



Publication Year	2019
Acceptance in OA	2024-06-26T10:12:39Z
Title	Metis PFM SVT1a Assessment Report
Authors	NICOLINI, Gianalfredo, SUSINO, ROBERTO
Handle	http://hdl.handle.net/20.500.12386/35257
Volume	METIS-OATO-RPT-031

**Metis INSTRUMENT
for the
Solar Orbiter Mission**

**Test Report
PFM SVT1a Assessment Report**

Principal Investigator:

Marco Romoli
Università degli Studi di Firenze
INAF - Astrophysical Observatory of Arcetri, Firenze, Italy

and the METIS Consortium:

Astronomical Institute - Academy of Sciences of the Czech Republic
CNR - Institute for Photonics and Nanotechnology, Padova, Italy
INAF - IASF, IAPS, OAA, OACN, OACT, OAPa, OATo, OATs, Italy
Laboratoire d'Astrophysique de Marseille, France
Max-Planck-Institut für Sonnensystemforschung, Germany
Naval Research Laboratory, USA
Politecnico of Turin, Italy
Universities of Florence, Padua, Italy
University of Athens, Greece



prepared by G. Nicolini, R. Susino

approved by G. Naletto - Experiment Manager
reference METIS-OATO-RPT-031
issue 1
revision 0
date of issue 05-AUG-2019





Page intentionally left blank

Distribution

Name	Organisation
Marco Castronuovo	ASI - Agenzia Spaziale Italiana Viale Liegi, 26 - 00198 Roma - ITALY
Mei Mei Stienstra	ESA/ESTEC (SCI-P) + P.O. Box 299 1 (part VI) 2200 AG Noordwijk The Netherlands
Daniel Müller	ESA/ESTEC (SCI-SM) + P.O. Box 299 1 (part VI) 2200 AG Noordwijk The Netherlands

Change Log

date	issue	Rev.	Paragraphs	reason for change
5/08/2019	1	0	All	First Issue

Table of Contents

Table of contents

1 INTRODUCTION.....	6
1.1 Scope of the document.....	6
2 SVT-1A RUN ON 2 MAY 2019.....	7
2.1 Data retrieval.....	7
2.2 Summary of Issues.....	7
2.2.1 Error and warnings TM packets (TM(5,2/3/4)).....	7
2.2.1.1 TM(5,2) after Metis power-on.....	7
2.2.1.2 TM(5,2) “SC_QUEUE_FULL” during first scientific acquisition.....	7
2.2.1.3 TM(5,2) “SSMM_Timeout_in_SpW_Link” during first scientific acquisition.....	7
2.2.1.4 TM(5,2) “TCS Warning”.....	7
2.2.1.5 TM(5,2) “Watchdog Alert”.....	8
2.2.2 Checks Not-OK during the formal run.....	8
2.2.3 Anomaly Reports and Non Conformances.....	8
2.2.3.1 SOL-251 - METIS packets in SSMM Packet Store 0.....	8
2.2.3.2 SOL-259 - METIS execution failures for ZIT24501.....	8
2.2.4 Other Observations.....	8
2.2.4.1 Not nominal scientific production from the PCU acquisition (AITV701A).....	8
2.2.4.2 Missing images form the VL-FP acquisition (AITF702A).....	8
2.2.4.3 UV_C_RAY_MAT not null (AITF700A, AITV706A, AITV712A).....	9
2.2.4.4 Nominal acquisition not resumed after CMEOBS completion.....	9
2.3 Validated Telecommands.....	10
2.3.1 TC’s sent during the test.....	10
2.3.2 Unsent TC’s bit-patterns.....	11
2.4 Validated Functionalities.....	11
2.4.1 PMP Thermal Control System.....	11
2.5 Analysis of the TM packets.....	12
2.5.1 Analysis of the scientific telemetry.....	12
2.5.1.1 VL pB + UV analog (AITF700A).....	12
2.5.1.2 STOP test VL pB + UV analog (AITV706A).....	12
2.5.1.3 ABORT test VL pB + UV analog (AITV707A).....	13
2.5.1.4 VL tB + UV PCU (AITV701A).....	13
2.5.1.5 VL-FP (AITF702A).....	13
2.5.1.6 Temporal Noise (AITV704A).....	14
2.5.1.7 Flags management and CME acq. (AITV712A).....	14
2.5.2 Summary and statistics.....	15
2.5.2.1 Time stamp analysis.....	15
3 CONCLUSIONS.....	17
4 DOCUMENT REFERENCES.....	18
4.1 Reference Documents.....	18
5 ACRONYMS.....	19

Table of Figures

Figure 2-1: PMP temperature during the test.....	11
--	----

Index of Tables

Table 2-1 – List of Metis related Anomaly Reports.....	8
Table 2-2 – Statistical analysis of the UV_C_RAY_MAT acquired during the test.....	9
Table 2-3 – Telecommands sent during the test received.....	10
Table 2-4 – Procedure AITF700A: summary of TM(21,6) received.....	12
Table 2-5 – Procedure AITV706A: summary of TM(21,6) received.....	12
Table 2-6 – Procedure AITV707A: summary of TM(21,6) received.....	13
Table 2-7 – Procedure AITV701A: summary of TM(21,6) received.....	13
Table 2-8 – Procedure AITV702A: summary of TM(21,6) received.....	13
Table 2-9 – Procedure AITV704A: summary of TM(21,6) received.....	14
Table 2-10 – Procedure AITV712A: summary of TM(21,6) received.....	14
Table 2-11 – Summary of TM received at Metis EGSE.....	15

1 Introduction

1.1 Scope of the document

This document prepared by the Metis team presents the analysis of TM data produced during the System Verification Test 1-a (SVT-1a) of the Metis PFM model integrated on the S/C and conducted by the MOC at ESOC the 2nd of May 2019. The Metis SVT-1 test flow is described in [RD-1] and it is very similar to the I-FFT.

Primary goal of the SVT-1a is the complete validation of the Metis TM/TC services as defined in the IDB.

Checks that were correctly verified during the test session are not re-verified here. In contrast, our analysis is performed to complete MOC test by investigating:

- Errors and warnings reported as TM event packets,
- Checks marked as NOK during Metis PFM SFT formal run.
- The scientific telemetry generated by the instrument during the test
- The verification of the bit-patterns for the TC's not delivered during the test.

For more information on the activities carried out during the test, refer to the following documents: [RD-1] [RD-5] [RD-6].