CHAPTER - 34 HIGHLIGHTS
(Summary of Changes)

Revision No. TR34-7 Jan 30/18

TO: HOLDERS OF THE AIRCRAFT MAINTENANCE MANUAL (06-123838)

Pages that have been added or revised are summarized below. Remove and insert the affected pages as listed, and enter the above revision number with issue date into the Record of Revisions sheet.

This Temporary Revision incorporates and supersedes previously released temporary revisions for the chapters listed below.

Do not remove this page. Keep it in place as a record of previous changes.

CH/SE/SU Page Block No.	Description of Change
34-50-20 PgBlk 1 (A)	Revised Description and Operation – Config A.
34-50-20 PgBlk 1 (B)	Added ADS-B Out to Description and Operation. – Config B.
34-50-20 PgBlk 501	Removed Barfield Altitude testing, Transponder and Avionics Cooling Fan Fault Checks (Standard System), and referenced Avionics Cooling Fan to AMM-34-50-24. Deleted Enhanced Downlinked Parameters test. Added ADS-B Test to test matrix.
34-50-21 PgBlk 501	Added ADS-B Out check.
34-50-23 PgBlk 401-Inst	Installation – Revised Job Close-up test reference.
34-50-24 PgBlk 501	Adjustment/Test – Corrected circuit breaker labels.

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TRANSPONDER - DESCRIPTION AND OPERATION

AMM-34-50-20-081-A-801

1. Introduction

A. Standard Transponder System with or without Extended Squitter:

(1) The standard transponder system provides aircraft identification (Mode S) and altitude (Mode C) information to Air Traffic Control.

(2) The standard transponder system is made up of the components that follow:

- Dual standard transponder units installed behind the Primary Flight Displays (PFD)
- Two transponder antennas

B. Optional Diversity Transponder System with or without Extended Squitter::

(1) The diversity transponder system provides aircraft identification (Mode S) and altitude reporting information (Mode C) to Air Traffic Control.

(2) The diversity transponder system is made up of the components that follow:

- Dual diversity transponder units installed behind the PFD.
- Two transponder antennas
- Two RF antenna switching relays

2. Description

SUBTASK AMM-34-50-20-081-A-871-001

A. Standard Transponder System:

(1) There are two transponders, one (transponder number 1) is installed in the instrument panel behind the left PFD and the other (transponder number 2) is installed in the instrument panel behind the right PFD.

B. Optional Diversity Transponder System:

(1) There are two diversity transponders, one (diversity transponder number 1) is installed in the instrument panel behind the left PFD and the other (diversity transponder number 2) is installed in the instrument panel behind the right PFD.

(2) There are two RF antenna switching relays, both installed behind the Multi Function Display (MFD). One is inboard of the left diversity transponder and the other is inboard of the right diversity transponder.

3. Operation

SUBTASK AMM-34-50-20-081-A-871-002

A. Standard Transponder System:

The two transponder units located behind the left and right PFDs provide identification information (Modes A and S) and altitude reporting information (Mode C).

The rack mounted dual Mode S transponder system are a radio transmitter-receivers that operate on radar frequencies, receiving ground radar and Traffic Collision Avoidance System interrogations at 1030 MHz and transmitting a coded response of pulses on a frequency of 1090 MHz. The transponder is equipped with the IDENT capability that activates the Special Position Identification pulse for 18 seconds. IDENT function is available through the designated button on the respective side grip.

The GTX 33 replies to Mode A, Mode C, and Mode S interrogations. Mode A replies consist of framing pulses and any one of 4,096 codes (also known as "squawk codes"), which differ in the position and number of pulses transmitted. Mode C replies include framing pulses and encoded altitude.

There are two transponder antennas. The number 1 transponder antenna is mounted on the top of the fuselage and is connect to transponder number 1 behind the left PFD. The number 2 transponder antenna is mounted on the lower fuselage and is connect to transponder number 2 behind the right PFD.

B. Optional Diversity Transponder System:

As an option, the transponders allow for antenna diversity feature available through the connection of both antennas to a single transponder unit. this is realized by the RF antenna switching relay and the diversity configuration control bit to the PFD available for configuration though the Aircraft Maintenance Computer (AMC). An active transponder alternates between the top and bottom antennas ensure the quality and reliability of the transponder system communications.

TRANSPONDER - DESCRIPTION AND OPERATION

AMM-34-50-20-081-B-801

1. Introduction

A. Standard Transponder System with Extended Squitter:

(1) The standard transponder system provides aircraft identification (Mode S), altitude (Mode C), and Automatic Dependent Surveillance Broadcast (ADS-B) OUT information to Air Traffic Control.

(2) The standard transponder system is made up of the components that follow:

- Dual standard transponder units with Extended Squitter installed behind the Primary Flight Displays (PFD)
- Two transponder antennas

B. Optional Diversity Transponder System:

(1) The diversity transponder system provides aircraft identification (Mode S) and altitude reporting information (Mode C) to Air Traffic Control.

(2) The diversity transponder system is made up of the components that follow:

- Dual diversity transponder units installed behind the PFDs
- Two transponder antennas
- Two RF antenna switching relays

C. ADS-B Function

The Extended Squitter enabled transponders provide the capabilities of ADS-B technology, which improves situational awareness and flight safety. The ADS-B OUT function is an option and may be activated through the MFD software key pertinent to a specific aircraft registration number.

2. Description

SUBTASK AMM-34-50-20-081-B-871-001

A. Standard Transponder System:

(1) There are two transponders, one (transponder number 1) is installed in the instrument panel behind the left PFD and the other (transponder number 2) is installed in the instrument panel behind the right PFD.

B. Optional Diversity Transponder System:

(1) There are two diversity transponders, one (diversity transponder number 1) is installed in the instrument panel behind the left PFD and the other (diversity transponder number 2) is installed in the instrument panel behind the right PFD.

(2) There are two RF antenna switching relays, both installed behind the Multi Function Display (MFD). One is inboard of the left diversity transponder and the other is inboard of the right diversity transponder.

C. ADS-B Function

The Extended Squitter enabled transponders provide the capabilities of ADS-B technology, which improves situational awareness and flight safety. The ADS-B OUT function is an option and may be activated through the MFD software key pertinent to a specific aircraft registration number.

3. Operation

SUBTASK AMM-34-50-20-081-B-871-002

A. Standard Transponder System:

The two transponder units located behind the left and right PFDs provide identification information (Modes A and S) and altitude reporting information (Mode C).

The rack mounted dual Mode S transponder system are a radio transmitter-receivers that operate on radar frequencies, receiving ground radar and Traffic Collision Avoidance System interrogations at 1030 MHz and transmitting a coded response of pulses on a frequency of 1090 MHz. The transponder is equipped with the IDENT capability that activates the Special Position Identification pulse for 18 seconds. IDENT function is available through the designated button on the respective side grip.

The GTX 33 replies to Mode A, Mode C, and Mode S interrogations. Mode A replies consist of framing pulses and any one of 4,096 codes (also known as "squawk codes"), which differ in the position and number of pulses transmitted. Mode C replies include framing pulses and encoded altitude.

There are two transponder antennas. The number 1 transponder antenna is mounted on the top of the fuselage and is connect to transponder number 1 behind the left PFD. The number 2 transponder antenna is mounted on the lower fuselage and is connect to transponder number 2 behind the right PFD.

B. Optional Diversity Transponder System:

As an option, the transponders allow for antenna diversity feature available through the connection of both antennas to a single transponder unit. this is realized by the RF antenna switching relay and the diversity configuration control bit to the PFD available for configuration though the Aircraft Maintenance Computer (AMC). An active transponder alternates between the top and bottom antennas ensure the quality and reliability of the transponder system communications.

C. ADS-B Function

The Extended Squitter enabled transponders provides the capabilities of ADS-B technology, which improves situational awareness and flight safety. With ADS-B capabilities, position, velocity, and heading information are automatically transmitted to other aircraft and ground stations. The current Air Traffic Control system depends on a transponder request for pertinent aircraft information. ADS-B provides immediate surveillance of air-to-air traffic and aircraft in remote or inhospitable areas not currently covered by radar.

TRANSPONDER - ADJUSTMENT/TEST

AMM-34-50-20-071-801

1. General

A. This task gives procedures to do the adjustment/test of the:

- Dual Standard (Non-Diversity) Transponder System and components or Optional Dual Diversity Transponder System and components.
- An adjustment/test is only required for the transponder that is being installed. The opposite transponder, if it has not been removed, does not require an adjustment/ test

NOTE: ADS-B test is only required, if the ADS-B function is enabled.

(1) Refer to Table 501 for testing procedures.

Table 501. Test Matrix

System Test	Procedures
Dual Standard Transponder System Test	**Std. Transponder 1** *Adjustment/Test:* SUBTASK AMM-34-50-20-071-701-001, and **Std. Transponder 2** *Adjustment/Test:* SUBTASK AMM-34-50-20-071-701-002. **ADS-B** *Adjustment Test: (If installed)* TASK AMM-34-50-21-071-801 . **Transponder Cooling** *Adjustment/Test:* TASK AMM-34–50–24–071–801 .
Dual Diversity Transponder System Test	**Diversity Transponder 1** *Adjustment/Test:* SUBTASK AMM-34-50-20-071-701-003, and **Diversity Transponder 2** *Adjustment/Test:* SUBTASK AMM-34-50-20-071-701-004. **ADS-B** *Adjustment Test: (If installed)* TASK AMM-34-50-21-071-801 . **Transponder Cooling** *Adjustment/Test:* TASK AMM-34–50–24–071–801 .

2. Equipment and Materials

A. Special Tools and Equipment

Name and Part Number
Transponder Test Set (Aeroflex, IFR6000) or equivalent

Name and Part Number
Weight-on-Wheels (WOW) Box (EAI, 87-117390-1001) or AMC 2.4.01 (or higher).
Ground Power Unit (GPU). AllStar 450 or AllStar G.S.E. or Hobart GPU-400 or Hobart GPU-600 or Bycan PS-28100

3. Job Set-Up

SUBTASK AMM-34-50-20-071-921-001

A. Make aircraft safe for maintenance. Refer to AMM-20-00-01-051-801 – Make Safe For Maintenance.

B. If on jacks, refer to AMM-07-10-00-051-801 – Jacking - Maintenance Practices and AMM-08-20-00-051-801 – Leveling.

C. Connect external power. Refer to AMM-24-40-00-051-801 – External Power - Maintenance Practices. Do not turn on START BATT and SYS BATT switches until prompted.

D. Prepare Anti-ice system for maintenance. Refer to AMM-20-00-03-051-801 – Prepare Anti-Ice Systems For Maintenance .

E. Take proper safety precautions to protect personnel. Position aircraft such that multi-path RF reflections between the IFR-6000 test set, the aircraft's antennas, and surrounding objects are minimized. The area on the left side of the aircraft should not be up against a metal wall or another aircraft. If necessary, position the aircraft outside, away from metal buildings or other aircraft. Refer to Fig. 501.

CAUTION: FAILURE TO COMPLY WITH THIS STEP AND CONTINUING WITH THIS PROCEDURE COULD IMPACT LOCAL AIRPORT TOWER OPERATIONS.

F. If applicable, contact local airport tower to inform them a transponder test is being run at your location (inside or outside). Request appropriate squawk and allotted time to run test.

NOTE: If local airport tower is not informed, use code 1200.

G. Attach test set antenna to Transponder Test Set using 1 foot long test set cable (blue cable, supplied if IFR6000 is used), connected to ANT port on tester.

H. During testing, place the Transponder Test Set antenna approximately two feet to four feet forward and in line with right wing tip tank. May require periodic repositioning between two and four feet.

I. Connect Weight On Wheels (WOW) box or Aircraft Maintenance Computer (AMC) and set switches on Box to W-On-W (on-ground). Refer to AMM-20-00-04-051-801 – Weight On Wheels (WOW) Box - Connect/Disconnect.

4. Transponder–1 Adjustment/Test (Standard System)

SUBTASK AMM-34-50-20-071-701-001

A. Begin adjustment/test as follows:

(1) Perform job setup, refer to SUBTASK AMM-34-50-20-071-921-001.

(2) Re-align the Transponder Test Set, IFR6000 antenna to point at the aircraft's Transponder–1 antenna (top of the center cabin/fuselage).

(3) Use the small rotary knob on the left PFD to select XPDR page. NOTE: The XPDR select page will time out and switch back to the COM page after 30 seconds. The operator will have to select XPDR page from time to time during this test.

(4) Make sure that Transponder 1 (XPDR 1) is ACTIVE transponder in STANDBY MODE.

(5) Scroll to FLT CTRLS using outer knob. Push inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push "COLLAR" soft key. Push "CONFIRM COLLAR" soft key.

- ECB - NOSE LDG GEAR (L AFT Bus)
- ECB - L MAIN LDG GEAR (L AFT Bus)
- ECB - R MAIN LDG GEAR (L AFT Bus)

(6) Scroll to ENGINE using outer knob. Push inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push "COLLAR" soft key. Push "CONFIRM COLLAR" soft key.

- ECB - L ENG FIRE EXTNGR (L FWD Bus)
- ECB - R ENG FIRE EXTNGR (R FWD Bus)

(7) Clear any "MASTER CAUTIONS" and "MASTER WARNINGS" as needed.

(8) Set both left and right PFD baro set to 29.92 (in/Hg) on Autopilot Control Panel (ACP) by pushing BARO SET knob.

B. Transponder-1 Setup

(1) Use the small rotary knob on the left PFD to select XPDR page.

NOTE: The XPDR select page times out and switches back to the COM page after 30 seconds. Select XPDR page from time to time during this test.

(2) Make sure that Transponder 1 (XPDR 1) is selected as ACTIVE transponder in STANDBY MODE.

(3) Push CODE soft key on left PFD and enter the transponder code provided by the control tower for this test. If no code was assigned, enter 1200.

C. Transponder-1 MODE A,C,S Test using Transponder Test Set, IFR6000

(1) Power up the Transponder Test Set (IFR 6000). After tester performs Self Test, push SETUP button on the test set to bring up the SETUP-XPDR page. If necessary, continue pressing SETUP button until tester cycles to SETUP-XPDR page.

(2) On the Transponder Test Set (IFR 6000)'s SETUP-XPDR page, use NEXT PARAM or PREV PARAM soft keys to select each parameter, and the "arrow" DATA keys to set the values listed below.

- ANTENNA: TOP
- RF PORT: ANTENNA
- ANT RANGE-TOP: 18 ft.
- ANT HEIGHT-TOP: 7 ft.
- ANT RANGE-BOTTOM: 18 ft.
- ANT HEIGHT-BOTTOM: 1 ft.
- DIR CABLE LOSS: Ignore
- ANT CABLE: 1 ft.
- ANT CABLE LOSS: As marked on blue cable (should be 0.1 dB)
- ANT GAIN (dBi) - 1.03 GHz: As marked on test set antenna
- ANT GAIN (dBi) - 1.09 GHz: As marked on test set antenna
- UUT ADDRESS: AUTO
- MANUAL AA: Ignore
- DIVERSITY TEST: OFF
- PWR LIM: FAR 43
- CHECK CAP: YES

(3) Push XPDR button to go to the XPDR-AUTO TEST page.

(4) Push CONFIG soft key to display the XPDR-CONFIG SCREEN page.

(5) On the XPDR-CONFIG SCREEN, scroll to GENERIC MODE S using the UP/Down DATA keys.

(6) With GENERIC MODE S highlighted, push RETURN soft key to confirm selection. This will also cause a return to the XPDR-AUTO TEST page.

(7) Set the WOW test box or AMC to W-off-W (airborne).

NOTE: Transponders will transition to ALT mode automatically when airborne or simulated airborne (W-off-W).

(8) Push RUN TEST soft key to start AUTO TEST. The tester will sequence through separate tests, after which a "PASS" message should be displayed.

(9) Top ERP should be between 48 to 60 dBm and MTL should be between -68 to -80 dBm to PASS.

NOTE: If values are obtained and any of the individual tests FAIL during AUTO TEST, press TEST LIST button on IFR 6000 and using UP/DOWN buttons scroll to the specific Failed test(s). Press SELECT TEST button, adjust IFR 6000 test set positioning anywhere within a 30 foot arc between the aircraft's right wingtip and the nose as required, and Press RUN TEST button until PASS Message is received (this may take several test set position adjustments until IFR 6000 and aircraft Transponder "Sync up"). Press STOP TEST button. Repeat until all individual FAILED tests have achieved a PASS. It is not necessary to re-run AUTO TEST. AUTO TEST is a convenience feature only.

NOTE: If POWER/FREQ test Fails: After pressing RUN TEST, adjust IFR-6000 test set positioning while test is running until PASS message appears (this test performs a "Live" update of the dBm values). It may be required to position the test set anywhere within a 30 foot arc between the aircraft's right wingtip and the nose. Press the STOP TEST button as soon as PASS message is displayed

(10) Push RUN TEST soft key on Transponder Test Set (IFR 6000) again.

(11) Make sure the following appears on the Transponder Test Set (IFR 6000):

- "A CODE" = transponder code entered
- "C ALT" = left PFD altitude indication +/- 100 ft.
- "S CODE" = ICAO code assigned to this aircraft/tail number
- "TAIL" = tail number assigned to this aircraft
- DF17 DETECTED = YES (IF ADS-B OUT IS INSTALLED) / NO (IF ADS-B OUT IS NOT INSTALLED)
- "FLT ID" = same as tail number
- "AA" = ICAO code assigned to this aircraft/tail number (8 digit number in parenthesis)
- "FS" = IN-AIR
- "VS" = IN-AIR

(12) On MFD, press SYS along bottom of MFD. Use the small lower knob on the MFD to scroll to the SETUP page. On the SETUP page, press the SETTINGS softkey to bring up the SETTINGS page. At the bottom of the SETTINGS page, verify:

(a) The "REGISTRATION NO" number (alphanumeric) matches the "TAIL" number (alphanumeric) displayed on the IFR 6000 (above).

(b) The “ICAO 24-BIT (OCT)” number matches the “AA” ICAO 24-bit code displayed on the IFR 6000 (above).

NOTE: If the aircraft’s registration number and/or ICAO 24-bit (octal) number are not present on the MFD’s SETTINGS page, the Aircraft Configuration File must be updated, refer to AMM-31-40-00-051-801 – Aircraft Computer Systems - Maintenance Practices. Steps (10) through this step must then be repeated.

(13) On the MFD, scroll to the SETUP tab, press the SENSOR Soft Key. Set the ADC PFD source selection from AUTO to ADC 2.

(14) On the IFR 6000, press the XPDR button once. Once XPDR – ALT ENCODER is displayed, press the SOURCE SELECT Soft Key until SOURCE - XPDR is displayed. Press the RUN TEST Soft Key.

(15) Make sure that the altitude reported on IFR 6000 matches L PFD altitude indication +/- 100 ft.

(16) On the MFD, set the ADC source back to AUTO.

(17) Set the WOW Box Switches to W-on-W (on-ground).

(18) Set XPDR 1 to STANDBY MODE.

5. Transponder–2 Adjustment/Test (Standard System)

SUBTASK AMM-34-50-20-071-701-002

A. Begin adjustment/test as follows:

(1) Perform job setup, refer to SUBTASK AMM-34-50-20-071-921-001.

(2) Re-align the Transponder Test Set, IFR6000 antenna to point at the aircraft’s lower Transponder–2 antenna (bottom of the center cabin/fuselage).

(3) Use the small rotary knob on the left PFD to select XPDR page.

NOTE: The XPDR select page will time out and switch back to the COM page after 30 seconds. The operator will have to select XPDR page from time to time during this test.

(4) Push ACTIVE soft key, upper right button, on the left PFD to select XPDR 2.

(5) Make sure that Transponder 2 (XPDR 2) is in STANDBY MODE.

B. Transponder-2 Setup

(1) Push CODE soft key on right PFD and enter the transponder code provided by the control tower for this test. If no code was assigned, enter 1200.

C. Transponder-2 MODE A,C,S Test using Transponder Test Set, IFR6000

(1) Power up the Transponder Test Set (IFR 6000). After tester performs Self Test, push SETUP button on the test set to bring up the SETUP-XPDR page. If necessary, continue pressing SETUP button until tester cycles to SETUP-XPDR page.

(2) On the Transponder Test Set (IFR 6000) SETUP-XPDR page, use NEXT PARAM or PREV PARAM soft keys to select each parameter, and the “arrow” DATA keys to set the values listed below.

- ANTENNA: BOTTOM
- RF PORT: ANTENNA
- ANT RANGE-TOP: 18 ft.
- ANT HEIGHT-BOTTOM: 7 ft.
- ANT RANGE-BOTTOM: 18 ft.
- ANT HEIGHT-TOP: 1 ft.
- DIR CABLE LOSS: Ignore
- ANT CABLE: 1 ft.
- ANT CABLE LOSS: As marked on blue cable (should be 0.1 dB)
- ANT GAIN (dBi) - 1.03 GHz: As marked on test set antenna
- ANT GAIN (dBi) - 1.09 GHz: As marked on test set antenna
- UUT ADDRESS: AUTO
- MANUAL AA: Ignore
- DIVERSITY TEST: OFF
- PWR LIM: FAR 43
- CHECK CAP: YES

(3) Push XPDR button to go to the XPDR-AUTO TEST page.

(4) Push CONFIG soft key to display the XPDR-CONFIG SCREEN page.

(5) On the XPDR-CONFIG SCREEN, scroll to GENERIC MODE S using the up/down DATA keys.

(6) With GENERIC MODE S highlighted, push RETURN soft key to confirm selection. This will also cause a return to the XPDR-AUTO TEST page.

(7) Set the WOW Box Switches to W-off-W (airborne).

(8) Push RUN TEST soft key to start AUTO TEST. The tester will sequence through separate tests, after which a “PASS” message should be displayed.

(9) Bottom ERP should be between 48 to 60 dBm and MTL should be between -68 to -80 dBm to PASS.

NOTE: If values are obtained and any of the individual tests FAIL during AUTO TEST, press TEST LIST button on IFR 6000 and using UP/DOWN buttons scroll to the specific Failed test(s). Press SELECT TEST button, adjust IFR 6000 test set positioning anywhere within a 30 foot arc between the aircraft's right wingtip and the nose as required, and Press RUN TEST button until PASS Message is received (this may take several test set position adjustments until IFR 6000 and aircraft Transponder "Sync up"). Press STOP TEST button. Repeat until all individual FAILED tests have achieved a PASS. It is not necessary to re-run AUTO TEST. AUTO TEST is a convenience feature only.

NOTE: If POWER/FREQ test Fails: After pressing RUN TEST, adjust IFR-6000 test set positioning while test is running until PASS message appears (this test performs a "Live" update of the dBm values). It may be required to position the test set anywhere within a 30 foot arc between the aircraft's right wingtip and the nose. Press the STOP TEST button as soon as PASS message is displayed.

(10) Make sure the following appears on the Transponder Test Set (IFR 6000):

- "A CODE" = transponder code entered
- "C ALT" = left PFD altitude indication +/- 100 ft.
- "S CODE" = ICAO code assigned to this aircraft/tail number
- "TAIL" = tail number assigned to this aircraft
- "FLT ID" = same as tail number
- DF17 DETECTED" = YES (IF ADS-B OUT IS INSTALLED) / NO (IF ADS-B OUT IS NOT INSTALLED)
- "AA" = ICAO code assigned to this aircraft/tail number (8 digit number in parenthesis)
- "FS" = IN-AIR
- "VS" = IN-AIR

(11) On MFD, press SYS along bottom of MFD. Use the small lower knob on the MFD to scroll to the SETUP page. On the SETUP page, press the SETTINGS softkey to bring up the SETTINGS page. At the bottom of the SETTINGS page, verify:

(a) The "REGISTRATION NO" number (alphanumeric) matches the "TAIL" number (alphanumeric) displayed on the IFR 6000 (above).

(12) The “ICAO 24-BIT (OCT)” number matches the “AA” ICAO 24-bit code displayed on the IFR 6000 (above).

NOTE: If the aircraft’s registration number and/or ICAO 24-bit (octal) number are not present on the MFD’s SETTINGS page, the Aircraft Configuration File must be updated, refer to AMM-31-40-00-051-801 – Aircraft Computer Systems - Maintenance Practices. .

(13) On the MFD, scroll to the SETUP tab, press the SENSOR Soft Key. Set the ADC PFD source selection from AUTO to ADC 2.

(14) On the IFR 6000, press the XPDR button once.

(15) Once XPDR – ALT ENCODER is displayed, press the SOURCE SELECT Soft Key until SOURCE - XPDR is displayed. Press the RUN TEST Soft Key.

(16) Make sure that an altitude reported on IFR 6000 matches L PFD altitude indication +/- 100 ft.

(17) On the MFD, set the ADC source back to AUTO.

(18) Set the WOW Box Switches to W-on-W (on-ground).

(19) Set XPDR 2 to STANDBY MODE.

6. Diversity Transponder–1 Adjustment/Tests

SUBTASK AMM-34-50-20-071-701-003

A. Begin adjustment/test as follows:

(1) Install Antenna Clamp and Shield Assembly (part of Transponder Test Set IFR 6000) on lower transponder antenna (bottom of the center cabin/fuselage), in accordance with instructions in IFR 6000 Ramp Test Set Operation Manual.

(a) Position Antenna Clamp inside the slot in the Antenna Shield Plate, aligning captive screws into the respective screw holes.

(b) Tighten captive screws.

(c) Cover the transponder's Antenna with Antenna Shield. Loosen thumbscrews if necessary.

NOTE: It may be necessary to remove the unit under test's Antenna Guard if access to the transponders Antenna is restricted.

(d) Secure Antenna Shield by tightening thumbscrews.

(2) Perform job setup, refer to SUBTASK AMM-34-50-20-071-921-001.

(3) Push ECB BY SYSTEM soft key. Scroll to FLCS using outer knob. Push inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push “COLLAR” soft key. Push “CONFIRM COLLAR” soft key.

- ECB - NOSE LDG GEAR (L AFT Bus)
- ECB - L MAIN LDG GEAR (L AFT Bus)

- ECB - R MAIN LDG GEAR (L AFT Bus)

(4) Scroll to ENGINE using outer knob. Push inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push “COLLAR” soft key. Push “CONFIRM COLLAR” soft key.

- ECB - L ENG FIRE EXTNGR (L FWD Bus)
- ECB - R ENG FIRE EXTNGR (R FWD Bus)

(5) Clear any “MASTER CAUTIONS” and “MASTER WARNINGS” as needed.

(6) Set both left and right PFD baro set to 29.92 (in/Hg.) on Autopilot Control Panel (ACP) by pushing BARO SET knob.

- Make sure Baro Set on PFD annunciates “29.92 IN”.

B. Diversity Transponder-1 Setup

(1) Use the small rotary knob on the left PFD to select XPDR page.

NOTE: The XPDR select page times out and switches back to the COM page after 30 seconds. Select XPDR page from time to time during this test.

(2) Push ACTIVE soft key (upper right button) on the left PFD to select D-XPDR1.

(3) Make sure that the selected transponder is in Standby Mode.

(4) Push CODE soft key on left PFD and enter the transponder code used for this test or 1200.

C. Diversity Transponder-1 MODE A,C,S Test using Transponder Test Set, IFR6000 (Upper Antenna)

(1) Power up the Transponder Test Set (IFR 6000). After tester performs Self Test, push SETUP button on the test set to bring up the SETUP-XPDR page. If necessary, continue pressing SETUP button until tester cycles to SETUP-XPDR page.

(2) On the Transponder Test Set (IFR 6000)’s SETUP-XPDR page, use NEXT PARAM or PREV PARAM soft keys to select each parameter, and the “arrow” DATA keys to set the values listed below.

- ANTENNA: TOP
- RF PORT: ANTENNA
- ANT RANGE-TOP: 18 ft.
- ANT HEIGHT-TOP: 7 ft.
- ANT RANGE-BOTTOM: 18 ft.
- ANT HEIGHT-BOTTOM: 1 ft.
- DIR CABLE LOSS: Ignore
- ANT CABLE: 1 ft.
- ANT CABLE LOSS: As marked on blue cable (should be 0.1 dB)

- ANT GAIN (dBi) - 1.03 GHz: As marked on test set antenna
- ANT GAIN (dBi) - 1.09 GHz: As marked on test set antenna
- UUT ADDRESS: AUTO
- MANUAL AA: Ignore
- DIVERSITY TEST: ON
- PWR LIM: FAR 43
- CHECK CAP: YES

(3) Push XPDR button to go to the XPDR-AUTO TEST page.

(4) Push CONFIG soft key to display the XPDR-CONFIG SCREEN page.

(5) On the XPDR-CONFIG SCREEN, scroll to GENERIC MODE S using the UP/Down DATA keys.

(6) With GENERIC MODE S highlighted, push RETURN soft key to confirm selection. This will also cause a return to the XPDR-AUTO TEST page.

(7) Set the WOW Box Switches to W-off-W (airborne).

(8) Push RUN TEST soft key to start AUTO TEST. The tester will sequence through separate tests, after which a “PASS” message should be displayed.

(9) Top ERP should be between 48 to 60 dBm and MTL should be between -68 to -80 dBm to PASS.

NOTE: If values are obtained and any of the individual tests FAIL during AUTO TEST, press TEST LIST button on IFR 6000 and using UP/DOWN buttons scroll to the specific Failed test(s). Press SELECT TEST button, adjust IFR 6000 test set positioning anywhere within a 30 foot arc between the aircraft’s right wingtip and the nose as required, and Press RUN TEST button until PASS Message is received (this may take several test set position adjustments until IFR 6000 and aircraft Transponder “Sync up”). Press STOP TEST button. Repeat until all individual FAILED tests have achieved a PASS. It is not necessary to re-run AUTO TEST. AUTO TEST is a convenience feature only.

NOTE: If POWER/FREQ test Fails: After pressing RUN TEST, adjust IFR-6000 test set positioning while test is running until PASS message appears (this test performs a “Live” update of the dBm values). It may be required to position the test set anywhere within a 30 foot arc between the aircraft’s right wingtip and the nose. Press the STOP TEST button as soon as PASS message is displayed

(10) Make sure the following appears on the Transponder Test Set (IFR 6000):

- “A CODE” = transponder code entered
- “C ALT” = left PFD altitude indication +/- 100 ft.
- “S CODE” = ICAO code assigned to this aircraft/tail number

- "TAIL" = tail number assigned to this aircraft
- "FLT ID" = same as tail number
- DF17 DETECTED" = YES (IF ADS-B OUT IS INSTALLED) / NO (IF ADS-B OUT IS NOT INSTALLED)
- "AA" = ICAO code assigned to this aircraft/tail number (8 digit number in parenthesis)
- "FS" = IN-AIR
- "VS" = IN-AIR

(11) On MFD, press SYS along bottom of MFD. Use the small lower knob on the MFD to scroll to the SETUP page. On the SETUP page, press the SETTINGS soft key to bring up the SETTINGS page. At the bottom of the SETTINGS page, verify:

(a) The "REGISTRATION NO" number (alphanumeric) matches the "TAIL" number (alphanumeric) displayed on the IFR 6000 (above).

(b) The "ICAO 24-BIT (OCT)" number matches the "AA" ICAO 24-bit code displayed on the IFR 6000 (above).

NOTE: If the aircraft's registration number and/or ICAO 24-bit (octal) number are not present on the MFD's SETTINGS page, the Aircraft Configuration File must be updated, refer to AMM-31-40-00-051-801 – Aircraft Computer Systems - Maintenance Practices. Steps (10) through this step must then be repeated.

(12) On the MFD, scroll to the SETUP tab, press the SENSOR Soft Key. Set the ADC PFD source selection from AUTO to ADC 2.

(13) On the IFR 6000, press the XPDR button once.

(14) Once XPDR – ALT ENCODER is displayed, press the SOURCE SELECT Soft Key until SOURCE - XPDR is displayed. Press the RUN TEST Soft Key.

(15) Make sure that an altitude reported on IFR 6000 matches L PFD altitude indication +/- 100 ft.

(16) On the MFD, set the ADC source back to AUTO.

(17) Set the WOW Box Switches to W-on-W (on-ground).

(18) Set D-XPDR 1 to STANDBY MODE.

D. Diversity Transponder-1 MODE A,C,S Test using Transponder Test Set (IFR 6000) (Lower Antenna)

(1) Remove Antenna Clamp and Shield Assembly (part of Transponder Test Set IFR 6000) from lower transponder antenna (bottom center cabin/fuselage).

(2) Install Antenna Clamp and Shield Assembly (part of Transponder Test Set IFR 6000) on upper transponder antenna (top of the center cabin/fuselage), in accordance with instructions in IFR 6000 Ramp Test Set Operation Manual.

(3) Pre-position the Transponder Test Set IFR 6000 antenna to point at the aircraft's lower Transponder 2 antenna, (bottom of the center cabin/fuselage).

(4) Push XPDR button to go to the XPDR-AUTO TEST page.

(5) Push CONFIG soft key to display the XPDR-CONFIG SCREEN page.

(6) On the XPDR-CONFIG SCREEN, scroll to GENERIC MODE S using the UP/Down DATA keys.

(7) With GENERIC MODE S highlighted, push RETURN soft key to confirm selection. This will also cause a return to the XPDR-AUTO TEST page.

(8) Set the WOW Box Switches to W-off-W (airborne).

(9) Push RUN TEST soft key to start AUTO TEST. The tester will sequence through separate tests, after which a "PASS" message should be displayed.

(10) ERP should be between 48 to 60 dBm and MTL should be between -68 to -80 dBm to PASS.

NOTE: If values are obtained and any of the individual tests FAIL during AUTO TEST, press TEST LIST button on IFR 6000 and using UP/DOWN buttons scroll to the specific Failed test(s). Press SELECT TEST button, adjust IFR 6000 test set positioning anywhere within a 30 foot arc between the aircraft's right wingtip and the nose as required, and Press RUN TEST button until PASS Message is received (this may take several test set position adjustments until IFR 6000 and aircraft Transponder "Sync up"). Press STOP TEST button. Repeat until all individual FAILED tests have achieved a PASS. It is not necessary to re-run AUTO TEST. AUTO TEST is a convenience feature only.

NOTE: If POWER/FREQ test Fails: After pressing RUN TEST, adjust IFR-6000 test set positioning while test is running until PASS message appears (this test performs a "Live" update of the dBm values). It may be required to position the test set anywhere within a 30 foot arc between the aircraft's right wingtip and the nose. Press the STOP TEST button as soon as PASS message is displayed

(11) Remove Antenna Clamp and Shield Assembly.

(12) Set the WOW Box Switches to W-on-W (on-ground).

7. Diversity Transponder–2 Adjustment/Tests

SUBTASK AMM-34-50-20-071-701-004

A. Begin adjustment/test as follows:

(1) Install Antenna Clamp and Shield Assembly (part of Transponder Test Set IFR 6000) on lower transponder antenna (bottom of the center cabin/fuselage), in accordance with instructions in IFR 6000 Ramp Test Set Operation Manual.

(a) Position Antenna Clamp inside the slot in the Antenna Shield Plate, aligning captive screws into the respective screw holes.

(b) Tighten captive screws.

(c) Cover the transponder's Antenna with Antenna Shield. Loosen thumbscrews if necessary.

NOTE: It may be necessary to remove the unit under test's Antenna Guard if access to the transponders Antenna is restricted.

(d) Secure Antenna Shield by tightening thumbscrews.

(2) Perform job setup, refer to SUBTASK AMM-34-50-20-071-921-001.

(3) Push ECB BY SYSTEM soft key. Scroll to FLCS using outer knob. Push inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push “COLLAR” soft key. Push “CONFIRM COLLAR” soft key.

- ECB - NOSE LDG GEAR (L AFT Bus)
- ECB - L MAIN LDG GEAR (L AFT Bus)
- ECB - R MAIN LDG GEAR (L AFT Bus)

(4) Scroll to ENGINE using outer knob. Push inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push “COLLAR” soft key. Push “CONFIRM COLLAR” soft key.

- ECB - L ENG FIRE EXTNGR (L FWD Bus)
- ECB - R ENG FIRE EXTNGR (R FWD Bus)

(5) Clear any “MASTER CAUTIONS” and “MASTER WARNINGS” as needed.

(6) Set both left and right PFD baro set to 29.92 (in/Hg.) on Autopilot Control Panel (ACP) by pushing BARO SET knob.

- Make sure Baro Set on PFD annunciates “29.92 IN”.

B. Diversity Transponder-2 Setup

(1) Use the small rotary knob on the left PFD to select XPDR page.

NOTE: The XPDR select page times out and switches back to the COM page after 30 seconds. Select XPDR page from time to time during this test.

(2) Push ACTIVE soft key (upper right button) on the left PFD to select D-XPDR2.

(3) Make sure that D-XPDR2 is in Standby Mode.

(4) Push CODE soft key on left PFD and enter the transponder code used for this test or 1200.

C. Diversity Transponder-2 MODE A,C,S Test using Transponder Test Set, IFR6000 (Upper Antenna)

(1) Power up the Transponder Test Set (IFR 6000). After tester performs Self Test, push SETUP button on the test set to bring up the SETUP-XPDR page. If necessary, continue pressing SETUP button until tester cycles to SETUP-XPDR page.

(2) On the Transponder Test Set (IFR 6000)'s SETUP-XPDR page, use NEXT PARAM or PREV PARAM soft keys to select each parameter, and the "arrow" DATA keys to set the values listed below.

- ANTENNA: TOP
- RF PORT: ANTENNA
- ANT RANGE-TOP: 18 ft.
- ANT HEIGHT-TOP: 7 ft.
- ANT RANGE-BOTTOM: 18 ft.
- ANT HEIGHT-BOTTOM: 1 ft.
- DIR CABLE LOSS: Ignore
- ANT CABLE: 1 ft.
- ANT CABLE LOSS: As marked on blue cable (should be 0.1 dB)
- ANT GAIN (dBi) - 1.03 GHz: As marked on test set antenna
- ANT GAIN (dBi) - 1.09 GHz: As marked on test set antenna
- UUT ADDRESS: AUTO
- MANUAL AA: Ignore
- DIVERSITY TEST: ON
- PWR LIM: FAR 43
- CHECK CAP: YES

(3) Push XPDR button to go to the XPDR-AUTO TEST page.

(4) Push CONFIG soft key to display the XPDR-CONFIG SCREEN page.

(5) On the XPDR-CONFIG SCREEN, scroll to GENERIC MODE S using the UP/Down DATA keys.

(6) With GENERIC MODE S highlighted, push RETURN soft key to confirm selection. This will also cause a return to the XPDR-AUTO TEST page.

(7) Set the WOW Box Switches to W-off-W (airborne).

(8) Push RUN TEST soft key to start AUTO TEST. The tester will sequence through separate tests, after which a "PASS" message should be displayed.

(9) Top ERP should be between 48 to 60 dBm and MTL should be between -68 to -80 dBm to PASS.

NOTE: If values are obtained and any of the individual tests FAIL during AUTO TEST, press TEST LIST button on IFR 6000 and using UP/DOWN buttons scroll to the specific Failed test(s). Press SELECT TEST button, adjust IFR 6000 test set positioning anywhere within a 30 foot arc between the aircraft's right wingtip and the nose as required, and Press RUN TEST button until PASS Message is received (this may take several test set position adjustments until IFR 6000 and aircraft Transponder "Sync up"). Press STOP TEST button. Repeat until all individual FAILED tests have achieved a PASS. It is not necessary to re-run AUTO TEST. AUTO TEST is a convenience feature only.

NOTE: If POWER/FREQ test Fails: After pressing RUN TEST, adjust IFR-6000 test set positioning while test is running until PASS message appears (this test performs a "Live" update of the dBm values). It may be required to position the test set anywhere within a 30 foot arc between the aircraft's right wingtip and the nose. Press the STOP TEST button as soon as PASS message is displayed

(10) Make sure the following appears on the Transponder Test Set (IFR 6000):

- "A CODE" = transponder code entered
- "C ALT" = left PFD altitude indication +/- 100 ft.
- "S CODE" = ICAO code assigned to this aircraft/tail number
- "TAIL" = tail number assigned to this aircraft
- "DF17 DETECTED" = YES (IF ADS-B OUT IS INSTALLED) / NO (IF ADS-B OUT IS NOT INSTALLED)
- "FLT ID" = same as tail number
- "AA" = ICAO code assigned to this aircraft/tail number (8 digit number in parenthesis)
- "FS" = IN-AIR
- "VS" = IN-AIR

(11) On MFD, press SYS along bottom of MFD. Use the small lower knob on the MFD to scroll to the SETUP page. On the SETUP page, press the SETTINGS softkey to bring up the SETTINGS page. At the bottom of the SETTINGS page, verify:

(a) The "REGISTRATION NO" number (alphanumeric) matches the "TAIL" number (alphanumeric) displayed on the IFR 6000 (above).

(b) The “ICAO 24-BIT (OCT)” number matches the “AA” ICAO 24-bit code displayed on the IFR 6000 (above).

NOTE: If the aircraft’s registration number and/or ICAO 24-bit (octal) number are not present on the MFD’s SETTINGS page, the Aircraft Configuration File must be updated, refer to AMM-31-40-00-051-801 – Aircraft Computer Systems - Maintenance Practices. Steps (10) through this step must then be repeated.

(12) On the MFD, scroll to the SETUP tab, press the SENSOR Soft Key. Set the ADC PFD source selection from AUTO to ADC 2.

(13) On the IFR 6000, press the XPDR button once.

(14) Once XPDR – ALT ENCODER is displayed, press the SOURCE SELECT Soft Key until SOURCE - XPDR is displayed. Press the RUN TEST Soft Key.

(15) Make sure that an altitude reported on IFR 6000 matches L PFD altitude indication +/- 100 ft.

(16) On the MFD, set the ADC source back to AUTO.

(17) Set the WOW Box Switches to W-on-W (on-ground).

(18) Set D-XPDR 2 to STANDBY MODE.

D. Diversity Transponder-2 MODE A,C,S Test using Transponder Test Set (IFR 6000) (Lower Antenna)

(1) Remove Antenna Clamp and Shield Assembly (part of Transponder Test Set IFR 6000) from lower transponder antenna (bottom of the center cabin/fuselage).

(2) Install Antenna Clamp and Shield Assembly (part of Transponder Test Set IFR 6000) on upper transponder antenna (top of the center cabin/fuselage), in accordance with instructions in IFR 6000 Ramp Test Set Operation Manual.

(3) Pre-position the Transponder Test Set IFR 6000 antenna to point at the aircraft’s lower Transponder 2 antenna (bottom of the center cabin/fuselage).

(4) On the Transponder Test Set (IFR 6000) SETUP-XPDR page, use NEXT PARAM or PREV PARAM softkeys to select each parameter, and the “arrow” DATA keys to set the values listed below:

- ANTENNA: BOTTOM
- RF PORT: ANTENNA
- ANT RANGE-TOP: 18 ft.
- ANT HEIGHT-TOP: 7 ft.
- ANT RANGE-BOTTOM: 18 ft.
- ANT HEIGHT-BOTTOM: 1 ft.
- DIR CABLE LOSS: Ignore
- ANT CABLE: 1 ft.
- ANT CABLE LOSS: As marked on blue cable (should be 0.1 dB)

- ANT GAIN (dBi) - 1.03 GHz: As marked on test set antenna
- ANT GAIN (dBi) - 1.09 GHz: As marked on test set antenna
- UUT ADDRESS: AUTO
- MANUAL AA: Ignore
- DIVERSITY TEST: ON
- PWR LIM: FAR 43
- CHECK CAP: YES

(5) Push XPDR button to go to the XPDR-AUTO TEST page.

(6) Push CONFIG soft key to display the XPDR-CONFIG SCREEN page.

(7) On the XPDR-CONFIG SCREEN, scroll to GENERIC MODE S using the UP/Down DATA keys.

(8) With GENERIC MODE S highlighted, push RETURN soft key to confirm selection. This will also cause a return to the XPDR-AUTO TEST page.

(9) Set the WOW Box Switches to W-off-W (airborne).

(10) Push RUN TEST soft key to start AUTO TEST. The tester will sequence through separate tests, after which a “PASS” message should be displayed.

(11) Bottom ERP should be between 48 to 60 dBm and MTL should be between -68 to -80 dBm to PASS.

NOTE: If values are obtained and any of the individual tests FAIL during AUTO TEST, press TEST LIST button on IFR 6000 and using UP/DOWN buttons scroll to the specific Failed test(s). Press SELECT TEST button, adjust IFR 6000 test set positioning anywhere within a 30 foot arc between the aircraft’s right wingtip and the nose as required, and Press RUN TEST button until PASS Message is received (this may take several test set position adjustments until IFR 6000 and aircraft Transponder “Sync up”). Press STOP TEST button. Repeat until all individual FAILED tests have achieved a PASS. It is not necessary to re-run AUTO TEST. AUTO TEST is a convenience feature only.

NOTE: If POWER/FREQ test Fails: After pressing RUN TEST, adjust IFR-6000 test set positioning while test is running until PASS message appears (this test performs a “Live” update of the dBm values). It may be required to position the test set anywhere within a 30 foot arc between the aircraft’s right wingtip and the nose. Press the STOP TEST button as soon as PASS message is displayed

(12) Remove Antenna Clamp and Shield Assembly from aircraft and stow in IFR 6000 ramp test set kit.

(13) Remove Antenna Clamp and Shield Assembly and stow in ramp test kit.

(14) Set the WOW Box Switches to W-on-W (on-ground).

8. Job Close-Up

SUBTASK AMM-34-50-20-071-921-005

A. Set WOW Box switches to W-on-W (on-ground)

B. Reset the collared ECB's. Refer to AMM-20-00-03-051-801 – Prepare Anti-Ice Systems For Maintenance.

C. Scroll to FLCS using outer knob. Press inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push "RESET" Soft key. Press "CONFIRM RESET" soft key.

- ECB - NOSE LDG GEAR (L AFT Bus)
- ECB - L MAIN LDG GEAR (L AFT Bus)
- ECB - R MAIN LDG GEAR (L AFT Bus)

D. Scroll to ENGINE using outer knob. Press inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push "RESET" Soft key. Press "CONFIRM RESET" soft key.

- ECB - L ENG FIRE EXTNGR (L FWD Bus)
- ECB - R ENG FIRE EXTNGR (R FWD Bus)

E. Power down the aircraft by setting the SYS BATT and START BATT switches to OFF and the BUS TIE to OPEN.

F. Disconnect WOW Box from aircraft. Refer to AMM-20-00-04-051-801 – Weight On Wheels (WOW) Box - Connect/Disconnect.

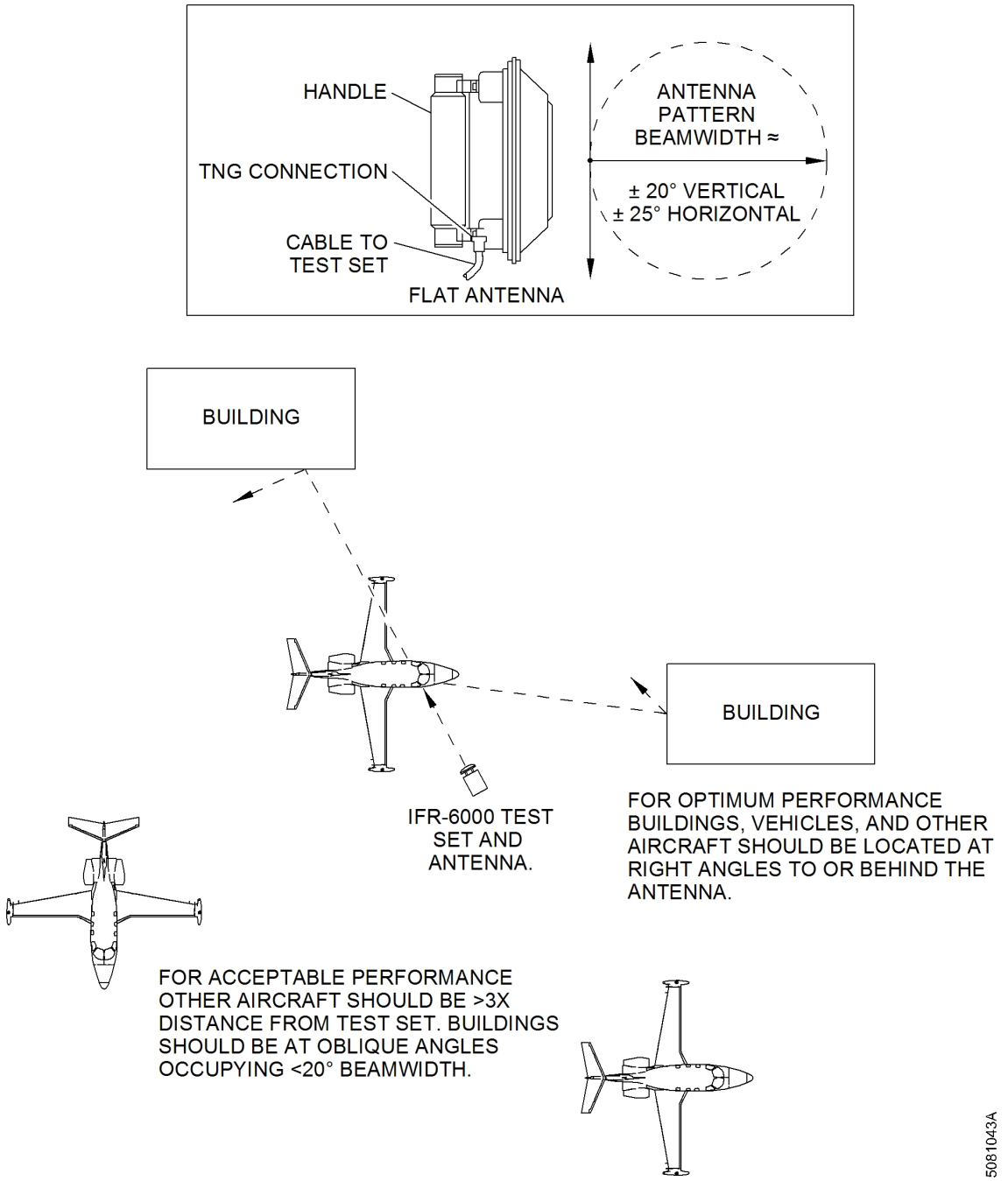
G. If on jacks, lower aircraft and remove jacks. Refer to AMM-07-10-00-051-801 – Jacking - Maintenance Practices.

H. If applicable, call the local control tower and tell them the transponder test is complete.

I. Remove all tools, equipment and unwanted material from work area.

J. Disconnect external power. Refer to AMM-24-40-00-051-801 – External Power - Maintenance Practices.

K. If all other maintenance is complete, return aircraft to service. Refer to AMM-20-00-02-051-801 – Return To Service (After Maintenance).



Transponder - Adjustment/Test
Figure 501 (Sheet 1 of 1)

ADS-B - ADJUSTMENT/TEST

AMM-34-50-21-071-801

1. General

A. This task gives procedures to do the adjustment/test of the ADS-B.

NOTE: ADS-B test is only required, if the ADS-B function is enabled.

2. Equipment and Materials

A. Special Tools and Equipment

Name and Part Number
Transponder Test Set (Aeroflex, IFR6000) or equivalent
Weight-on-Wheels (WOW) Box (EAI, 87-117390-1001) or AMC 2.4.01 (or higher).
Ground Power Unit (GPU). AllStar 450 or AllStar G.S.E. or Hobart GPU-400 or Hobart GPU-600 or Bycan PS-28100

3. Job Set-Up

SUBTASK AMM-34-50-21-071-921-001

A. Make aircraft safe for maintenance. Refer to AMM-20-00-01-051-801 – Make Safe For Maintenance.

B. If on jacks, refer to AMM-07-10-00-051-801 – Jacking - Maintenance Practices and AMM-08-20-00-051-801 – Leveling.

C. Connect external power. Refer to AMM-24-40-00-051-801 – External Power - Maintenance Practices. Do not turn on START BATT and SYS BATT switches until prompted.

D. Prepare Anti-ice system for maintenance. Refer to AMM-20-00-03-051-801 – Prepare Anti-Ice Systems For Maintenance .

E. Take proper safety precautions to protect personnel. Position aircraft such that multi-path RF reflections between the IFR-6000 test set, the aircraft's antennas, and surrounding objects are minimized. The area on the left side of the aircraft should not be up against a metal wall or another aircraft. If necessary, position the aircraft outside, away from metal buildings or other aircraft. Refer to Fig. 501.

CAUTION: FAILURE TO COMPLY WITH THIS STEP AND CONTINUING WITH THIS PROCEDURE COULD IMPACT LOCAL AIRPORT TOWER OPERATIONS.

F. If applicable, contact local airport tower to inform them a transponder test is being run at your location (inside or outside). Request appropriate squawk and allotted time to run test.

NOTE: If local airport tower is not informed, use code 1200.

G. Attach test set antenna to Transponder Test Set using 1 foot long test set cable (blue cable, supplied if IFR6000 is used), connected to ANT port on tester.

H. During testing, place the Transponder Test Set antenna approximately two feet to four feet forward and in line with right wing tip tank. May require periodic repositioning between two and four feet.

I. Connect Weight On Wheels (WOW) box or Aircraft Maintenance Computer (AMC) and set switches on Box to W-On-W (on-ground). Refer to AMM-20-00-04-051-801 – Weight On Wheels (WOW) Box - Connect/Disconnect.

4. ADS-B System Test

SUBTASK AMM-34-50-21-071-701-002

A. In order to verify ADS-B OUT function is active, perform the following test using IFR 6000 or an equivalent test set.

NOTE: If IFR 6000 (or an equivalent transponder test set) does not include the ADS-B test capability, at a minimum, verification that the DF17 extended squitter format is being detected is sufficient. During Generic Mode S tests, DF17 format availability is being checked in the following subtasks:

- SUBTASK AMM-34-50-20-071-701-001
- SUBTASK AMM-34-50-20-071-701-002
- SUBTASK AMM-34-50-20-071-701-003
- SUBTASK AMM-34-50-20-071-701-004

NOTE: If no transponder test set with the ADS-B test capability is available, as an additional or alternate method of verifying proper operation and performance of the installed ADS-B OUT function, the FAA Public ADS-B Performance Report (PAPR) may be requested after a Return to Service (RTS) flight. This report request may be made online on the FAA web site at the ADS-B related area.

NOTE: To check if IFR 6000 has the ADS-B test, press SETUP to display SETUP-GENERAL page. Press INFO and verify that ADSB is listed in the OPTIONS area.

If using IFR 6000 with the ADSB test option, to make sure that the ADS-B OUT function is active, perform the following procedure:

(1) ADS-B Test Setup

(a) After the Transponder Test Set (IFR 6000) performs Self Test, push SETUP button on the test set to bring up the SETUP-XPDR page. If necessary, continue pressing SETUP button until SETUP XPDR screen is displayed.

(b) Press ADS-B SETUP Soft Key to display the SETUP-ADSB Setup Screen. Use NEXT PARAM and PREV PARAM Soft Keys to select each parameter. Configure the setup parameters as shown in the following example:
POS DECODE: GLOBAL
LAT: 35 02 13.80 N
LON: 106 37 1.80 W
BARO PRES ALT: 5450 ft.
ADSB MON: DF17

NOTE: LAT and LON must be set to the values corresponding to the location of the test as shown on the MFD GPS Status Page. In this example, for the test set entry, the position data corresponds to the MFD displayed position data of N35º02.23' W106º37.03', where seconds are represented as a fraction of a minute, and, therefore, the entered seconds' values are 0.23 x 60 sec = 13.80 sec and 0.03 x 60 sec = 1.80 sec, respectively. BARO PRES ALT is a test reference and must be set to the value corresponding to the tested aircraft Pressure Altitude. Therefore, using the Autopilot Control Panel (ACP) controls, set Baro Correction to 29.92 inHg, and then enter the altitude value displayed on the PFD into BARO PRES ALT entry field of IFR 6000. This entry may not be available in some IFR 6000 test sets.

(2) ADS-B OUT Data Monitor Test

(a) Make sure aircraft power is off.

(b) Set WOW Box switches to W-on-W (on-ground).

(c) On IFR 6000, press XPDR mode Key until ADSB/GICB/UAT MAIN menu is displayed. Press the ADS-B MON Soft Key to display the ADS-B MON list screen.

(d) Power up the aircraft.

(e) On the PFD, select active transponder and enter transponder test squawk code as 1200 (or as assigned by the Air Traffic Control).

(f) Make sure that the Baro Correction is set to 29.92 inHg.

(g) Set WOW Box switches to W-off-W (airborne). Transponder should be in ALT mode.

(h) On IFR 6000, press Run Test to execute ADS-B MON Test

(i) Select BDS 0,5 AIRBORNE POS and check the following data:
AA = matches aircraft ICAO code displayed on the MFD Settings Page
LAT = comparable to the aircraft latitude.
LON = comparable to the aircraft longitude.
BARO PRES ALT = matches aircraft altitude displayed on the L PFD within 125 ft.

(j) Set WOW Box switches to W-on-W (on-ground).

5. Job Close-Up

SUBTASK AMM-34-50-21-071-921-003

A. Reset the collared ECB's. Refer to AMM-20-00-03-051-801 – Prepare Anti-Ice Systems For Maintenance.

B. Scroll to FLCS using outer knob. Press inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push "RESET" Soft key. Press "CONFIRM RESET" soft key.

- ECB - NOSE LDG GEAR (L AFT Bus)
- ECB - L MAIN LDG GEAR (L AFT Bus)
- ECB - R MAIN LDG GEAR (L AFT Bus)

C. Scroll to ENGINE using outer knob. Press inner knob to select. Scroll to the listed ECB using outer knob and highlight. Push "RESET" Soft key. Press "CONFIRM RESET" soft key.

- ECB - L ENG FIRE EXTNGR (L FWD Bus)
- ECB - R ENG FIRE EXTNGR (R FWD Bus)

D. Power down the aircraft by setting the SYS BATT and START BATT switches to OFF and the BUS TIE to OPEN.

E. Disconnect WOW Box from aircraft. Refer to AMM-20-00-04-051-801 – Weight On Wheels (WOW) Box - Connect/Disconnect.

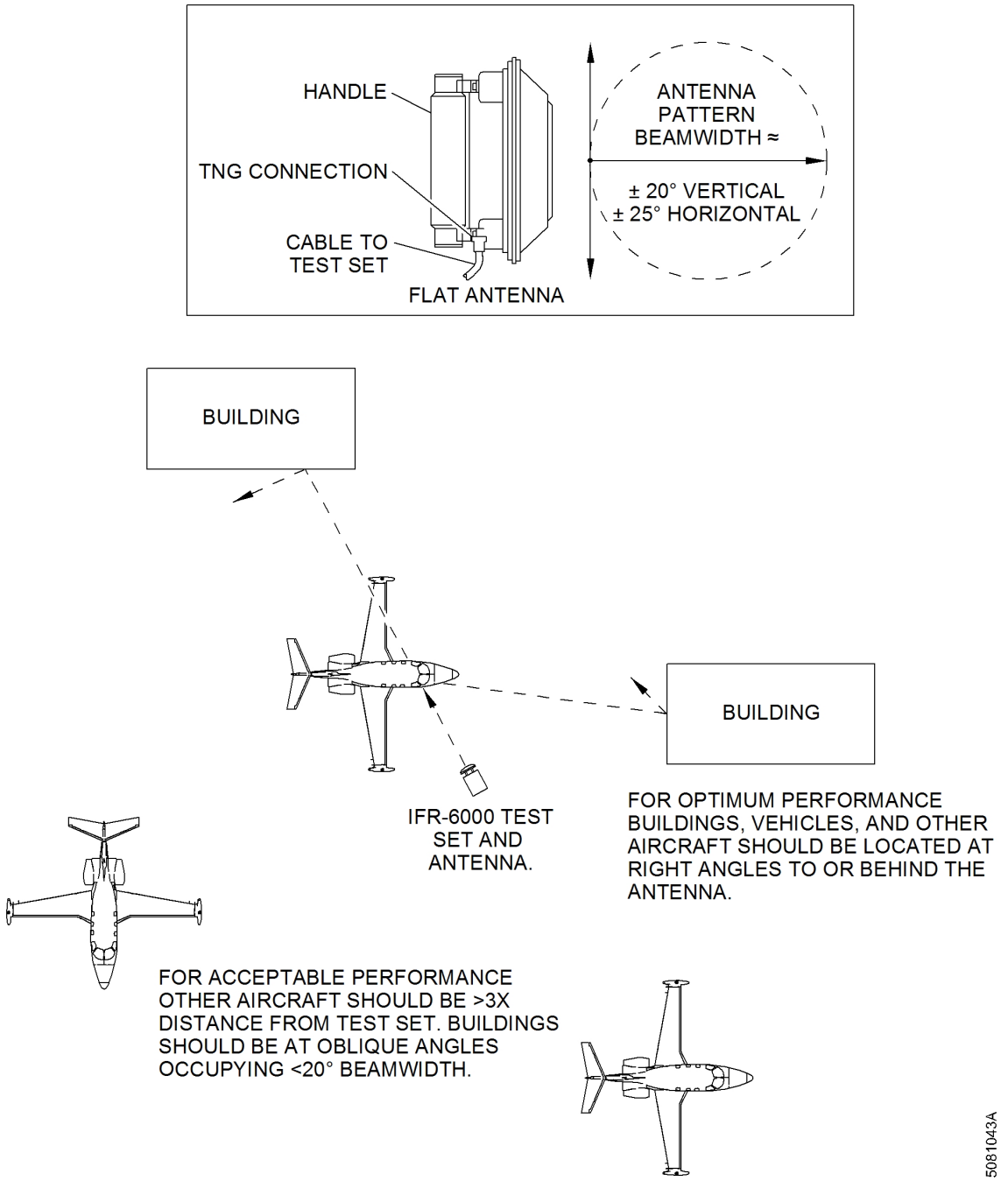
F. If on jacks, lower aircraft and remove jacks. Refer to AMM-07-10-00-051-801 – Jacking - Maintenance Practices.

G. If applicable, call the local control tower and tell them the transponder test is complete.

H. Remove all tools, equipment and unwanted material from work area.

I. Disconnect external power. Refer to AMM-24-40-00-051-801 – External Power - Maintenance Practices.

J. If all other maintenance is complete, return aircraft to service. Refer to AMM-20-00-02-051-801 – Return To Service (After Maintenance).



ADS–B - Adjustment/Test
Figure 501 (Sheet 1 of 1)

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TRANSPONDER ANTENNA RELAY - INSTALLATION

AMM-34-50-23-041-801

1. General

A. This task gives the procedures to install the transponder antenna relay(s).

(1) Dual Diversity Transponder Configuration

(a) There are two transponder (upper and lower) antenna relays installed with the optional Dual Diversity Transponder configuration behind the instrument panel.

2. Job Set-Up

SUBTASK AMM-34-50-23-041-921-001

A. Make sure the aircraft is in the same configuration as it was when the removal task was completed. Refer to AMM-34-50-23-001-801 – Transponder Antenna Relay - Removal.

3. Procedure

SUBTASK AMM-34-50-23-041-411-001

(Refer to Fig. 401. Installation procedures apply to both sides)

NOTE: The lower antenna relay and upper antenna relay are located inboard of their respective diversity transponder(s).

A. Remove the protective caps from the electrical connectors.

B. Put the transponder lower and/or upper antenna relay *(1)* on the structure and align the holes.

C. Attach the transponder lower and/or upper antenna relay *(1)* with the two screws *(3)* and washers *(2)* .

D. Connect the coax cable connectors 23K02P01 to the transponder lower antenna relay coax receptacle marked COM (Common) *(5)* .

E. Connect the coax cable connectors 23K03P01 to the transponder upper antenna relay coax receptacle marked COM (Common) *(5)* .

F. Connect the coax cable connectors 23K02P02 to the transponder lower antenna relay coax receptacle marked NC (Normally Closed) *(6)* .

G. Connect the coax cable connectors 23K03P02 to the transponder upper antenna relay coax receptacle marked NC (Normally Closed) *(6)* .

H. Connect the coax cable connectors 23K02P03 to the transponder lower antenna relay coax receptacle marked NO (Normally Open) *(4)* .

I. Connect the coax cable connectors 23K03P03 to the transponder upper antenna relay coax receptacle marked NO (Normally Open) *(4)* .

J. Connect the electrical connector 23K02P04 to the transponder lower antenna relay electrical receptacle *(7)* .

K. Connect the electrical connector 23K03P04 to the transponder upper antenna relay electrical receptacle *(7)* .

L. Electrically bond the transponder lower antenna relay *(1)* to the structure. Refer to AMM-20-03-00-051-801 – Electrical Bonding - Maintenance Practices. Resistance must be 2.5 milliohms or less.

4. Job Close-Up

SUBTASK AMM-34-50-23-041-921-002

A. Remove all tools, equipment, and unwanted material from the work area.

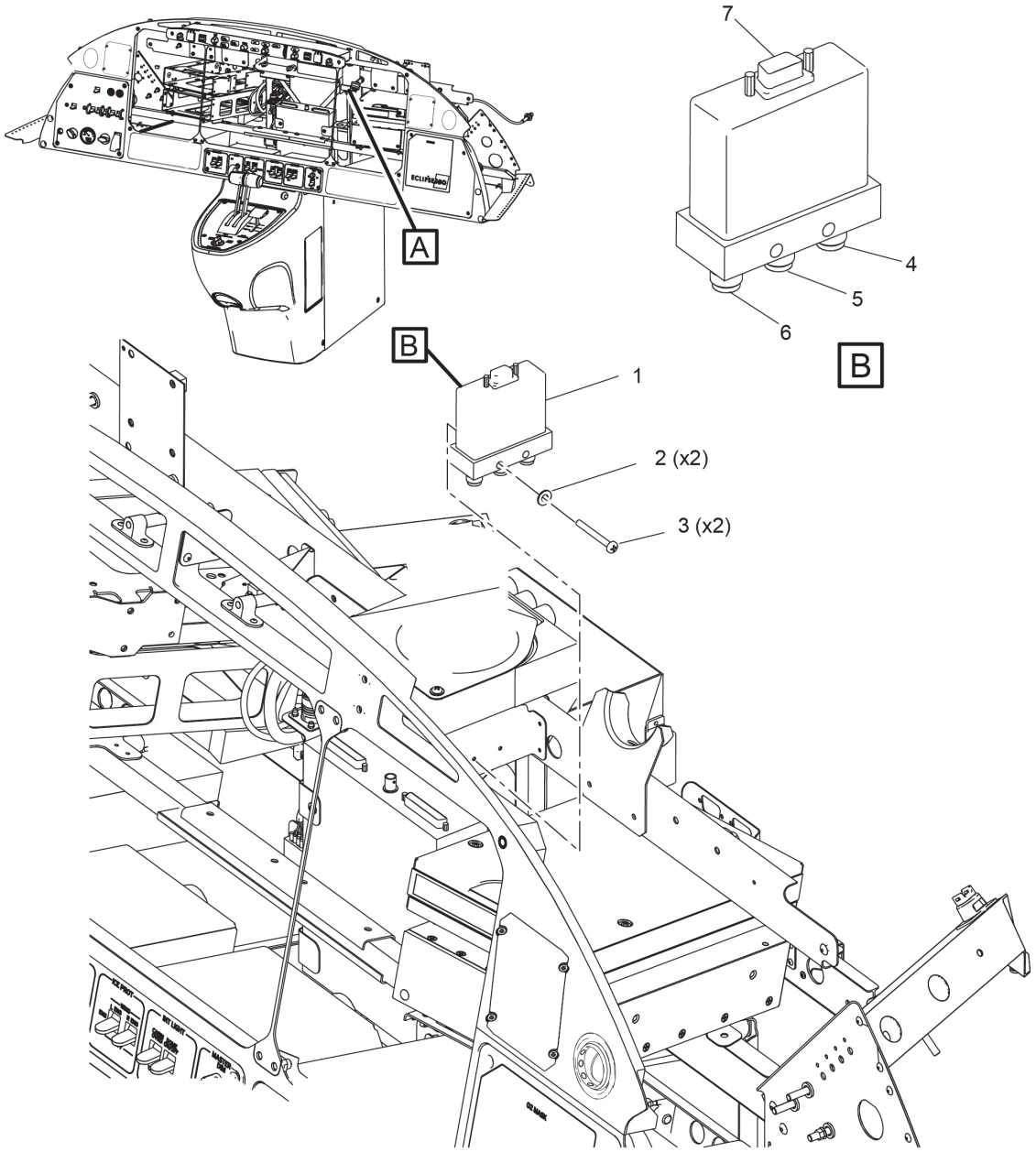
B. If removed, install the air conditioning ducts. Refer to AMM-21-20-11-041-801 – Cockpit Ducting - Installation.

C. Install the 222 KZ - Multi Function Display (MFD). Refer to AMM-31-10-15-041-801 – Multi-Function Display - Installation.

D. Remove the warning placards.

E. Do the adjustment/test of the transponder system. Noting effectivity, refer to AMM-34-50-20-071-801 – Transponder - Adjustment/Test

F. If all other maintenance is complete, return the aircraft to service. Refer to AMM-20-00-02-051-801 – Return To Service (After Maintenance).



NOTE:
STRUCTURE AND EQUIPMENT
REMOVED FOR CLARITY

Transponder Antenna Relay - Removal/Installation
Figure 401 (Sheet 1 of 1)

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TRANSPONDER COOLING - ADJUSTMENT/TEST

AMM-34-50-24-071-801

1. General

A. This task gives procedures to test the transponder cooling system.

2. Job Set-Up

SUBTASK AMM-34-50-24-071-921-001

A. Make the aircraft safe for maintenance. Refer to AMM-20-00-01-051-801 – Make Safe For Maintenance.

B. The mechanical circuit breakers for this procedure are located on the left instrument panel and the pilots and copilots communications jacks panel. Refer to Fig. 501, Sheet 1 and Fig. 502, Sheet 1.

3. Test Procedure

SUBTASK AMM-34-50-24-071-781-001

A. Make sure the following are pushed in:

- MECHANICAL CIRCUIT BREAKER - INSTRUMENT PANEL, LEFT: L PFD CNS 1. Refer to Fig. 501, Sheet 1.
- MECHANICAL CIRCUIT BREAKER - CIRCUIT BREAKER BOX LEFT, XPDR1/ KYBD1). Refer to *(4)* .
- MECHANICAL CIRCUIT BREAKER - CIRCUIT BREAKER BOX RIGHT: XPDR2/ KYBD2). Refer to *(5)* .

B. Power up the aircraft by setting the SYS BATT and START BATT switches to ON and the BUS TIE switch to AUTO. Clear any MASTER WARNINGS/CAUTIONS as needed.

C. On the Multi-Function Display (MFD) ECB page, make sure that the ECB - L PFD, COM/NAV 1, ACP (R FWD Bus) is set to AUTO/ON.

D. Make sure that CAS message - ADVISORY: AVIONICS COOLING FAIL is not displayed on the MFD.

E. Check that the avionics cooling blower is running.

NOTE: The avionics cooling blower operation can be checked for air flow from the glare shield openings.

F. Pull the MECHANICAL CIRCUIT BREAKER - CIRCUIT BREAKER BOX LEFT, XPDR1/ KYBD1 and MECHANICAL CIRCUIT BREAKER - CIRCUIT BREAKER BOX RIGHT: XPDR2/KYBD2). Refer to *(5)* .

- Make sure that the avionics cooling blower is not running.

G. Push in the MECHANICAL CIRCUIT BREAKER - CIRCUIT BREAKER BOX LEFT, XPDR1/KYBD1). Refer to *(4)* .

- Make sure that the avionics cooling blower is running.
- Make sure that the CAS message - ADVISORY: AVIONICS COOLING FAIL is not displayed on the MFD.

H. Push in the MECHANICAL CIRCUIT BREAKER - CIRCUIT BREAKER BOX RIGHT: XPDR2/KYBD2). Refer to *(5)* .

I. Pull the MECHANICAL CIRCUIT BREAKER - CIRCUIT BREAKER BOX LEFT, XPDR1/KYBD1). Refer to *(4)* .

- Make sure that the avionics cooling blower is running.
- Make sure that the CAS message - ADVISORY: AVIONICS COOLING FAIL is not displayed on the MFD.

J. Push in the MECHANICAL CIRCUIT BREAKER - CIRCUIT BREAKER BOX LEFT, XPDR1/KYBD1. Refer to *(4)* .

- Make sure that the avionics cooling blower is running.
- Make sure that the CAS message - ADVISORY: AVIONICS COOLING FAIL is not displayed on the MFD.

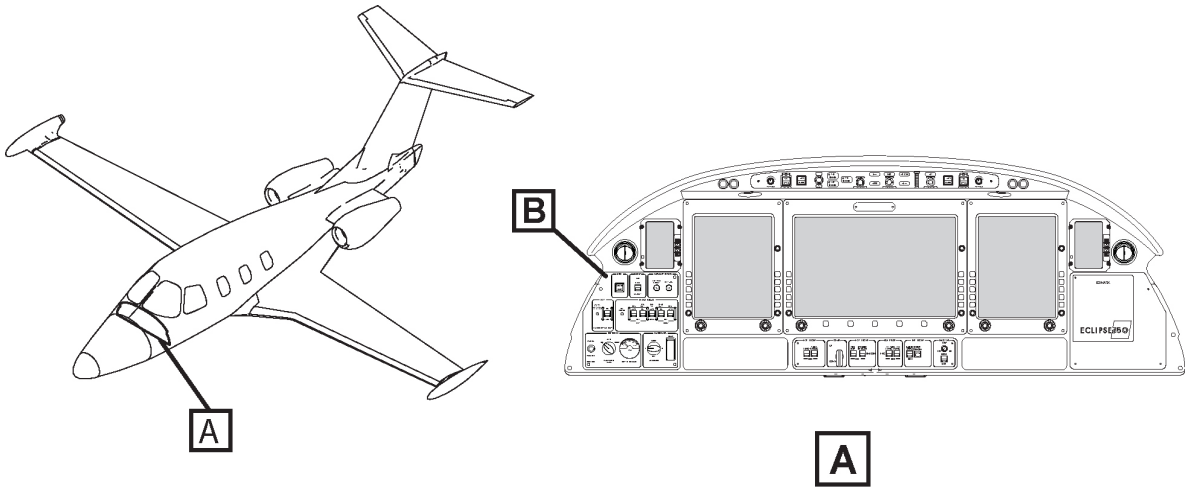
K. Power down aircraft by setting the SYS BATT and START BATT switches to the OFF position and the BUS TIE switch to the OPEN position.

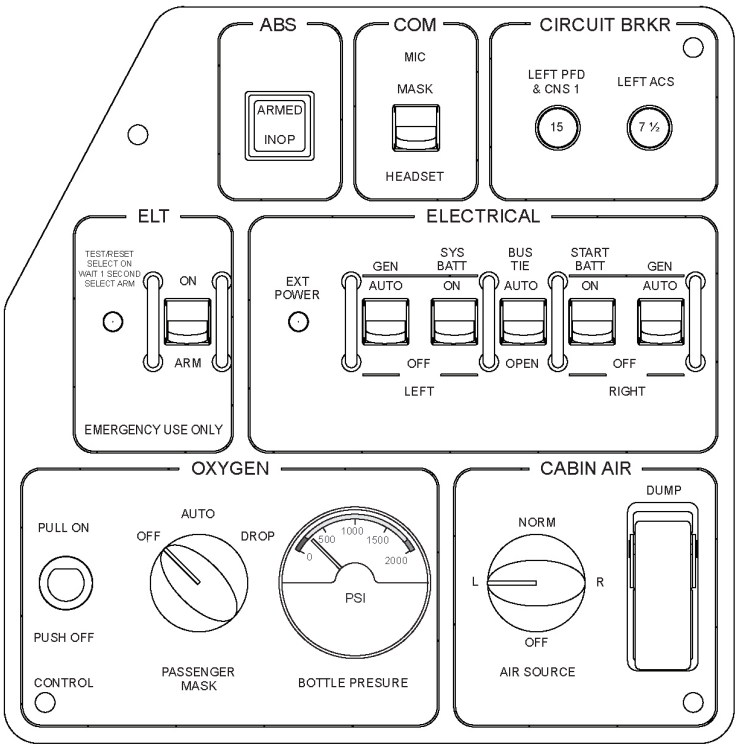
4. Job Close-Up

SUBTASK AMM-34-50-24-071-921-002

A. Remove all tools, equipment, and unwanted material from the work area.

B. If all other maintenance is complete, return the aircraft to service. Refer to AMM-20-00-02-051-801 – Return To Service (After Maintenance).





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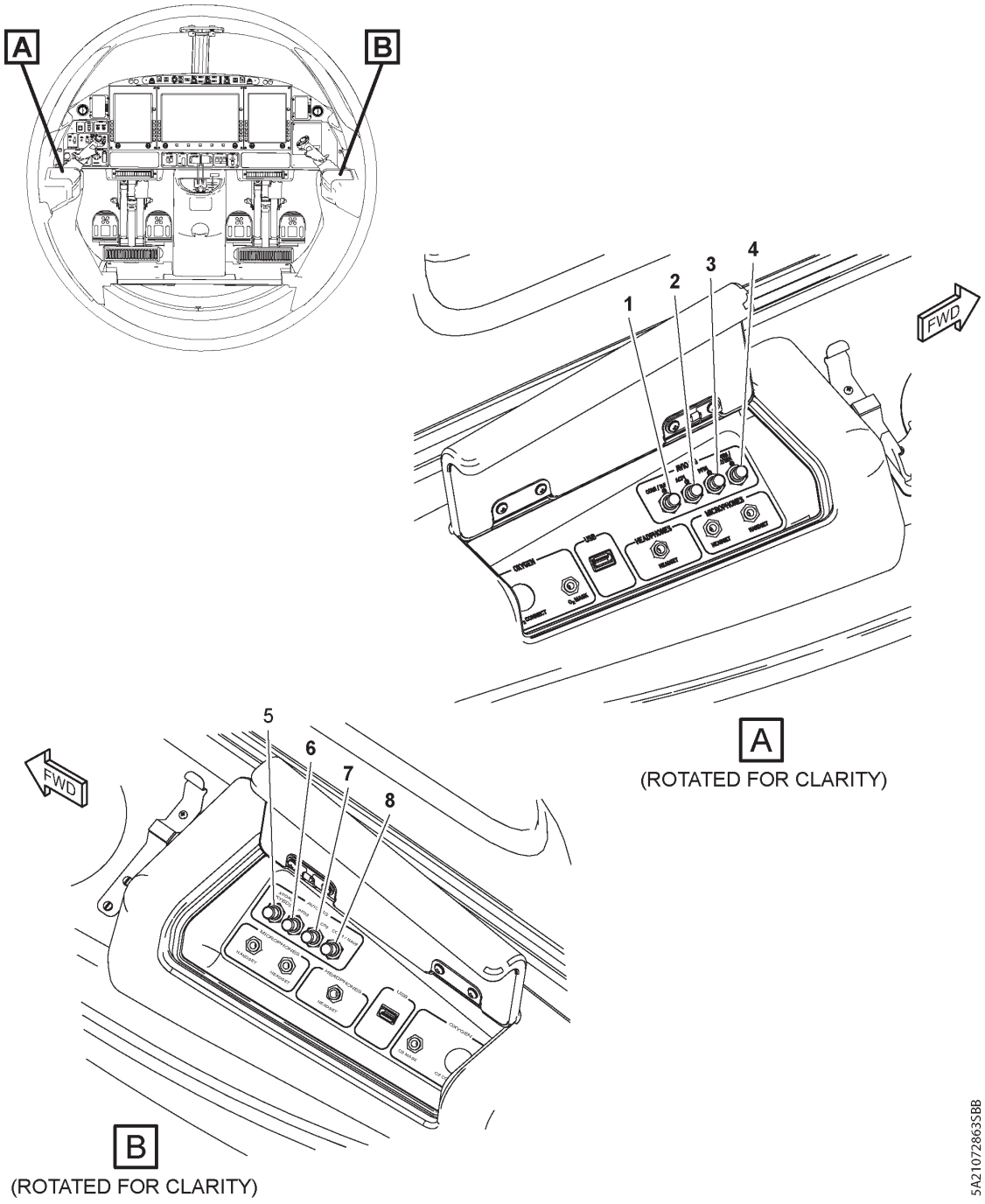
Instrument Panel - Left
Figure 501 (Sheet 1 of 1)



Circuit Breaker Locations
Figure 502 (Sheet 1 of 1)