SMOS L1 Processor Prototype

Test Data Set 3.4 description

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	Name	Function	Signature
Prepared by	R. Castro	Project Engineer	
	J. Barbosa	Project Engineer	
Checked by	J. Freitas	Project Engineer	
Approved by	J. Barbosa	Project Manager	

DEIMOS Engenharia
Av. D. João II, Lote 1.17, Torre Zen, 10º,
1998-023 Lisboa, PORTUGAL
Tel: +351 21 893 3013
Fax: +351 21 896 9099
E-mail: mailto:deimos@deimos.com.pt

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1. INTRODUCTION

1.1. Purpose and Scope

This short note lists the contents of the Test Data Set for the L1PP v3.4. It is intended as a high level description, leaving a full description of the tests to the Validation Report document.

1.2. Acronyms and Abbreviations

APID	Application program identifier
CFI	Customer Furnished Item
DPM	Data Processing Model
EE	Earth Explorer
EEFH	Earth Explorer File Handling CFI (ASCII XML library)
GUI	Graphical User Interface
HKTM	HouseKeeping Telemetry
HTML	HyperText Markup Language
L1PP	Level 1 processor prototype
LCF	LiCeF (LIghtweight and Cost-Effective Front-end)
MIRAS	Microwave Imaging Radiometer with Aperture Synthesis
NIR	Noise Injection Radiometer
OBET	On Board Elapsed Time
PLM	PayLoad Module
PMS	Power Measurement Signal
SEPS	SMOS End-to-end Performance Simulator
SMOS	Soil Moisture and Ocean Salinity
SVP	Software Validation Plan
TBW	To Be Written
UPC	*Universitat Politècnica de Catalunya (*Technical University of Catalonia*)*
XML	Extended Markup Language

Table 1: Table of Acronyms.

1.3. Applicable and Reference Documents

Ref.	Code	Title	Issue
AD.1	SO-TR-DME-L1PP-0238	SMOS L1 Processor v3.4.0 Validation Report	*1.0*

Table 2: Applicable Documents.

2. TEST DATA SET V3.4 CONTENTS

For this release of the Test Data Set, the scenarios were chosen in order to keep the dimension of the TDS reasonable and a manageable complexity, while still exemplifying all the relevant cases. The TDS contents are exactly the same as for TDS 3.3, in order to be able to make direct comparisons.

Data was selected from the data base available from dpgs-l0 ftp servers at ESAC, covering the period between 13th-Jan-2010 until 31st-Jan-2010.

The scenario numbering and naming has changed from TDS for V7.0/V8/V9 deliveries. However, in order to keep track of what used with SEPS-GS data Table 3 has a column that establishes the parallel between in-orbit data and simulated data.

Table 3: List of tests proposed for TDS 3.4

Type	Description	Internal Code	SEPS-GS Code	SEPS-GS Scenario Id
System Tests / Nominal Processing	Test processing from L0 to L1a using external calibration and NIR Calibration.	genANIR	N.A.	N.A.
	Test processing from L0 to L1b using external calibration data and external target manoeuvre, including FTR in Dual polarisation.	genFTTD	1170	07
	Test processing from L0 to L1b using external calibration data and external target manoeuvre, including FTR in Full polarisation.	genFTTF	1171	08
	Test Generation of G and J Matrices from L0 data	genMatr	1401b	11
	Test processing from L0 to L1a using long calibration sequences	genLongCalib	1405	15
Scientific Validation Tests	Test processing from L0 to L1c data acquired in measurement mode in Dual polarisation with LO injection every 6 minutes. Segment of 500 scenes in an ascending orbit over Australia.	austD	1610	21
	Test processing from L0 to L1c data acquired data in measurement mode in Dual polarisation with LO injection every 6 minutes. Segment of 600 scenes in an ascending orbit over Europe.	euroD	N.A.	N.A.
	Test processing from L0 to L1c data acquired data in measurement mode in Dual polarisation with LO injection every 6 minutes. Segment of 600 scenes in a descending orbit over the Indian Ocean.	indiD	1650	27
	Test processing from L0 to L1c data acquired data in measurement mode in Dual polarisation with LO injection every 6 minutes. Segment of 600 scenes in an ascending orbit over the Pacific Ocean.	pacfD	1650	27
	Test processing from L0 to L1c data acquired in measurement mode in Full polarisation with LO injection every 6 minutes. Segment of 749 scenes in an ascending orbit over Australia.	austF	1680	30
	Test processing from L0 to L1c data acquired data in measurement mode in Full polarisation with LO injection every 6 minutes. Segment of 748 scenes in an ascending orbit over Europe.	euroF	N.A.	N.A.

Type	Description	Internal Code	SEPS-GS Code	SEPS-GS Scenario Id
	Test processing from L0 to L1c data acquired data in measurement mode in Full polarisation with LO injection every 6 minutes. Segment of 747 scenes in a descending orbit over the Indian Ocean.	indiF	N.A.	N.A.
	Test processing from L0 to L1c data acquired data in measurement mode in Full polarisation with LO injection every 6 minutes. Segment of 747 scenes in an ascending orbit over the Pacific Ocean.	pacfF	N.A.	N.A.

All scientific scenarios were processed with L1PP v3.4 using:

- Offset correction on baselines sharing the same LO;
- Reference temperature set to be the average of the NIRs (Tref v2);
- Gibbs 1 reconstruction algorithm;
- Applying all the Foreign Sources correction **except** Sun Glint;

For each (segment of an) orbit in measurement mode to be processed, L1PP v3.4 shall ingest:

a) the closest long and external calibration events prior to the orbit and;

b) the LO calibration relative to the orbit to be processed.

The orbits have been cut in smaller portions to improve the performance of the system testing.

The list of tests performed, which covers the previous functionalities, is presented in the table below. For more information on the test contents and results, please refer to [AD.1].

As for the delivery of TDS, it is proposed to deliver a single TDS to all users, with the following contents:

TDS	Scenarios	Contents
TDS-L1PP V3.3	genANIR, genFTTD, genFTTF, genMatr, genMatr, genLongCalib, austD, euroD, indiD, pacfD, austF, euroF, indiF, pacfF	Products, breakpoints (when applicable) and logs