

Mode A/C Transponder Functional Test

Setup:

1. Set up the remote test antenna on the tripod. Adjust test antenna height to be equal to aircraft Transponder antenna. (Test antenna is usually positioned for convenience.)
2. Horizontally position test antenna the distance from aircraft antenna indicated on test antenna's coaxial cable, approximately 21 inches (53.34 cm) .
3. Route loose end of coaxial cable into the aircraft via a vent window, door or other opening.
4. Connect remote test antenna coaxial cable to RF INPUT/OUTPUT Connector.
5. Power Up the test set.
6. Power up the aircraft as necessary to power the Transponder and altitude encoder
7. Set transponder to Mode A/C and allow to stabilize for at least 1 minute

CAUTION: DAMAGE TO THE TEST SET COULD RESULT WHEN THE REMOTE TEST ANTENNA IS POSITIONED CLOSER THAN 15 INCHES (38.1 CM) TO THE AIRCRAFT ANTENNA WHEN THE TEST SET IS ON.

TRANSPONDER OPERATION TESTS

C1 Transponder Frequency

1. Set FREQ/PWR Switch to **PWR**.
2. Set Pilot's Code of 7777 into Transponder Control Head and remove all altitude code pulses.
3. Adjust FREQ GAIN Control for a midscale FREQ/PWR Meter indication.
4. Rotate XMTR FREQ Control for a peak FREQ/PWR Meter indication.
5. At the peak indication, read deviation (in MHz) (from 1090 MHz) directly from XMTR FREQ Control.
6. Record deviation under C1 in Testrecord.

C2 Peak Transponder Power

1. Set MODE Switch to **A/C ALT, ALT CODE** or **A**.
2. Set FREQ/PWR Switch to **PWR**.
3. Verify FREQ/PWR Meter displays the Transponder's peak transmitting power.
4. Record power under C2 in Testrecord.

C3 Receiver Sensitivity

1. Set MODE Switch to **A/C CODE**.
2. Adjust XPDR SIG LEVEL Control fully ccw.
3. Verify XPDR % RPLY/DME PRF Meter displays **100%** reply.
4. Adjust XPDR SIG LEVEL Control cw until XPDR % RPLY/DME PRF Meter displays **90%** reply.
5. Note position on XPDR SIG LEVEL Control. (This is the minimum trigger level [MTL] of Transponder in -dBm.)
6. Verify the MTL is -69 dBm to -77 dBm (-1.5 dBm) .
7. Record MTL under C3 in testrecord.
8. Set MODE Switch to **A/C ALT**.
9. Repeat Steps 2-6.
10. Verify receiver sensitivity (difference in MTL of the **A/C CODE** and **A/C ALT**) is <1.0 dBm.
11. Adjust XPDR SIG LEVEL Control fully ccw.

C4 Pilot's Code

1. Set MODE Switch to **A/C CODE**.
2. Set Transponder Control Head to A/C Mode. Set code 7777 into Control Head.
3. Verify NUMERICAL Readout displays pilot's code 7777.
4. Set Code from 0 to 7 for every digit.
5. Verify correct numerical readout on the testset for every code you set.
6. Verify appropriate OCTAL READOUT Indicators are lit .
7. Set Code 7777 into control head when finished.

C5 XPDR Receiver-Decoder Limits

1. Adjust INTERROGATION SPACING Control left of 0 until the XPDR % RPLY/DME PRF Meter falls to 0. (Transponder decoder input limits are exceeded.) Note reading.
2. Adjust INTERROGATION SPACING Control right of 0 until the XPDR % RPLY/DME PRF Meter falls to 0. (Transponder decoder input limits are exceeded.) Note reading.

NOTE: The INTERROGATION SPACING Control is normally set to 0.

NOTE: Transponder Decoder limits should be symmetrical above the "0" setting on the INTERROGATION SPACING Control.

C6 Transponder Pulse Spacing

NOTE: If the F2 PULSE SPACING Indicator is lit, the F2 pulse of the reply is either missing or is improperly spaced.

1. Adjust FRAMING PULSE SPACING Control left of zero until the F2 PULSE SPACING Indicator is lit. Note position of FRAMING PULSE SPACING Control.
2. Adjust FRAMING PULSE SPACING Control right of zero until the F2 PULSE SPACING Indicator is lit. Note position of FRAMING PULSE SPACING Control.
3. Calculate difference between position in Step 1 and position in Step 2 - this is the approximate width of the F2 pulse.
4. Record the values under C6 in testrecord.

NOTE: If the F2 pulse is displaced, the other reply pulses may be skewed out of position proportionally.

NOTE: Transponder Decoder limits should be symmetrical above the "0" setting on the INTERROGATION SPACING Control.

C7-C8 SLS Operation

1. Set MODE Switch to **A/C ALT** or **A/C CODE**.
2. Using XPDR SIGNAL LEVEL Control, set RF level output to 3 dB above minimum trigger level (MTL).
3. Set 0/OFF/-9 dB SLS Switch to **0dB**.
4. Verify Transponder maintains 3% reply on XPDR % RPLY/DME PRF Meter. Record under C8.
5. Set 0/OFF/-9 dB SLS Switch to **-9dB**.
6. Verify Transponder maintains >90% reply on XPDR % RPLY/DME PRF Meter. Record under C7.

C9 IDENT (XPDR) Pulse Output

1. Press Ident Button on the Transponder Control Head.
2. Verify IDENT PULSE Indicator is lit. (IDENT PULSE Indicator stays lit for duration of IDENT pulse: for approximately 30 seconds.)
3. Record lit time under C9 in testrecord.

C10 Self test

1. Set Transponder Mode switch to self test.
2. Verify proper self test indication on transponder control head

C11 Altitude Code

1. Set MODE Switch to **A/C ALT**.
2. Verify NUMERICAL Readout displays output of encoding altimeter in feet (with Baro Knob on encoding altimeter set to 1013 hPa (29.92 inches Hg)).
3. Maximum difference may not exceed 125 ft.
4. Record difference under C11 in testrecord.

NOTE: The encoding altimeter code output is unaffected by changing the Baro Knob setting and always indicates altitude referenced to 1013 hPa (29.92 inches Hg).

C12 Reply light

1. Verify reply light is working and the brightness allows to recognise from pilots seat.

C13 Panel light

1. Verify panel light is working and dimming function is working.
2. Verify brightness allows the to recognise all indications from pilots seat without other illumination present.