


	FUNCTIONAL TEST	<u>PFBFA-24-60-01-00/1</u>	Issue	C	Pages	10																																																
	SPF, Aircraft System Engineering Department																																																					
Aircraft	A330 MRTT																																																					
Title: <p style="text-align: center;"><i>DC Network System Functional Test</i></p>																																																						
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Prepared by:		Checked by:		Approved by:																																																		
Javier Fernández Martín		Jesús Villasante San Román		Rafael Moreno Sanchez																																																		
Signature:		Signature:		Signature:																																																		
																																																						
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REVISIONS RECORD

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1 INTRODUCTION

1.1 Object

The purpose of this test is to check the integrity and functionality of the Aircraft DC Electrical Power System (ATA24) after the installation of the EEN for powering the new Military Systems. Furthermore to check the functionality of the battery discharge warning horn. This test is performed with external power and therefore generator tests are excluded in this part.

1.2 List of acronyms and abbreviations

AMM	Aircraft Maintenance Manual
MRTT	Multi-Role Tanker Transport
MFCD	Multi-Function and Control Display
GPU	Ground Power Unit
EEN	Electrical Extensión Network
AWM	Aircraft Wiring Manual
RAAF	Royal Australian Air Force
CBMU	Circuit Breaker Monitoring Unit
EIS	Electronic Instrument System
ECAM	Electronic Centralized Aircraft Monitoring

2 APPLICABLE DOCUMENTATION

NT-FA-SGU-07025	A330 MRTT. ATA24 Electrical System Functional Test
AMM - RAAF	A330 Aircraft Maintenance Manual (AMM) – Royal Australian Air Force
AWM - RAAF	A330 Aircraft Wiring Manual (AWM) – Royal Australian Air Force
TASK 24-41-00-862-802	De-energize Aircraft Electrical Circuits from External Power A
TASK 24-41-00-861-801	Energize Aircraft Electrical Circuits from External Power A

3 REQUIRED EQUIPMENT

- External GPU of 115/200 VAC, 3-phase, 400 Hz
- Digital multimeter model Fulke 8060 A or equivalent.

4 DEFINITIONS

N/A

5 PRELIMINARY INSTRUCTIONS

5.1 Test Preparation

The systems to be operative for the test performance are the EIS, ECAM part and MFCD system for the electrical system monitoring.

On the other hand PFBFA-31-00-02-00-1_MFCP System Pages Controls and Indications Functional Test must have been executed.

5.2 Safety Instructions

Prior to performing any test, the following requirements must be met:

- Adequate electrical fire, extinguishing equipment shall be available within the aircraft and shall be within calibration / maintenance.
- No other testing shall be executed simultaneously on the aircraft which might interfere with the correct execution of these tests.
- All Operator Safety hazards shall be identified and appropriate clothing, and or precautions shall be taken.
- Check that all control switches, and selectors of the electrical installation are in the OFF position.

5.3 Preliminary Actions

- All the engines and the APU shall be shut down.
- Batteries will be checked for correct connectivity. They shall also be checked to ensure they are fully charged.
- The wiring continuity tests of the system-under-test shall have been concluded successfully.
- The equipment and components of the system-under-test shall have been properly installed, in accordance with the applicable documentation. They shall be verified as fully operative.

6 TEST EXECUTION

WARNING: BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

NOTE: All results are to be recorded in the Result Table below. Where no steps result required mark STEP RESULT box with N/A

6.1 DC Network System Functional Test:

6.1.1 Apply procedure 24-41-00-861-801 of AMM (Energize the Aircraft Electrical Circuits from the External Power A)

6.1.2 If EIS system is not operative, apply procedure 31-60-00-860-801 of AMM (EIS start procedure)

6.1.3 On the ECAM (*Figure 1*) control panel, push the EL/AC key, and then check that TR3 and TR4 are displayed. If any TR consumes less than 3 A, is shown in amber.

PASS ☐ FAIL ☐ COMMENT:

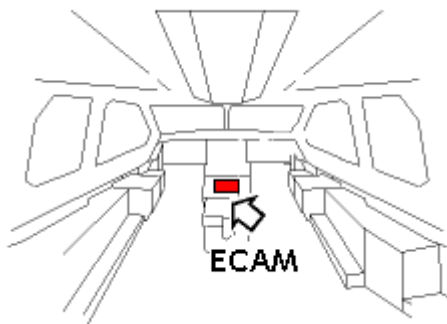


Figure 1. Cockpit Panel Location.

6.1.4 On the ECAM control panel, push the EL/DC key.

6.1.5 Check that TR3 supplies DC M1 and DC M3.

PASS ☐ FAIL ☐ COMMENT:

6.1.6 Check that TR4 supplies DC M2 and DC M4.

PASS ☐ FAIL ☐ COMMENT:

6.1.7 Check that TR3 and TR4 voltage is around 28Vdc.

PASS ☐ FAIL ☐ COMMENT:

6.2 BCL Functional Test.

6.2.1 Make sure that these circuit breakers are closed:

PANEL	DESIGNATION	FIN	LOCATION
5000VE	DC SUPPLY 309PP REF BCL APU	14PB3	B02
5000VE	DC SUPPLY BAT REF BCL APU	13PB3	B03
5000VE	DC SUPPLY BAT APU CNTOR	12PB3	B04
715VU	105XP	3XN1	H55
715VU	TR 1	3PU1	J55
715VU	204XP	2XN2	U56
715VU	TR 2 NORM	3PU2	W56
721VU	ECMU 1 1XP SNSG	6XM	K05
721VU	CMC 1 SWTG	4TM1	U07
721VU	TR 2 NORM MONG	10PU	X09
721VU	BCL 1 301PP REF	14PB1	Q08
721VU	BCL 2 301PP REF	14PB2	Q09
722VU	CMC 2	3TM2	D45
722VU	MCDU 2	7CA2	C47
722VU	ECMU 2 2XP SNSG	7XM	F49
722VU	TR 2 NORM SPLY CTL	8PU	J50
722VU	CMC 2 SWTG	4TM2	W40
735VU	301PP	11PB	D24
735VU	303PP	9PB	E24
742VU	TR 1 MONG	4PU	A79
742VU	TR 2 ESS MONG	9PU	E78
742VU	CMC 1	3TM1	N72
742VU	MCDU 1	7CA1	Q61
742VU	BAT 2 CNTOR	12PB2	H74
742VU	BAT REF BCL 2	13PB2	H75
742VU	BAT 1 CNTOR	12PB1	J73
742VU	BAT REF BCL 1	13PB1	J74
742VU	702PP	10PB2	S71
742VU	701PP	10PB1	S72

NOTE : Ignore the ECAM warnings as long as the CMC is in the menu mode. The procedure below is applicable to each MCDU. The actions and the results of this procedure occur on the MCDU used.

6.2.2 Push the MCDU MENU mode key. The MCDU MENU page comes into view.

- 6.2.3 Push the line key adjacent to the CMS indication. The MAINTENANCE MENU page comes into VIEW
- 6.2.4 Push the line key adjacent to the SYSTEM REPORT/TEST indication. The SYSTEM REPORT/TEST 1/6 menu page comes into view.
- 6.2.5 Push the down arrow key. The SYSTEM REPORT/TEST 2/6 menu page comes into view.
- 6.2.6 Push the line key adjacent to the DC indication. The SYSTEM REPORT/TEST ELEC: DC page comes into view.
- 6.2.7 On the MCDU, push the line adjacent to BCL 1 indication. The BCL 1 page comes into view
- 6.2.8 On the MCDU, push the line adjacent to TEST indication.
- 6.2.9 The BCL 1 TEST page comes into view with the following message: "TEST IN PROGRESS 30 s ON OVHD PANEL 235VU BAT 1 FAULT LT ON DURING THE TEST, ON OVHD PANEL EMER ELEC PANEL 211VU EMER GEN FAULT LT ON DURING THE TEST"
- 6.2.10 On the panel 235VU, check that the FAULT legend of the BAT 1 pushbutton switch comes on for 30 second approximately.
PASS ☐ **FAIL** ☐ **COMMENT:**
- 6.2.11 On the panel 211V check that the FAULT legend of the EMER GEN pushbutton switch comes on for 30 second approximately.
PASS ☐ **FAIL** ☐ **COMMENT:**
- 6.2.12 On the MCDU check that the following message is displayed: "TEST OK IF ON OVHD ELECT PANEL 235VU BAT 1 FAULT LT ON DURING THE TEST, ON OVHD EMER ELEC PANEL 211VU EMER GEN FAULT LT ON DURING THE TEST"
PASS ☐ **FAIL** ☐ **COMMENT:**
- 6.2.13 On the MCDU, push the line key adjacent to the RETURN indication until the SYSTEM REPORT/TEST ELEC. DC page comes into view.
- 6.2.14 On the MCDU, push the line adjacent to BCL 2 indication. The BCL 2 page comes into view
- 6.2.15 On the MCDU, push the line adjacent to TEST indication.
- 6.2.16 Check that the BCL 2 TEST page comes into view with the following message: "TEST IN PROGRESS 30 s ON OVHD PANEL 235VU BAT 2 FAULT LT ON DURING THE TEST, ON OVHD PANEL EMER ELEC PANEL 211VU EMER GEN FAULT LT ON DURING THE TEST"
- 6.2.17 On the panel 235VU, check that the FAULT legend of the BAT 2 pushbutton switch comes on for 30 second approximately.
PASS ☐ **FAIL** ☐ **COMMENT:**
- 6.2.18 On the panel 211V check that the FAULT legend of the EMER GEN pushbutton switch comes on for 30 second approximately.

PASS ☐ **FAIL** ☐ **COMMENT:**

- 6.2.19 On the MCDU check that the following message is displayed: "TEST OK IF ON OVHD ELECT PANEL 235VU BAT 2 FAULT LT ON DURING THE TEST, ON OVHD EMER ELEC PANEL 211VU EMER GEN FAULT LT ON DURING THE TEST"

PASS ☐ **FAIL** ☐ **COMMENT:**

- 6.2.20 On the MCDU, push the line key adjacent to the RETURN indication until the SYSTEM REPORT/TEST ELEC. DC page comes into view.

- 6.2.21 On the MCDU, push the line adjacent to BCL APU indication. The BCL APU page comes into view

- 6.2.22 On the MCDU, push the line adjacent to TEST indication.

- 6.2.23 Check that the BCL APU TEST page comes into view with the following message: "TEST IN PROGRESS 30 s ON OVHD PANEL 235VU BAT APU FAULT LT ON DURING THE TEST, ON OVHD PANEL EMER ELEC PANEL 211VU EMER GEN FAULT LT ON DURING THE TEST"

- 6.2.24 On the panel 235VU, check that the FAULT legend of the BAT APU pushbutton switch comes on for 30 second approximately.

PASS ☐ **FAIL** ☐ **COMMENT:**

- 6.2.25 On the MCDU check that the following message is displayed: "TEST OK IF ON OVHD ELECT PANEL 235VU BAT APU FAULT LT ON DURING THE TEST"

PASS ☐ **FAIL** ☐ **COMMENT:**

- 6.2.26 On the MCDU, push the line key adjacent to the RETURN indication until the MAINTENANCE MENU 1/2 page comes into view.

- 6.2.27 De-energize Aircraft Electrical Circuits from External Power A (Ref. TASK 24-41-00-862-802), if no further testing is required.

7 TEST RESULTS

Type on the following tables the results of the tests:

7.1 DC Network System Functional Test Result:

STEP	STEP RESULT (TICK BOX)	COMMENT (IF FAIL)
6.1.3	TR3 and TR4 are displayed	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
6.1.5	TR3 supplies DC M1 and DC M2	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
6.1.6	TR4 supplies DC M2 and DC M4	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
6.1.7	TR3 and TR4 voltage is around 28Vdc	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
OVERALL TEST RESULT (TICK BOX)	COMENTS:	
PASS <input type="checkbox"/>		
FAIL <input type="checkbox"/>		

7.2 BCL Function Test Result:

STEP	STEP RESULT (TICK BOX)	COMMENT (IF FAIL)
6.2.10	FAULT legend of the BAT 1 pushbutton switch comes on for 30 second approximately	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
6.2.11	FAULT legend of the EMER GEN pushbutton switch comes on for 30 second approximately	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
6.2.12	TEST OK	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
6.2.17	FAULT legend of the BAT 2 pushbutton switch comes on for 30 second approximately	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
6.2.18	FAULT legend of the EMER GEN pushbutton switch comes on for 30 second approximately	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>
6.2.19	TEST OK	
	PASS <input type="checkbox"/>	FAIL <input type="checkbox"/>

STEP		STEP RESULT (TICK BOX)			COMMENT (IF FAIL)		
6.2.24		FAULT legend of the BAT APU pushbutton switch comes on for 30 second approximately					
		PASS	<input type="checkbox"/>	FAIL	<input type="checkbox"/>		
6.2.25		TEST OK					
		PASS	<input type="checkbox"/>	FAIL	<input type="checkbox"/>		
OVERALL TEST RESULT (TICK BOX)		COMENTS:					
PASS							<input type="checkbox"/>
FAIL							<input type="checkbox"/>

NOTE: In Case of NCS, write down its number on Table 1

N.C.S. Number	Date

Table 1

NOTE: After this functional test execution, stamp the correspondent operation on the Production Order.

NOTE: Every result sheet must be stamped and attached to Production Order.

STAMP:	
DATE:	