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VIR-IAS-TN-33  
VIRTIS ROSETTA EGSE SW  
Version 7.6  
Functional Validation

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## 1. Introduction

### 1.1. Scope

This document describes the validation of the maintenance activity carried out by Techno System Developments on the VIRTIS EGSE Software CIG Z571056CC1 for the version 7.6.

### 1.2. Applicable documents

N.A:

### 1.3. Reference documents

- [RD.1]** VIRTIS EGSE SW Maintenance PROPOSAL, VIR-TSD-RP-115, issue 1;
- [RD.2]** Primo report sulle attività di manutenzione, VIR-TSD-RP-116, issue 1;
- [RD.3]** Secondo report sulle attività di manutenzione, VIR-TSD-RP-117, issue 1;
- [RD.4]** Terzo report sulle attività di manutenzione, VIR-TSD-RP-118, issue 2.
- [RD.5]** VIR-IAS-TN-32\_VIRTIS EGSE SW Update verification (DOI: <http://dx.doi.org/10.20371/INAF/TechRep/12>).

### 1.4. Acronyms

<b>TSD</b>	Techno System Developments
<b>EGSE</b>	Electrical Ground Support Equipment
<b>MTP</b>	Medium Term Plan
<b>STP</b>	Short Term Plan
<b>SW</b>	SoftWare
<b>VIRTIS</b>	Visible InfraRed Thermal Imaging Spectrometer
<b>VM</b>	Virtual Machine

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## 2. TSD Activity

### 2.1. Known bugs

This purpose of this maintenance activity is to solve the following known bug:

- Difference in the number of lines in the VIRTIS cubes between the data produced by PDS Converter version 7.1 and 7.5, as reported in [RD.5].

### 2.2. Implementation

In order to correct the bug reported in the session 2.1, TSD deliver a new version of a software modules for the EGSE SW described into [RD.4]:

- PDS Converter Ver 7.6

## 3. Validation activity

### 3.1. Validation environment

The software validation environment is the same of the operative one. We create a clone of the VM used for the nominal pipeline, in order to preserve the original configuration. In this test machine we installed the new software module.

### 3.2. Pipeline schema

The data production pipeline is structured as the following schema:

- VSOC Converter
- CSWS
- PDS Session Converter
  - PDS Converter

The PDS Session converter call the PDS Converter for each file in the session.

### 3.3. Previous software version

The previous version of the pipeline uses the following modules version:

- VSOC Converter ver. 7.1
- CSWS ver. 7.1
- PDS Session Converter ver. 7.1
- PDS Converter ver. 7.5

### 3.4. Test Dataset

For all the test we used VIRTIS data coming from the Pre-Landing phase, MTP 9, STP 26 in the time range from October, 30 2014 10:00:00 to November, 5 2014 09:59:59.

### 3.5. Test Phases

#### 3.5.1. Installation

The first step is the Validation of the installers.

We run the installation programs. The results of the test are:

- PDS Converter correct installation.

### 3.5.2. Number of products.

The following table shows the number of products produced by the old and new versions of the pipeline for the three VIRTIS channels (VIRTIS-H, VIRTIS M-IR, VIRTIS M-VIS). For the channel H the products are grouped in the three VIRTIS-H transfer mode (see **Errore. L'origine riferimento non è stata trovata.**):

- **H:** H image transfer mode (backup observation mode);
- **S:** H single spectrum transfer mode (including dark current files in nominal mode);
- **T:** H "64-spectra frame" transfer mode (nominal mode).

	H			M-IR	M-Vis
	H	S	T		
Old	0	15	15	36	36
New	0	15	15	36	36

The number data file produced by the old and new version of the software is the same.

### 3.5.3. Lost Line

Performing a comparison for the cube size between the data produced by the 7.1 and by the 7.6 version for all the data VIS and IR in a section (PEAV) of this dataset, the same used in [RD.5], we obtain:

Older (7.1)	New (7.6)
PIEAV737.QUB: CORE ITEMS = (432, 256, 92)	PIEAV737.QUB: CORE ITEMS = (432, 256, 92)
PIEAV754.QUB: CORE ITEMS = (432, 256, 86)	PIEAV754.QUB: CORE ITEMS = (432, 256, 86)
PIEAV809.QUB: CORE ITEMS = (432, 256, 86)	PIEAV809.QUB: CORE ITEMS = (432, 256, 86)
<b>PIEAV824.QUB: CORE ITEMS = (432, 256, 86)</b>	<b>PIEAV824.QUB: CORE ITEMS = (432, 256, 86)</b>
PIEAVG12.QUB: CORE ITEMS = (432, 256, 92)	PIEAVG12.QUB: CORE ITEMS = (432, 256, 92)
PIEAVG29.QUB: CORE ITEMS = (432, 256, 86)	PIEAVG29.QUB: CORE ITEMS = (432, 256, 86)
PIEAVG44.QUB: CORE ITEMS = (432, 256, 86)	PIEAVG44.QUB: CORE ITEMS = (432, 256, 86)
<b>PIEAVG59.QUB: CORE ITEMS = (432, 256, 86)</b>	<b>PIEAVG59.QUB: CORE ITEMS = (432, 256, 86)</b>
PIEAVI37.QUB: CORE ITEMS = (432, 256, 92)	PIEAVI37.QUB: CORE ITEMS = (432, 256, 92)
PVEAV737.QUB: CORE ITEMS = (432, 256, 92)	PVEAV737.QUB: CORE ITEMS = (432, 256, 92)
PVEAV754.QUB: CORE ITEMS = (432, 256, 86)	PVEAV754.QUB: CORE ITEMS = (432, 256, 86)
PVEAV809.QUB: CORE ITEMS = (432, 256, 86)	PVEAV809.QUB: CORE ITEMS = (432, 256, 86)
<b>PVEAV824.QUB: CORE ITEMS = (432, 256, 86)</b>	<b>PVEAV824.QUB: CORE ITEMS = (432, 256, 86)</b>
PVEAVG12.QUB: CORE ITEMS = (432, 256, 92)	PVEAVG12.QUB: CORE ITEMS = (432, 256, 92)
PVEAVG29.QUB: CORE ITEMS = (432, 256, 86)	PVEAVG29.QUB: CORE ITEMS = (432, 256, 86)
PVEAVG44.QUB: CORE ITEMS = (432, 256, 86)	PVEAVG44.QUB: CORE ITEMS = (432, 256, 86)
<b>PVEAVG59.QUB: CORE ITEMS = (432, 256, 86)</b>	<b>PVEAVG59.QUB: CORE ITEMS = (432, 256, 86)</b>
PVEAVI37.QUB: CORE ITEMS = (432, 256, 92)	PVEAVI37.QUB: CORE ITEMS = (432, 256, 92)

In bold are reported the file that had discrepancies when produced by the version 7.5 of the PDS Converter.

The session PEAV is the same used by TSD to perform the bug correction. As supplementary check we used the data acquired during the MTP 8, STP 19 in the time range from September, 23 2014 10:00 to September, 28 2014 09:59, sections PE9R and PE9S.

	CORE ITEMS		
	7.1	7.5	7.6
PIE9R249.QUB	(432, 256, <b>65</b> )	(432, 256, <b>64</b> )	(432, 256, <b>65</b> )
PIE9R649.QUB	(432, 256, <b>65</b> )	(432, 256, <b>64</b> )	(432, 256, <b>65</b> )
PIE9RB24.QUB	(432, 256, <b>65</b> )	(432, 256, <b>64</b> )	(432, 256, <b>65</b> )
PIE9RE44.QUB	(432, 256, <b>65</b> )	(432, 256, <b>64</b> )	(432, 256, <b>65</b> )

PIE9RG03.QUB	(432, 64, <b>34</b> )	(432, 64, <b>33</b> )	(432, 64, <b>34</b> )
PIE9RI38.QUB	(432, 64, <b>31</b> )	(432, 64, <b>30</b> )	(432, 64, <b>31</b> )
PIE9S238.QUB	(432, 64, <b>31</b> )	(432, 64, <b>30</b> )	(432, 64, <b>31</b> )

We compared, also, the images and there are no differences between the version 7.1 and 7.6.

#### 4. Conclusions

The updates reported in the [RD.4] fix the missing line bug.

All the open issues for the software update are closed.