



<b>sabena</b> <sup>®</sup> <b>B707</b>	Module: COCKPIT + WINDOW	A/C Reg :	Check :	 <b>82K0000534</b>
	Oper. : RT-MP HT			
	Type : *OPER./FUNC. CHE	Issuer : A48308	Cert.St.: 50516	
Spec. : REI INSP	Release Date: 15.03.2010		Page 1 of 7	

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**AIR DATA SYSTEM FUNCTIONAL**

		MAINT	RII/INSP
Execution / Start Date:			
End Date:			

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					MAINT	RII/INSP
Nr.	Hardtime	Task	Spec.	Related Documents		
1.		F2	INS	MMS-328 341002 00200 rev 21/01/08 MPD 04-34-02.C rev . MPD CARD 2C-71 rev .		
<b>Check:</b> 24 MTH						
<b>Zones:</b> 221, 222						
<b>Access:</b>						
NRC YES <input type="radio"/> NO <input type="radio"/>		IF YES, NUMBER(S):				

PERFORM A GROUND CALIBRATION OF AIR DATA SYSTEM

**GUIDANCE ON TRANSPONDER GROUND TESTING**

To avoid the generation of airborne collision avoidance system (ACAS) traffic advisories (TAs) and resolution advisories (RAs), special precautions and appropriate procedures described below are required during transponder testing and maintenance:

- a) when not required, ensure that all transponders are set to "OFF" or "Standby";
- b) before starting any test, contact the local air traffic control (ATC) unit and advise them of your intention to conduct transponder testing and indicate the planned start time and test duration. Also inform them of your intended Mode A code (see subparagraph c) below) and your intended aircraft identification (Flight ID, see subparagraph d) below);

**Belgocontrol:** we do not require prior co-ordination with our services. However, you may inform ATS about your intentions via FAX to +32.2.206.2729. Note that any notification sent will not relieve you from the entire responsibility for the proper conduct of the test!

- c) prior to "switch-on" or with the transponder in "standby" mode, set the Mode A code to a value that is regionally agreed to be used for transponder testing;

**NOTE: Mode A code 7 776 is assigned as a reserved code in Europe, specifically for the testing of transponders. Australia requires the use of Mode A code 2 100 for transponder testing.**

**Belgocontrol:** preferably use Mode A code 7776. Use code 2000 as a second code if your test procedure asks for the simultaneous use of 2 Mode A codes.


- d) for a Mode S transponder, set the aircraft identification (Flight ID) to the first eight characters of the name of the company that is conducting the tests (or something to that effect);

**Belgocontrol:** examples might be: SNTECH, DHLEAT, LHTECH, 15WING, FEDPOL, ABELAG, 0

- e) set the on-the-ground status for all Mode S replies, except when an airborne reply is required (e.g. for altitude testing);
- f) where possible, perform the testing inside a hanger to take advantage of any shielding properties it may provide;
- g) as a precaution, use antenna transmission covers whether or not testing is performed inside or outside;
- h) when testing the altitude parameter of a Mode A/C or Mode S transponder, radiate directly into the ramp test set via the prescribed attenuator;

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	MAINT	RII/INSP
<p>i) manually set the altitude to an unrealistically high value (i.e. over 60 000 feet);</p> <p><b>Belgocontrol:</b> we doubt this is practically feasible. Any feedback on this item is welcome!</p> <p>j) in between testing, i.e. to transition from one altitude to another, or changing the Mode A code, set the transponder to “Standby” mode before changing the altitude input;</p> <p>k) when testing is complete, immediately set the transponders) to “OFF” or “Standby”;</p> <p>l) simulation of ACAS operation must not be carried out by radiating from an antenna located on, or remotely based, from a workshop; and</p> <p>m) finally, it should be noted that the current practices of testing transponders with different altitudes using Gilham encoders may no longer be required for aircraft using altitude encoders with serial output.</p> <p><u>A. DETERMINATION OF ALTITUDE ACCURACY.</u></p> <p><b>NOTE: Following procedure has to be performed for each ADDU separately. Select appropriate ADDU with the ADDU select switch.</b></p> <p><b>NOTE: Self test STR 2000-A1 can only check if stream of data bus is there (parity), but is unable to check altitude accuracy.</b></p> <p><u>Activate STR 2000-A1</u></p> <ol style="list-style-type: none"> <li>Ensure self test OK, CADU FAIL indicator extinguished. <ul style="list-style-type: none"> <li>– Ensure TTU-205 test set is hooked-up to the LH &amp; RH pitot static system.</li> <li>– Close ADC1, ADC 2 &amp; KIFIS circuit breakers on panel P5.</li> <li>– Place CADU rotary switch to the NORM position.</li> <li>– If mode C &amp; mode S are not activated, select both modes on CADU.</li> <li>– Select Test position on TEST/NORM switch.</li> <li>– Adjust TTU-205 test set sequentially to the altitudes &amp; airspeeds shown in altitude column tables.</li> </ul> </li> </ol> <p><b>Note:</b> The constant cruise mach No. for the A/C with all four engines in operation is 0.82. Monitor the A/C machmeter at each altitude setting &amp; ensure that the mach No. never exceeds 0.82. Erroneous altitude readings may occur if this mach No. is exceeded. Adjust the test set airspeed accordingly.</p> <ul style="list-style-type: none"> <li>– Select ATRBS REPLY TEST at IFF-701 test set &amp; interrogate STR 2000-A1 via lower antenna as follows: <ul style="list-style-type: none"> <li>– Press RUN/STOP, TEST RUNNING will be displayed.</li> </ul> </li> <li>– Select each altitude level in sequence &amp; verify that the display mode C altitude on the screen equals with the altitude setting on TTU-205. Verify the cockpit indicated altitude is within tolerance for each altitude setting. Altimeter accuracy tolerance is given in table 4,5,6 &amp; 7.</li> </ul> <p><b>Note:</b> Pilots altimeter must be to RESET &amp; copilots altimeter to STBY.</p>		

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**AIR DATA SYSTEM FUNCTIONAL**

TABLE 3A			MAINT	RII/INSP
** ATCRBS REPLY TEST – PASSED **				
F1 to F2 SPACING	3: **** μS	C: 20,30 μS ± 0,1 μS		
F1 PULSE WIDTH	3: **** μS	C: 0,30 μS ± 0,1 μS		
F2 PULSE WIDTH	3: **** μS	C: 0,30 μS ± 0,1 μS		
CODE= ****	ALT = FT	(—)		
Press RUN to start				

**B. ENABLE MODE 'C'.**

- Press softkey MENU, 'MODE ' 'SEL' appears in the alpha-numeric display.
- Press softkey 6 'C' 'MODE' 'INP' appears in the alpha-numeric display.
- If the mode 'C' enable status is already ON (LED C illuminated), press softkey ENT. The words (AC) & (CEPT) will appear in the alpha-numeric display.
- If the mode 'C' enable status is shown as OFF, press softkey 6 (C) again to enable mode C to be turned ON, confirmed by illumination of LED C.
- Complete the selection by pressing ENT.

**C. ENABLE MODE 'S'.**


**NOTE:** Squitter may be enabled manually or can be automatically enabled during the activation of mode S by use of the toggle switch MIL/MC/CIV.

- Prior to activation of mode S, ensure switch MIL/MC/CIV is placed in the CIV position.
- Press softkey MENU, 'MODE' 'SEL' appears in the alpha-numeric display.
- Press softkey 7 'C' 'MODE' 'INP' appears in the alpha-numeric display.
- If MODE S enable status is already ON (LED S illuminated). Press softkey ENT. The words (AC) & (CEPT) will appear in the alpha-numeric display.
- If the MODE 'S' enable status is shown as OFF, press softkey 7 (S) again to enable mode S to be turned ON, confirmed by illumination of LED S.
- Complete the selection by pressing ENT.
- Verify LED SQ & LED S are both illuminated.

**D. TEST 3 ATCRBS REPLY.**

The IFF-701 interrogates UUT with mode 3/A & C

- Press RUN/STOP, test RUNNING will be displayed.
- ON completion, verify the following on the screen.

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**AIR DATA SYSTEM FUNCTIONAL**

TABLE 3B				MAINT	RII/INSP
** ATCRBS REPLY TEST – PASSED **					
F1 to F2 SPACING	3: 20,30 $\mu$ S $\pm$ 0,1 $\mu$ S	C: 20,30 $\mu$ S $\pm$ 0,1 $\mu$ S			
F1 PULSE WIDTH	3: 0,45 $\mu$ S $\pm$ 0,1 $\mu$ S	C: 0,45 $\mu$ S $\pm$ 0,1 $\mu$ S			
F2 PULSE WIDTH	3: 0,45 $\mu$ S $\pm$ 0,1 $\mu$ S	C: 0,45 $\mu$ S $\pm$ 0,1 $\mu$ S			
CODE= ****	ALT = 10000 FT	(—)			
Press RUN to start					
<b><u>ALTITUDE COLUMN TABLES</u></b>					
TABLE 4					
<b>Note:</b> SSEC does not affect values below 25000 ft & below mach 0.5.					
TTU-205 ALTITUDE (ft) at AIRSPEED 300 KTS	ADDU 1 (ft)		ADDU 2 (ft)		
	Tolerance		Tolerance		
500	$\pm$ 15 ft		$\pm$ 15 ft		
1000	$\pm$ 15 ft		$\pm$ 15 ft		
1500	$\pm$ 15 ft		$\pm$ 15 ft		
2000	$\pm$ 15 ft		$\pm$ 15 ft		
4000	$\pm$ 15 ft		$\pm$ 15 ft		
6000	$\pm$ 15 ft		$\pm$ 15 ft		
8000	$\pm$ 15 ft		$\pm$ 15 ft		
10000	$\pm$ 20 ft		$\pm$ 20 ft		
15000	$\pm$ 20 ft		$\pm$ 20 ft		
20000	$\pm$ 30 ft		$\pm$ 30 ft		
25000	$\pm$ 30 ft		$\pm$ 30 ft		

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TABLE 5						MAINT	RII/INSP
<p><b>Note:</b> Following table shows the SSEC corrected values for A/C LXN 19997.</p>							
TTU-205 Test set setting		Pilot system ICM P/N 9B-03508-170		Copilot system ICM P/N 9B-03508-171			
Altitude (ft)	Airspeed (knots)	Nominal ADDU 1 Pointer indication (ft) / allowable tolerance	ADDU 1 Pointer indication (ft) QNH 29,92 InHg	Nominal ADDU 2 Pointer indication (ft) / allowable tolerance	ADDU 1 Pointer indication (ft) QNH 29,92 InHg		
30000	203	30011 / ± 30		30005 / ± 30			
30000	243	30005 / ± 30		30004 / ± 30			
30000	283	30019 / ± 30		30016 / ± 30			
30000	325	30065 / ± 30		30052 / ± 30			
35000	199	35006 / ± 32.5		35004 / ± 32.5			
35000	217	35005 / ± 32.5		35004 / ± 32.5			
35000	253	35018 / ± 32.5		35016 / ± 32.5			
35000	291	35063 / ± 32.5		35050 / ± 32.5			
40000	193	40005 / ± 35		40004 / ± 35			
40000	225	40018 / ± 35		40016 / ± 35			
40000	259	40062 / ± 35		40049 / ± 35			
TABLE 6							
<p><b>Note:</b> Following table shows the SSEC corrected values for A/C LXN 20000.</p>							
TTU-205 Test set setting		Pilot system ICM P/N 9B-03508-172		Copilot system ICM P/N 9B-03508-173			
Altitude (ft)	Airspeed (knots)	Nominal ADDU 1 Pointer indication (ft) / allowable tolerance	ADDU 1 Pointer indication (ft) QNH 29,92 InHg	Nominal ADDU 2 Pointer indication (ft) / allowable tolerance	ADDU 1 Pointer indication (ft) QNH 29,92 InHg		
30000	203	29989 / ± 30		29981 / ± 30			
30000	243	29986 / ± 30		29974 / ± 30			
30000	283	29994 / ± 30		29975 / ± 30			
30000	325	30021 / ± 30		29994 / ± 30			
35000	199	34987/ ± 32.5		34978/ ± 32.5			
35000	217	34987 / ± 32.5		34975 / ± 32.5			
35000	253	34994 / ± 32.5		34976 / ± 32.5			
35000	291	35020 / ± 32.5		34994 / ± 32.5			
40000	193	39987 / ± 35		39975 / ± 35			
40000	225	39994 / ± 35		39977 / ± 35			
40000	259	40020 / ± 35		39994 / ± 35			

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TABLE 7

**Note:** Following table shows the SSEC corrected values for A/C LXN 20199.

TTU-205 Test set setting		Pilot system ICM P/N 9B-03508-174		Copilot system ICM P/N 9B-03508-175	
Altitude (ft)	Airspeed (knots)	Nominal ADDU 1 Pointer indication (ft) / allowable tolerance	ADDU 1 Pointer indication (ft) QNH 29,92 InHg	Nominal ADDU 2 Pointer indication (ft) / allowable tolerance	ADDU 1 Pointer indication (ft) QNH 29,92 InHg
30000	203	30003 / ± 30		30013 / ± 30	
30000	243	30006 / ± 30		30020 / ± 30	
30000	283	30028 / ± 30		30045 / ± 30	
30000	325	30083 / ± 30		30099 / ± 30	
35000	199	35003 / ± 32.5		35014 / ± 32.5	
35000	217	35006 / ± 32.5		35019 / ± 32.5	
35000	253	35027 / ± 32.5		35043 / ± 32.5	
35000	291	35080 / ± 32.5		35095 / ± 32.5	
40000	193	40006 / ± 35		40019 / ± 35	
40000	225	40027 / ± 35		40042 / ± 35	
40000	259	40079 / ± 35		40094 / ± 35	

**MAINT**

**RII/INSP**