANGE START = 5 nm

- STOP = 0.00 nm
- RANGE RATE = 360 kts
- ALT START = 0 ft
- STOP = 0 ft
- ALT RATE = 0 fpm
- CONVERGE = OFF
- ALT DETECT = ON

7 Push the RUN TEST soft key to start the simulation.

NOTE: The IFR6000 antenna must be pointed to one of the aircraft's TCAS antennas.

(f) To simulate air traffic using the TCAS-201, proceed as follows:

1 On TCAS Ramp Test Set TCAS-201 (GSE 190 or GSE 304), set the SCENERY as follows:

- INTRUDER TYPE = MOD S
- RANGE = 5 NM
- ALT = 10000 FT
- STATUS = XXXX
- TIME = XX:XX:XX
- RATE = + 360 KT
- RATE = 0 PFM

2 On TCAS-201 push the RUN key to start the simulation.

NOTE: The TCAS-201 antenna must be pointed to one of the aircraft's TCAS antennas.

(g) On IFR6000 (the one used to run the Transponder tests), on TEST LIST screen, select UF16 test and press SELECT TEST soft key.

(h) On IFR6000, on UF16 test screen, press RUN TEST soft key.

(i) Verify that the test passes and that the parameter AC is the same altitude shown on the PFD.

(j) Make sure that the parameter RI changes to "3".

(k) If another IFR6000 was used to simulate air traffic, dismount and keep the equipment in its case.

(l) On IFR6000, press RETURN soft key.

(28) (AIRCRAFT POST-MOD S.B.145-34-0096) UF5 with air traffic simulation:

(a) Simulate a radio altitude of 2000 ft on radio altimeter system. Refer to AMM TASK 34-31-00-800-801-A/200.

(b) On the Pitot-Static System Test-Set (GSE 129), simulate 2000 ft altitude.

(c) To simulate air traffic using another IFR6000, proceed as follows:

NOTE: It is necessary to use two IFR6000 units, one to simulate the traffic and other to get the test results.

1 Mount the directional Antenna on another IFR6000 (GSE 475) and connect the short RF coaxial cable between antenna connector and IFR6000 ANT connector.

2 Press the POWER key to power up the test set.

3 Press SETUP Control Key on IFR6000 to display the setup screens. Continue pressing SETUP Control Key to cycle to SETUP-TCAS screen.

4 Set the parameters:

- RF PORT = ANTENNA
- ANT RANGE = range for TCAS antenna
- ANT HEIGHT = height for TCAS antenna
- UUT ADDRESS = AUTO
- ANT CABLE LOSS = Set to cable loss found on cable
- DISPLAYED ALT = ABSOLUTE

5 On IFR6000, press TCAS Control Key to enter TCAS screen.

6 Set the parameters as follows:

- SCENARIO = CUSTOM
- TCAS TYPE = TCAS II
- INTRUDER TYPE = MODE S
- RANGE START = 5 nm
- STOP = 0.00 nm
- RANGE RATE = 360 kts
- ALT START = 0 ft
- STOP = 0 ft
- ALT RATE = 0 fpm
- CONVERGE = OFF
- ALT DETECT = ON

7 Push the RUN TEST soft key to start the simulation.

NOTE: The IFR6000 antenna must be pointed to one of the aircraft's TCAS antennas.

(d) To simulate air traffic using the TCAS-201, proceed as follows:

1 On TCAS Ramp Test Set TCAS-201 (GSE 190 or GSE 304), set the SCENERY as follows:

- INTRUDER TYPE = MOD S
- RANGE = 5 NM
- ALT = 2000 FT
- STATUS = XXXX
- TIME = XX:XX:XX
- RATE = + 360 KT
- RATE = 0 PFM

2 On TCAS-201 push the RUN key to start the simulation.

NOTE: The TCAS-201 antenna must be pointed to one of the aircraft's TCAS antennas.

(e) On IFR6000 (the one used to run the Transponder tests), on the TEST LIST screen, select UF5 test and press SELECT TEST soft key.

(f) On IFR6000, on UF5 test screen, press RUN TEST soft key.

(g) Verify that the test passes and the following parameters:

1 FS = 0.

2 DR ≥ 2.

NOTE: The Downlink Request (DR) value will change at the same time as the aural RA message are heard in the cockpit.

(h) On the circuit breaker panel, on the cockpit ceiling, close the AIR/GND A, B, C and D circuit breakers in 10 seconds maximum to put the aircraft in the ground configuration.

Circuit breakers location tips:

- AIR/GND A: DC BUS 1 / LDG GEAR / AIR/GND A.
- AIR/GND B: ESSENTIAL DC BUS 1 / LDG GEAR / AIR/GND B.
- AIR/GND C: DC BUS 2 / LDG GEAR / AIR/GND C.
- AIR/GND D: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D.

(i) Make sure that the LG AIR/GND FAIL caution message is not shown on the EICAS display.

(j) On the IFR6000, on UF5 test screen, press RUN TEST soft key.

(k) Verify that the test passes and the following parameters:

1 FS = 1.

2 DR ≥ 2.

NOTE: The Downlink Request (DR) value will change at the same time as the aural RA message are heard in the cockpit.

(l) On the circuit breaker panel, on the cockpit ceiling, open the AIR/GND A, B, C and D circuit breakers to put the aircraft in the flight configuration.

(m) On RMU, push the ID key.

(n) On the IFR6000, on UF5 test screen, press RUN TEST soft key.

(o) Verify that the test passes and the following parameters:

1 FS = 5.

2 DR ≥ 2.

NOTE: The Downlink Request (DR) value will change at the same time as the aural RA message are heard in the cockpit.

(p) If another IFR6000 was used to simulate air traffic, dismount and keep the equipment in its case.

(q) On IFR6000, press RETURN soft key.

(29) (AIRCRAFT POST-MOD S.B.145-34-0089 or POST-MOD S.B. 145-34-0096) Put the radio altitude system back. Refer to TASK AMM TASK 34-31-00-800-801-A/200.

(30) (AIRCRAFT POST-MOD S.B.145-34-0096) ENHANCED SURV:

(a) On TEST LIST screen, select ENHANCED SURV test and press SELECT TEST soft key.

(b) (AIRCRAFT WITH AHRS SYSTEM INSTALLED) Make sure that AHRS1 and AHRS2 circuit breaker are closed.

(c) (AIRCRAFT WITH IRS SYSTEM INSTALLED) Make sure that IRS1 and IRS2 circuit breaker are closed.

(d) On IFR6000, press RUN TEST soft key.

(e) Verify that the test passes and the following parameter:

1 MAGNETIC HEADING = Magnetic Heading as shown on the MFD.

2 ROLL ANGLE = Roll Angle value, in degrees.

(f) On the Pitot-Static system test (GSE 129), simulate 450 kts speed.

(g) On IFR6000, press RUN TEST soft key.

(h) Verify that the test passes and the following parameter:

1 IND AIR SPEED = Indicated air speed (IAS) in kts as shown on the PFD.

(i) On the Pitot-Static system test (GSE 129), simulate 0.50 mach speed.

(j) On IFR6000, press RUN TEST soft key.

(k) Verify that the test passes and the following parameter:

1 MACH NO = Indicated air speed (IAS) in mach as shown on the PFD.

(l) On the Pitot-Static system test (GSE 129), simulate +3000 ft/min on the adjust rate.

(m) On IFR6000, press RUN TEST soft key.

(n) Verify that the test passes and the following parameter:

1 BARO ALT RATE = Barometric altitude rate (VSI) as shown on the PFD.

(o) (AIRCRAFT WITH HONEYWELL FMS INSTALLED) Proceed as follows:

1 On the FMS Control Display Unit (CDU), push the NAV function key, until the MAINTENANCE line select is shown (Figure 504).

- The NAV INDEX page is shown.

2 On the FMS Contrl Display Unit (CDU), push the NEXT function key, until the MAINTENANCE line select is shown.

3 On the FMS Control Display Unit (CDU), push the MAINTENANCE line select key.

- The MAINTENANCE page is shown.

4 On the FMS Control Display Unit (CDU), push the NEXT function key, until the ACTIVE HDG MODE and SELECT HDG MODE are shown.

- Make sure that the ACTIVE HDG MODE is selected TRUE, if not, adjust the ACTIVE HDG MODE to TRUE (Figure 504).

5 On the FMS Control Display Unit (CDU), push PROG function key.

NOTE: To the PROGRESS page be shown, make sure that there is an active flight plan loaded in the FMS.

- The PROGRESS page is shown.

6 On the FMS Control Display Unit (CDU), push the NEXT function key until the TRACK line select key is shown (Figure 504).

7 On IFR6000, press RUN TEST soft key.

8 Verify that the test passes and the following parameters:

- TRUE TRACK ANGLE = TRACK as shown on the FMS Control Display Unit (CDU) in the PROGRESS page, TRACK line select key (Figure 504).

- GROUND SPEED = Ground Speed value.

9 (Aircraft with single FMS) On the circuit breaker panel, open the CMPTR and GPS circuit breakers.

10 (Aircraft with dual FMS) On the circuit breaker panel, open the FMC1, FMC2, GPS1 and GPS2 circuit breakers.

11 On IFR6000, press RUN TEST soft key.

12 Verify that the test passes and the following parameters:

- TRUE TRACK ANGLE = N/A.
- GROUND SPEED = N/A.

13 (Aircraft with single FMS) On the circuit breaker panel, close the CMPTR and GPS circuit breakers.

14 (Aircraft with dual FMS) On the circuit breaker panel, close the FMC1, FMC2, GPS1 and GPS2 circuit breakers.

(p) (AIRCRAFT WITH UNIVERSAL FMS INSTALLED) Proceed as follows:

1 On the circuit breaker panel, open the FMS/GPS 1 circuit breaker.

2 (Aircraft with dual FMS) On the circuit breaker panel, open the FMS/GPS 2 circuit breaker.

3 On IFR6000, press RUN TEST soft key.

4 Verify that the test passes and the following parameters:

- TRUE TRACK ANGLE = N/A.
- GROUND SPEED = N/A.

5 On the circuit breaker panel, close the FMS/GPS 1 circuit breaker.

6 (Aircraft with dual FMS) On the circuit breaker panel, close the FMS/GPS 2 circuit breaker.

7 On IFR6000, press RUN TEST soft key.

8 Verify that the test passes and the following parameter:

- TRUE TRACK ANGLE = True Track Angle value.
- GROUND SPEED = Ground Speed value.

(q) On the flight guidance controller (GC-550), with the ASEL knob, select the altitude of 14,000 ft on the top right corner of the PFD (Figure 503).

(r) On IFR6000, press RUN TEST soft key.

(s) Verify that the test passes and the following parameter:

1 MCP/FCU SEL ALT = Selected Altitude (ASEL) as shown on the PFD.

(t) On IFR6000, press RETURN soft key.

(31) Simulate the local ground altitude on the Pitot/Static Test Set (GSE 129).

(32) (Applicable to procedure using GSE 476) Configure IFR6000 to antenna connection, disconnecting the RF I/O Coaxial Harness (GSE 476) as follows (Figure 506):

(a) On IFR6000, press the POWER key to power off the test set.

(b) In the forward electronic compartment, disconnect the Termination Load (AGE 04084) from the XPDR bottom antenna cable.

(c) Connect the XPDR bottom antenna cable to connector J0745.

(d) In the forward electronic compartment, disconnect the RF I/O Coaxial Cable (AGE 04083) from the XPDR top antenna cable..

(e) Connect the XPDR top antenna cable to connector J0746.

(f) Disconnect the connector P0001 of RF I/O Coaxial Harness (GSE 476) from IFR6000.

(g) Mount the directional Antenna on IFR6000 and connect the short RF coaxial cable between antenna connector and IFR6000 ANT connector

(h) On IFR6000, press the POWER key to power on the test set.

(i) On IFR6000, press SETUP Control Key to display setup screens. Continue pressing SETUP Control Key to cycle to SETUP-XPDR screen.

NOTE: Use NEXT PARAM and PREV PARAM Soft Key to select each parameter on SETUP screen. Use DATA Keys (arrows) to slew the data.

(j) Configure the parameters as follows:

1 Select ANTENNA: Set to TOP or BOTTOM depending on which aircraft's transponder antenna the IFR6000 is pointing towards.

2 Select RF PORT: Set to ANTENNA.

3 Select DIVERSITY: Set to ON.

(k) On IFR6000, press XPDR key to go to XPDR Auto Test Screen.

(l) On IFR6000, press TEST LIST soft key to go to TEST LIST Screen.

(33) POWER/FREQ and DIVERSITY:

NOTE:
- To get better results, the power test must be carried out with the airplane outside the hangar, or in an open area, with test set antenna located at 50 ft (15.24 m) from airplane.
- Perform this test twice, once selecting TOP antenna on SETUP XPDR Screen and another selecting BOTTOM antenna. To the BOTTOM antenna test, make sure that the TOP antenna is not in the line of sight of

the test set or use the Antenna Shield in the XPDR TOP antenna. To the TOP antenna test, use the Antenna Shield in the XPDR BOTTOM antenna. Refer to IFR6000 Operational Manual for further instructions on Antenna Shield usage.

(a) On the IFR6000, push the Setup key to enter the correct range for the TOP and BOTTOM antennas and select the antenna under test. Make sure that DIVERSITY TEST is set to ON, then return to XPDR - TEST LIST Screen.

(b) On the TEST LIST screen, select POWER/FREQ test and press SELECT TEST soft key

(c) On the IFR6000, press RUN TEST soft key.

(d) Verify that the test passes.

NOTE: The TOP and BOTTOM values are obtained from the average measurement over 40 replies. The PASS/FAIL limits are applied and updated every 40 replies.

(e) On the IFR6000, press RETURN soft key.

(f) On TEST LIST screen, select S REPLY test and press SELECT TEST soft key.

(g) On the IFR6000, press RUN TEST soft key.

(h) Verify that the test passes.

(i) Verify that the DIVERSITY ISOLATION parameter is greater than 20 dB.

(j) On the IFR6000, press RETURN soft key.

(34) (Aircraft equipped with two transponders) On the circuit breaker panel, close the XPDR 2 circuit breaker (Location tip: DC BUS 2/NAV/XPDR 2) and open the XPDR 1 circuit breaker (Location tip: DC BUS 1/NAV/XPDR 1).

On RMU1, the ATC/TCAS window shows dashes.

(35) (Aircraft equipped with two transponders) Repeat the test for Transponder 2.

L. Follow-on

*SUBTASK 842-002-A*

(1) On the circuit breaker panel, close the XPDR 1 (Location tip: DC BUS 1/NAV/XPDR 1) and XPDR 2 (Location tip: DC BUS 2/NAV/XPDR 2) circuit breakers, if applicable.

(2) On the circuit breaker panel, on the cockpit ceiling, close the AIR/GND A, B, C, and D circuit breakers in 10 seconds maximum to put the aircraft in the ground configuration.

Circuit breaker location tips:

- AIR/GND A: DC BUS 1 / LDG GEAR/ AIR/GND A.
- AIR/GND B: ESSENTIAL DC BUS 1 / LDG GEAR/ AIR/GND B.
- AIR/GND C: DC BUS 2 / LDG GEAR / AIR/GND C.

- AIR/GND D: ESSENTIAL DC BUS 2 / LDG GEAR / AIR/GND D.

(3) Make sure that the LG AIR/GND FAIL caution message is not shown on the EICAS display.

(4) Applicable to procedure using ATC-601 Test Set (GSE 125 or GSE 303):

- Remove the ATC-601 Ramp Test (GSE 125 or GSE 303).

(5) Applicable to procedure using IFR6000 Test Set (GSE 475):

- On IFR6000, press POWER key to power down the unit.
- Disconnect the short RF coaxial cable from IFR6000 and its antenna and dismount the directional Antenna from IFR6000.

(6) Disconnect the pitot/static-system test set (GSE 129) (AMM TASK 34-13-00-000-801-A/400).

(7) Applicable to procedure using TCAS-201 for air traffic simulation:

- Remove the TCAS-201 Ramp Test (GSE 190 or GSE 304).

(8) Deenergize the aircraft ( AMM TASK 20-40-01-860-801-A/200).

TASK 34-52-00-700-802-A
*EFFECTIVITY: ALL*

3. TRANSPONDER SYSTEM - OPERATIONAL TEST

A. General

(1) This task gives the procedures to do the operational test of the Mode-S transponder.

B. References

| *REFERENCE* | *DESIGNATION* |
|---|---|
| AMM SDS 23-31-00/1 | |
| AMM SDS 23-51-00/1 | |
| AMM SDS 23-81-00/1 | |
| AMM SDS 31-51-00/1 | |
| AMM SDS 34-15-00/1 | |
| AMM SDS 34-22-00/1 | |
| AMM SDS 34-31-00/1 | |
| AMM SDS 34-51-00/1 | |
| AMM SDS 34-52-00/1 | |
| AMM TASK 20-40-01-860-801-A/200 | ENERGIZATION OF THE AIRCRAFT WITH AN EXTERNAL POWER SOURCE |

C. Zones and Accesses

Not Applicable

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

| *QTY* | *FUNCTION* | *PLACE* |
|---|---|---|
| 1 | Does the task | Cockpit |

I. Preparation

*SUBTASK 841-003-A*

(1) Energize the aircraft with the External DC-power supply ( AMM TASK 20-40-01-860-801-A/200).

(2) Make sure that the Systems below are serviceable and on:

- Passenger Address & Cabin Interphone System (AMM SDS 23-31-00/1).
- Airborne Audio System (AMM SDS 23-51-00/1).
- Radio Management System (AMM SDS 23-81-00/1).
- Aural Warning System (AMM SDS 31-51-00/1).
- ADC System (AMM SDS 34-15-00/1).
- EFIS (AMM SDS 34-22-00/1).
- Radio Altimeter System (AMM SDS 34-31-00/1).
- DME System (AMM SDS 34-51-00/1).
- Transponder System (AMM SDS 34-52-00/1).

(3) (Aircraft with TCAS II) On the circuit breakers panel, on the cockpit ceiling, open the TCAS circuit breaker (Location tip: 115 V AC BUS/TCAS) and attach a DO-NOT-CLOSE tag to it.

(4) (Aircraft with TCAS 2000) On the circuit breakers panel, on the cockpit ceiling, open the TCAS circuit breaker (Location tip: DC BUS 1/NAV/TCAS) and attach a DO-NOT-CLOSE tag to it.

J. Transponder System - Operational Test Procedures (Figure 501) (Figure 502)

*SUBTASK 710-002-A*

(1) On the circuit breakers panel, close the XPDR #1 circuit breaker and open the XPDR #2 circuit breaker.

(2) On RMU1, set the cursor to the ATC/TCAS window.

(3) Set the ATC/TCAS window to XPDR #1.

(4) Push the line select key to put the cursor on the select mode.

(5) Turn the TUNE knob to set "ATC ON" (green).

(6) Do the self-test below:

(a) On RMU1, push and hold the TST key.

Result:

1 On RMU1(2), the ATC/TCAS window shows in sequence:

1. TEST.
2. ATC TEST.
3. ATC PASS.

(b) On the circuit breakers panel, close the XPDR #2 circuit breaker and open the XPDR #1 circuit breaker.

Result:

1 On RMU1(2), the ATC/TCAS window shows dashes.

(7) On RMU2, set the cursor to the ATC/TCAS window.

(8) On RMU2, push the 1/2 key to set the ATC/TCAS window to XPDR #2.

(9) Turn the TUNE knob to set "ATC ALT" (green).

(10) Do the self-test below:

(a) On RMU2, push and hold the TST key.

Result:

1 On RMU2(1), the ATC/TCAS window shows in sequence:

1. TEST.
2. ATC TEST.
3. ATC PASS.

K. Follow-on

*SUBTASK 842-003-A*

(1) Deenergize the aircraft ( AMM TASK 20-40-01-860-801-A/200).

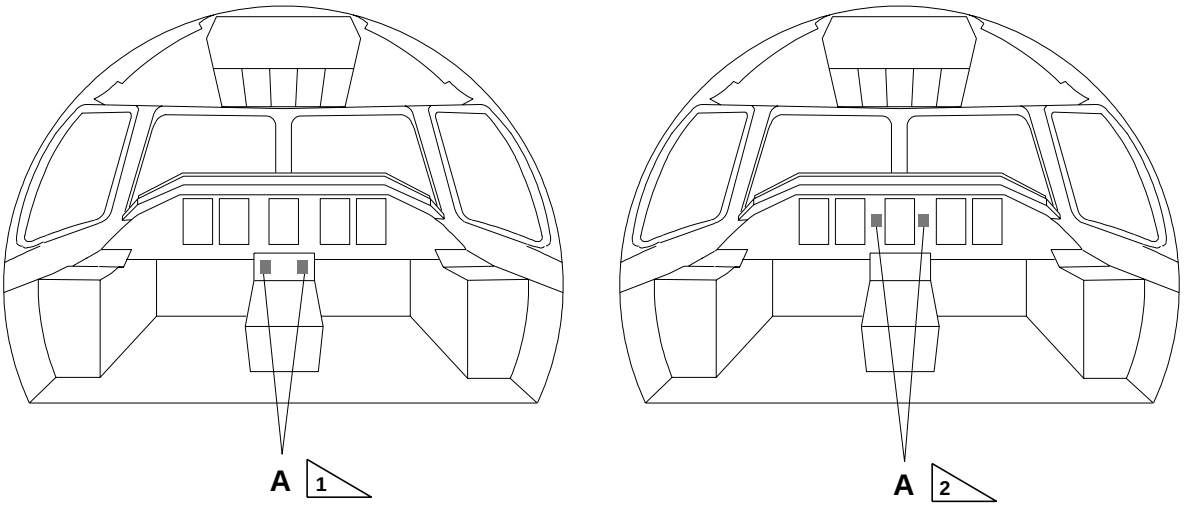
(2) On the circuit breakers panel, close the XPDR #1 (Location tip: DC BUS 1/NAV/XPDR 1) and XPDR #2 (Location tip: DC BUS 2/NAV/XPDR 2) circuit breakers if applicable.

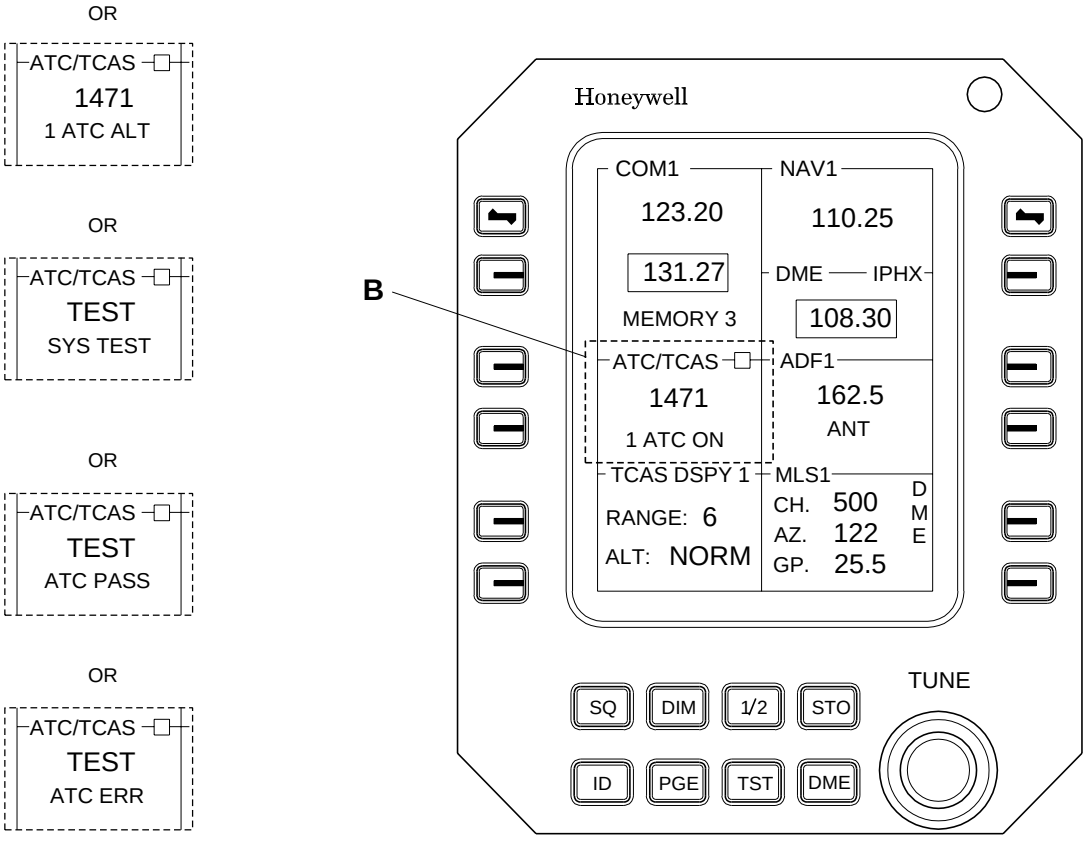
(3) (Aircraft with TCAS II ) On the circuit breakers panel, on the cockpit ceiling, close the TCAS circuit breaker (Location tip: 115 V AC BUS/TCAS) and remove the DO-NOT-CLOSE tag from it.

(4) (Aircraft with TCAS 2000) On the circuit breakers panel, on the cockpit ceiling, close the TCAS circuit breaker (Location tip: DC BUS 1/NAV/TCAS) and remove the DO-NOT-CLOSE tag from it.

*EFFECTIVITY: ALL*

Transponder 1 - RMU Display
Figure 501




**DET. B**

**DET. A**

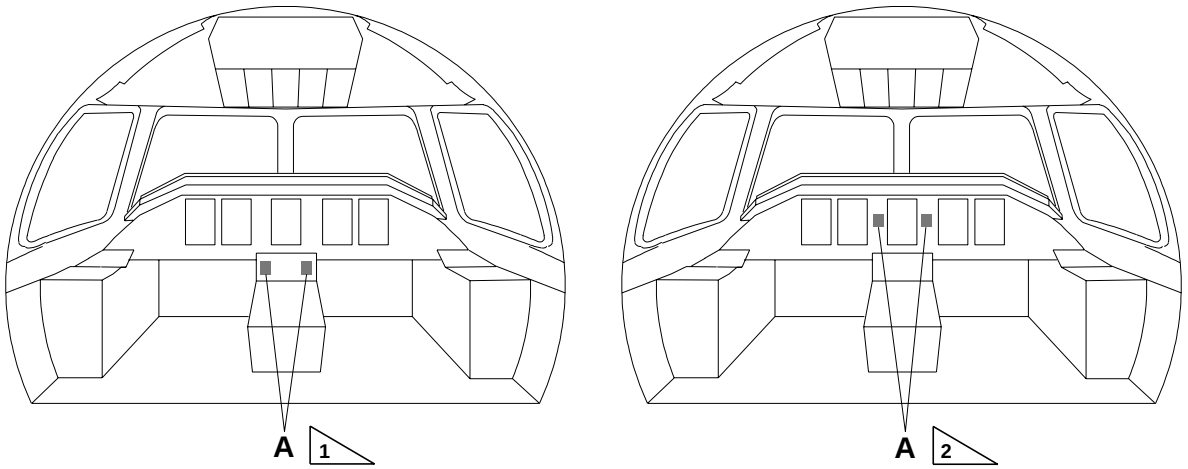
1 AIRCRAFT WITH RMU INSTALLED ON CONTROL PEDESTAL.

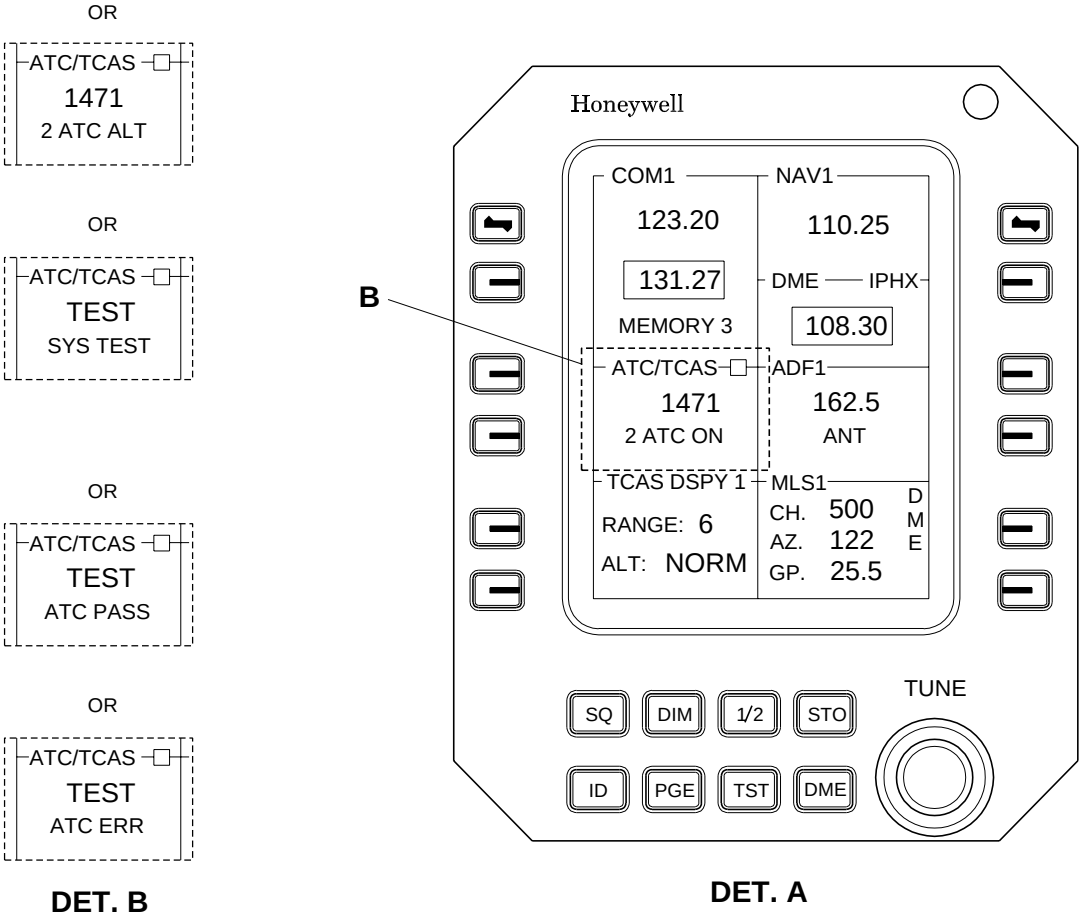
2 AIRCRAFT WITH RMU INSTALLED ON MAIN INSTRUMENT PANEL.

145AMM340010.MCE A

*EFFECTIVITY: ALL*

Transponder 2 - RMU Display
Figure 502



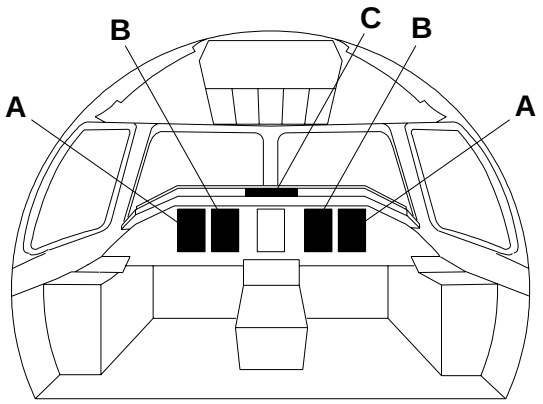




1 AIRCRAFT WITH RMU INSTALLED ON CONTROL PEDESTAL.

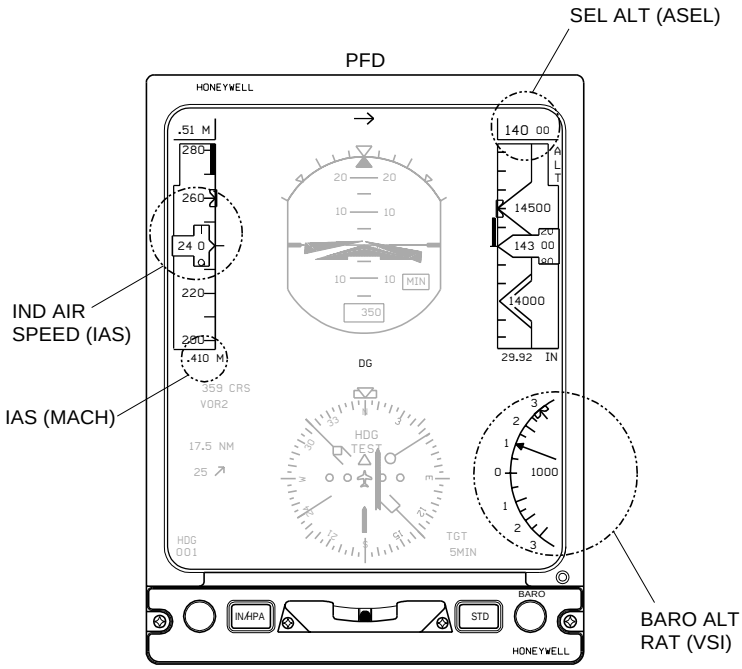
2 AIRCRAFT WITH RMU INSTALLED ON MAIN INSTRUMENT PANEL.

145AMM340011.MCE A

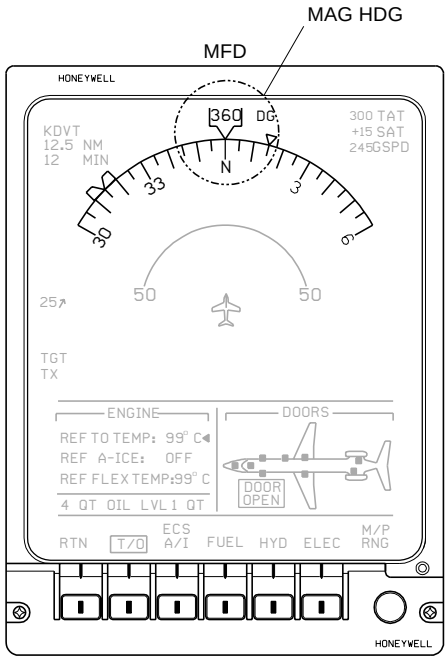
*EFFECTIVITY: POST-MOD S.B. 145-34-0096*
Display Indications
Figure 503



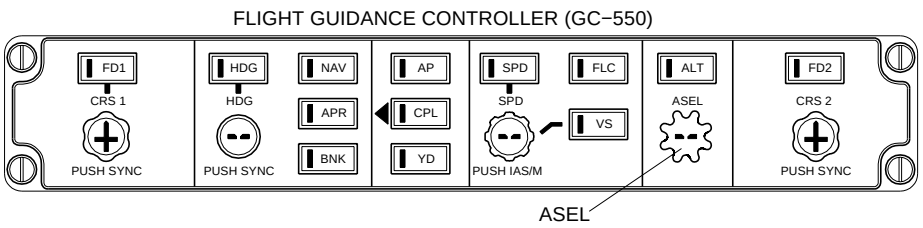

**DET. A**




**DET. A**



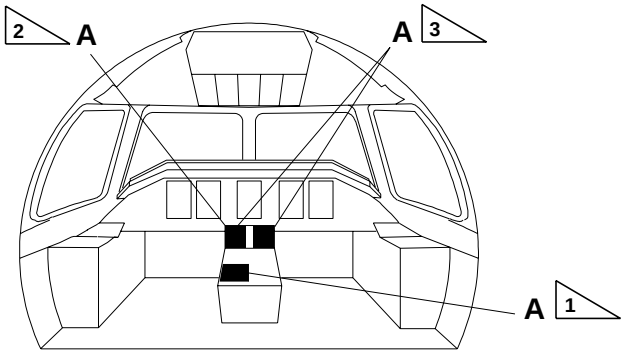

**DET. B**

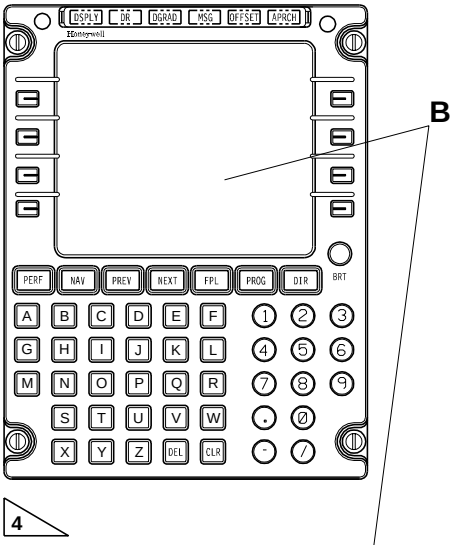


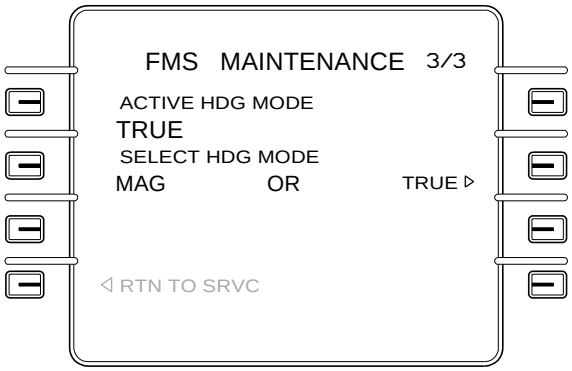

**DET. C**

EM145AMM341034A.DGN

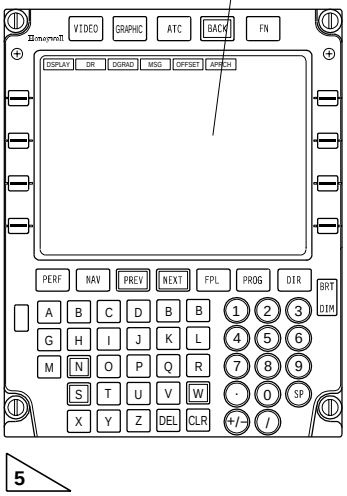
*EFFECTIVITY: POST-MOD S.B. 145-34-0096 AND WITH HONEYWELL FMS INSTALLED*
Honeywell FMS - Indications
Figure 504



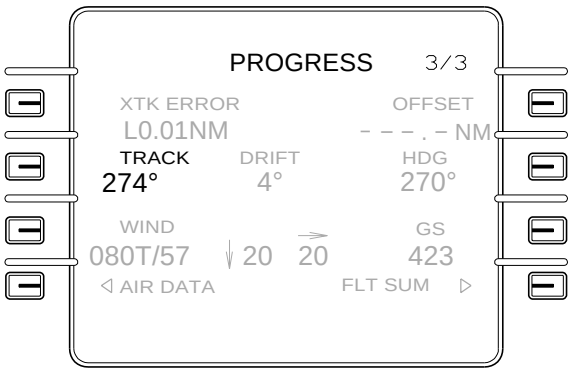




**DET. B**
HDG MODE SELECT




**DET. A**
FMS–CDU




**DET. B**
TRACK READING EXAMPLE

1 AIRCRAFT WITH SINGLE FMS INSTALLED ON CONTROL PEDESTAL AFT PANEL

2 AIRCRAFT WITH SINGLE FMS INSTALLED ON CONTROL PEDESTAL FORWARD PANEL

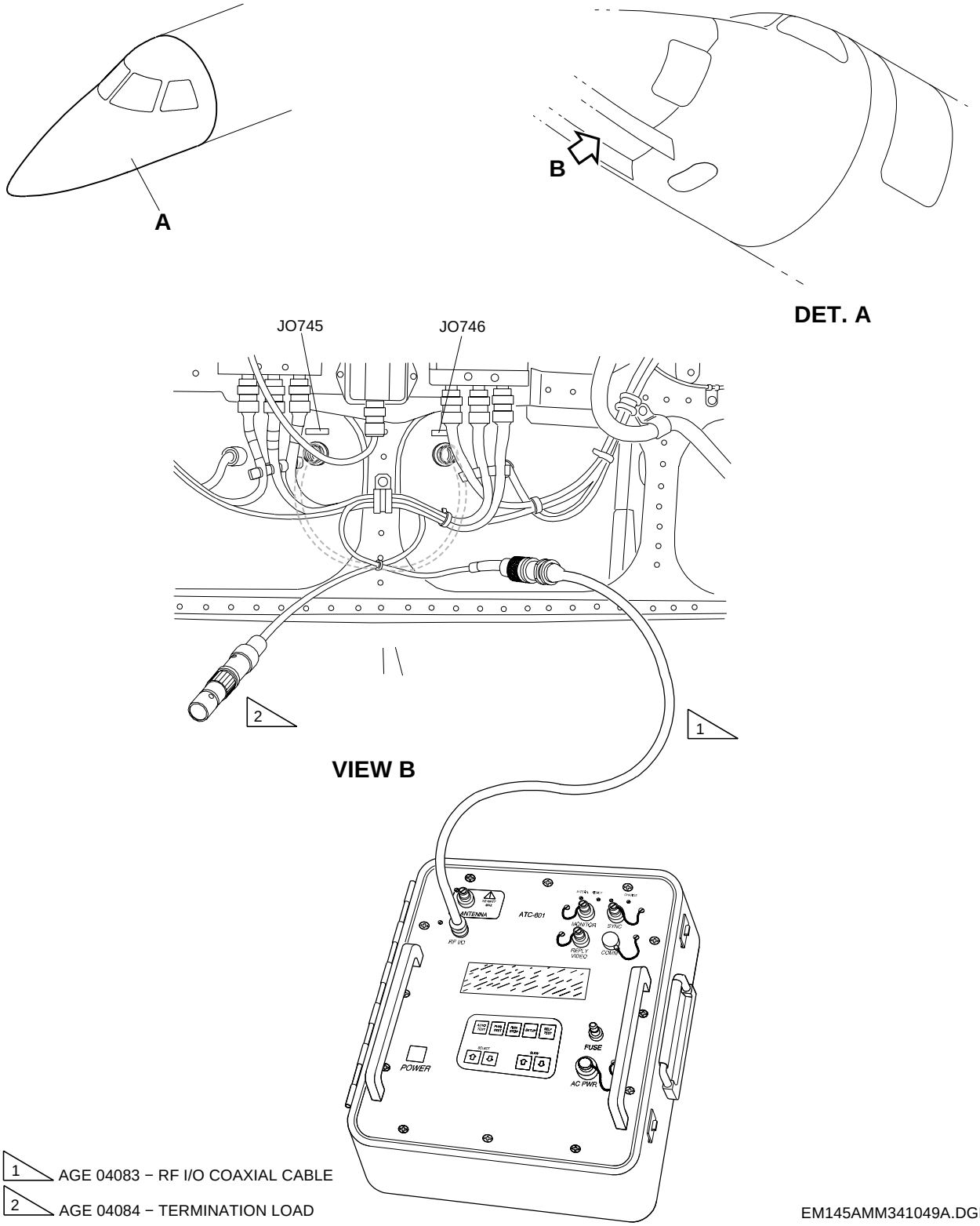
3 AIRCRAFT WITH DUAL FMS

4 AIRCRAFT WITH CD–810 CONTROL DISPLAY UNIT

5 AIRCRAFT WITH CD–820 CONTROL DISPLAY UNIT

EM145AMM341033A.DGN

*EFFECTIVITY: ALL*
ATC-601 Direct Connection
Figure 505

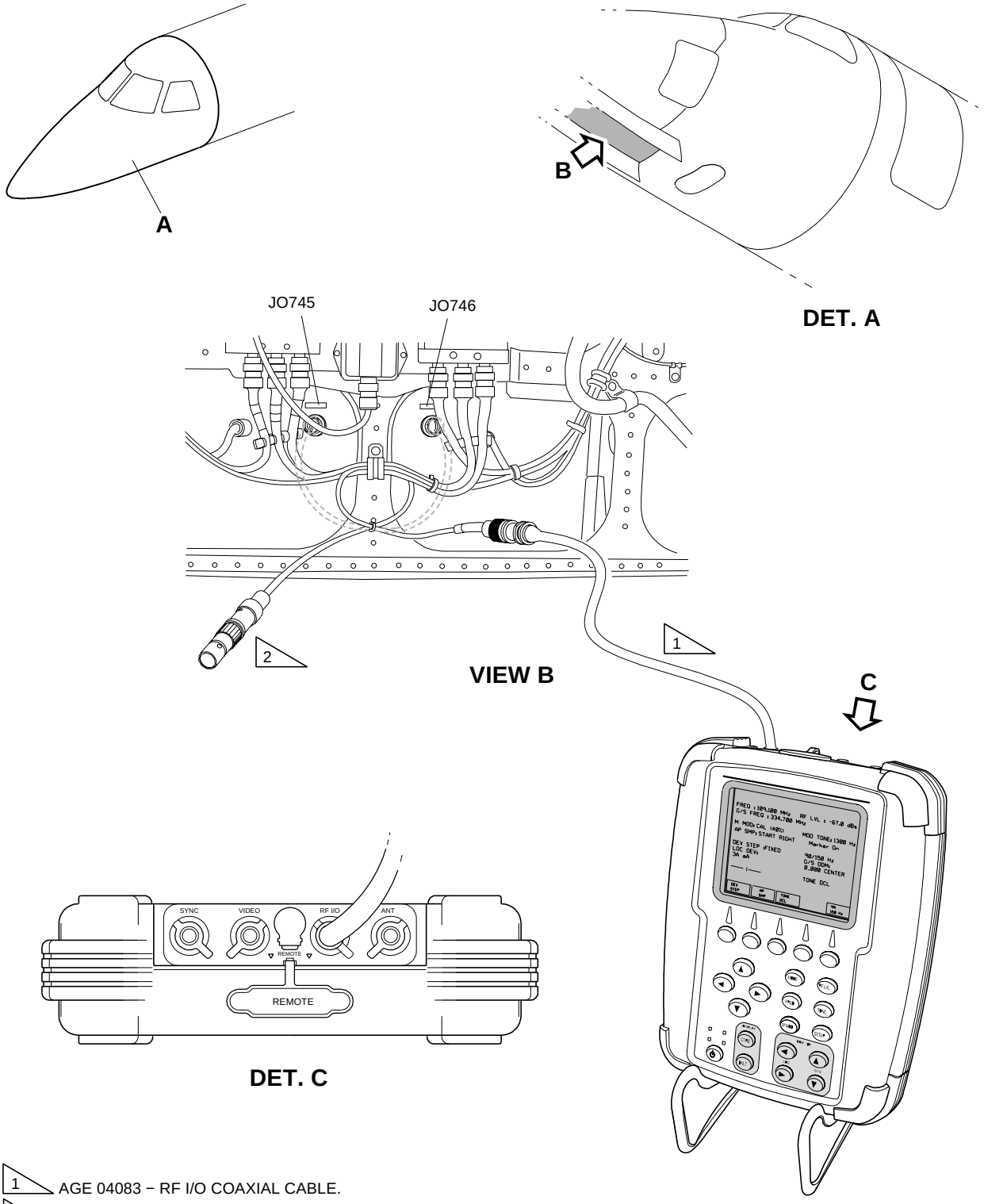



1 AGE 04083 − RF I/O COAXIAL CABLE

2 AGE 04084 − TERMINATION LOAD

EM145AMM341049A.DGN

*EFFECTIVITY: ALL*
IFR6000 Direct Connection
Figure 506




1 AGE 04083 − RF I/O COAXIAL CABLE.

2 AGE 04084 − TERMINATION LOAD.

EM145AMM341119A.DGN