
CONSERT - Antenna on Rosetta S/C

Project Deployment Test Report of the Consert S/C-Antenna STM after Modification

RO-OCN-TR-3003.5

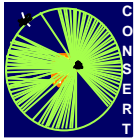
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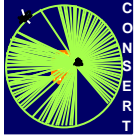
Approval Sheet

prepared by: *E.Nielsen / W.Boogaerts* (signature/date)

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approved by Consert-Management: *Dr. E.Nielsen* (signature/date) **23.08.1999**

approved by QA/PA : *W.Boogaerts* (signature/date)



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Document Change Record

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1/-	01.08.1999	All	Deployment after Modification

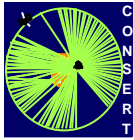
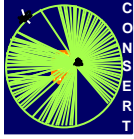


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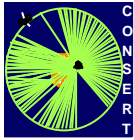


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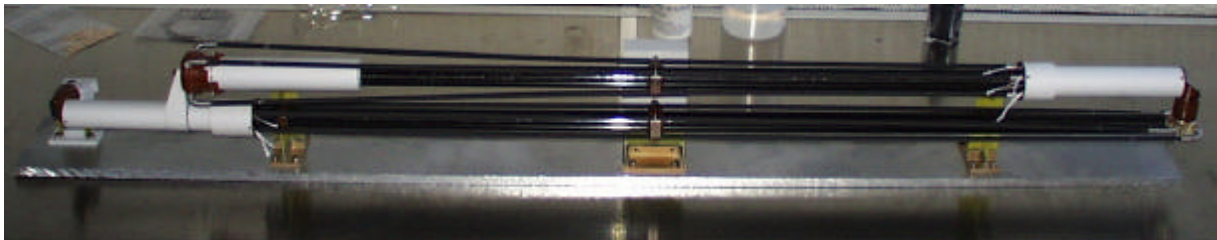


1.0 General aspects

1.1 Scope

**This Testprocedure covers Project :
Consert-Antenna (STM)**

Fig. 1 Antenna folded on Attachement Plate

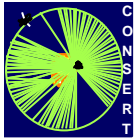


1.2 Introduction

The test carried out according to this procedure shall demonstrate the deployment functionality of the Consert-Antenna after the following test :

Table 1 Test Overview

Test	Doc. Nr.	Description	Remarks
	RO-OCN-MPAe-NCR-002	Modofications	



1.2.1 Definition correct Deployment

A correct deployment means that the deployment indicators show the correct signal prior to deployment (signaling a stowed antenna), that the antenna deployment takes place in an orderly and defined sequence, that the locking mechanisms are latching-on at the end of the deployment, and that the electrical deployment indicators are showing the correct signal at the end of the deployment (signaling a deployed antenna).

For general background on handling of the orbiter antenna and on terminology consult RO-OCN-TN-3019, version 1.2.

Correct deployment is defined as:

1) There are two deployment indicators; one on each Carpenter-Spring. The indicators are connected to connector JA4 on Support 1.

The deployment indicator on Carpenter-Spring-1 is connected to Pins 2 and 7.

The deployment indicator on Carpenter-Spring-2 is connected to Pins 4 and 9.

For stowed antenna: Deployment indicator value is an Ohmic resistance of $< 50 \text{ Ohm}$.

For deployed antenna: Deployment indicator value is an Ohmic resistance of $> 1 \text{ MOhm}$.

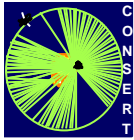
2) The sequence of deployment is:

- cut pyro wire;
- release of Mast-1; activation of Carpenter-Spring-1;
- release of Mast-2; activation of Carpenter-Spring-2;
- release of reflectors;
- release of dipoles

3) After the deployment is completed check that the Manchet-1 and Manchet-2 have latched-on.

The test will be performed with **MPAE - Equipment** by **MPAe personnel**.

The test progress will be documented by pictures and Video Recording.



1.3 Applicable Documents

Table 2: Applicable Documents

No.	Document Name	Document Number	Iss./Rev.
AD1	Consert Orbiter Antenna Mechanical I/F	RO-OCN-DW-3001 Pages 1-3	2/E
AD2	general background on handling of the orbiter antenna and on terminology consult	RO-OCN-TN-3019	Version 1.3

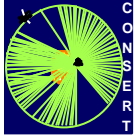
1.4 Reference Documents

Table 3: Reference Documents

No.	Document Name	Document Number	Iss./Rev.
RD1	EIDA	RO-EST-RS-3001	1/1
RD2	EIDB	RO-EST-RS-3001	1/0
RD3	EIDC	RO-EST-RS-3001	

1.5 Acronyms

MPAe	Max-Planck-Institut für Aeronomie
STM	Structural and Thermal Model
AD	Applicable Documents
RD	Reference Documents
FM	Flight Model



2.0 *Equipment under Test*

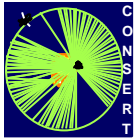
The Structural and Thermal Model (STM) of the Consert Antenna is mass and thermal representative of the Consert Antenna (FM). The size of the Antenna is 1135 mm x 100 mm x 125 mm. The Antenna weight is **1.45** kg.

3.0 *Test Conditions*

Cleanliness: 100 000

Temperature: 20 °C

Humidity: < 50 %



4.0 Ground Support Equipment (MGSE)

Table 4 Ground Support Equipment

Nr.	Instr. / Equipment Description	Manufacturer	Identification-Nr.	Model/Type- Nr.	Inv. Nr.	Remarks
1	Deployment Bracket	MPAE	OCN-MGSE-01			See AD2
2	Holding Bracket A	MPAE	OCN-MGSE-02			
3	Holding Bracket B	MPAE	OCN-MGSE-03			
4	Balloons		OCN-MGSE-04			
5	Counter Weight	MPAE	OCN-MGSE-05			
6	String Attachement	MPAE	OCN-MGSE-06			
7	Multimeter + Attachment cable		OCN-MGSE-07			
8	3 Pieces of String, about 50 cm. each	MPAE	OCN-MGSE-08			
9	Pyro Wire	MPAE	OCN-MGSE-09			
10	Wire-Cutter	MPAE	OCN-MGSE-10			
11	Bottle with Helium Plus attachment	Provided by Integrator				

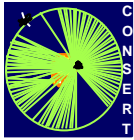
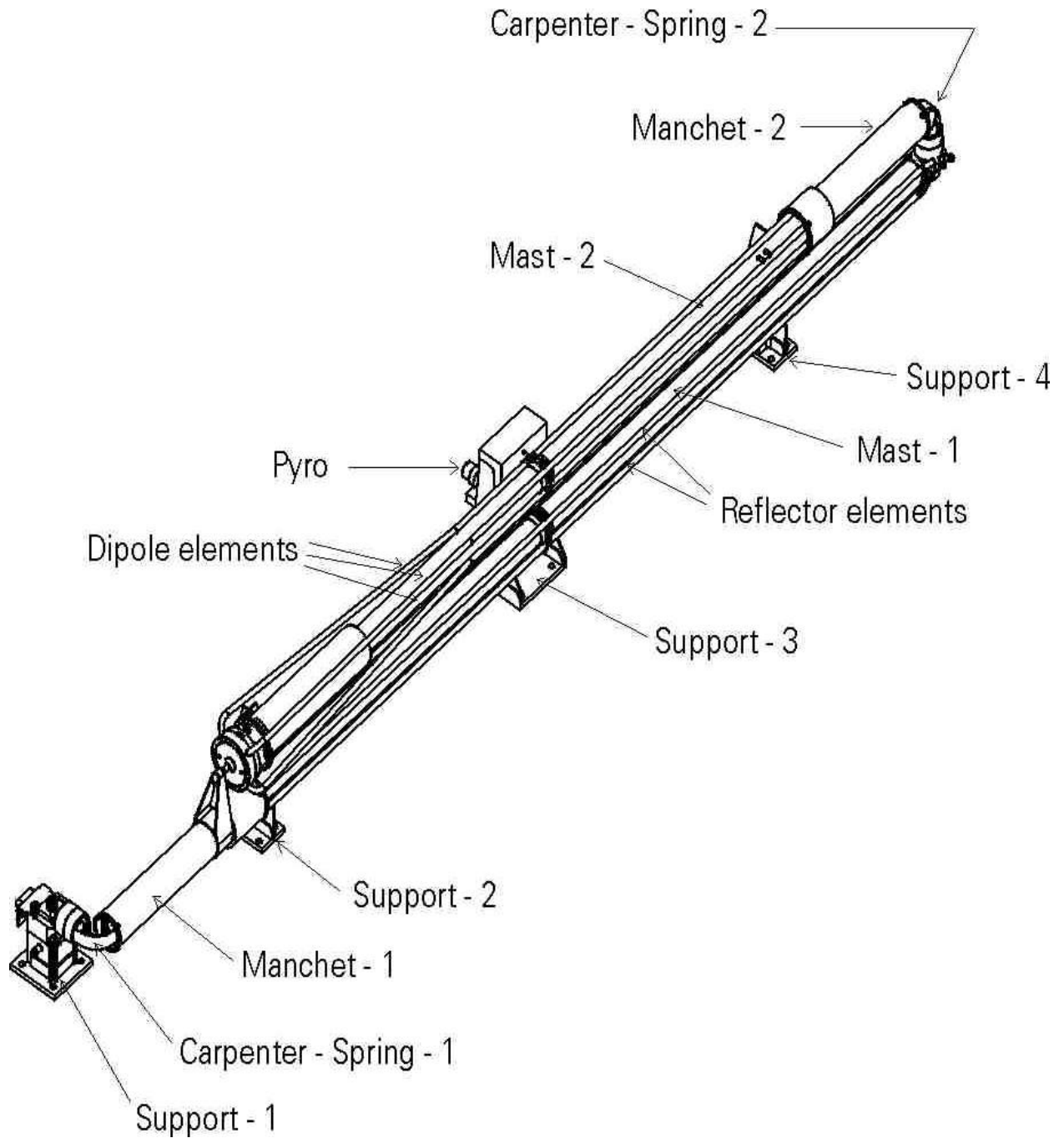
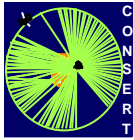


Fig. 2 The folded antenna with the major parts named



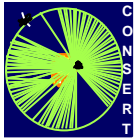


5.0 Test Steps

5.1 Preparations

Location : MP Ae

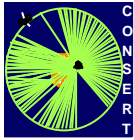
Step	Picture-Nr. / Video	Activity	Executed by [Initials]	OK Y/N	Comments
10		Place Antenna Horizontally > 1m over Ground	WE	Y	
20		Assemble and prepare the 'Deployment Bracket'	WE	Y	
30		Attach 'Deployment Bracket' to the crane hook	WE	Y	
40		Position crane hook over Support-1	WE	Y	
50		Attach the string through the 'Deployment Bracket' to Support-1	WE	Y	
60		Position crane hook exactly to make sure that the vertical part of the 'Deployment Bracket' is vertical	WE	Y	
70		Mount the 'String Attachment' and connect the 'Deployment Bracket'	WE	Y	
80		Fill balloon(s) with helium so that they balance the 'Counter Weight'	WE	Y	
90		Fasten the balloon(s) to the top of Mast-2	WE	Y	



Step	Picture-Nr. / Video	Activity	Executed by [Initials]	OK Y/N	Comments
100		Remove Pyro : <ul style="list-style-type: none"> Remove the 2 Holding Screws holding the Pyro Remove the pyro 	WE	Y	
110		Antenna is ready to be deployed?			

5.2 Deployment

Step	Picture-Nr. / Video	Activity	Executed by [Initials]	OK Y/N	Comments
200		Check Deployment Indicators: JA4: $R < 50\Omega$ Carpenter Spring 1 (JA4, PIN 2,7) Carpenter Spring 2 (JA4, PIN 4,9)	WE	Y	
210		Cut the Pyro Wire with the Wire-Cutter at the point where the Pyro would have cut			
220		Watch deployment sequence as the Antenna deploys : <ul style="list-style-type: none"> Release of Mast-1 Release of Mast-2 Release of Reflectors Release of Dipols 	WE	Y Y Y Y	



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Step	Picture-Nr. / Video	Activity	Executed by [Initials]	OK Y/N	Comments
230		Verify that Manchets are locked on : <ul style="list-style-type: none">• at Carpenter Spring 1• at Carpenter Spring 2	WE	Y	
240		Check the Deployment-Indicators : (on JA4 . $R > 1 \text{ M}\Omega$) <ul style="list-style-type: none">• Carpenter-Spring 1 (JA4, PIN 2,7)• Carpenter-Spring 2 (JA4, PIN 4,9)	WE	Y	

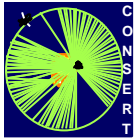
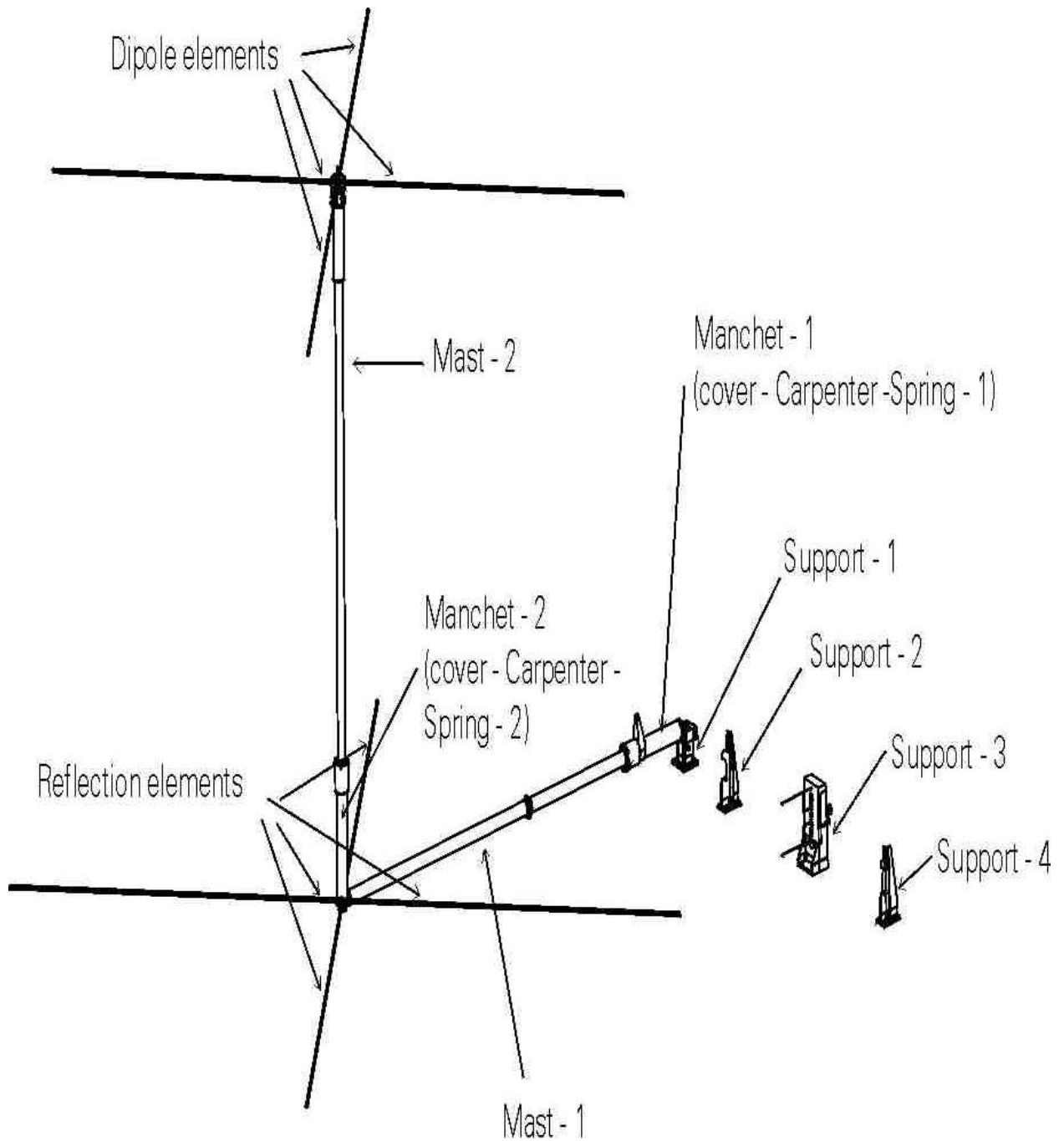
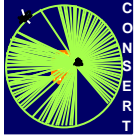


Fig. 3 Antenna deployed





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