

**spi\_psd\_memcomp**

# User Manual

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#### Note to the user

This software has been written to analyse data of the SPI telescope onboard INTEGRAL. Particular care has been taken in making the software user friendly and well documented. If you appreciated this effort, and if this software and User Manual were useful for your scientific work, the author would appreciate a corresponding acknowledgment in your published work.

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## 1 Introduction

The executable `spi_psd_memcomp`, written in the ANSI C++ language, compares memory dumps to OBSMS reference memory images. The memory dumps may be provided in various formats: binary files or ASCII files (produced for example by GSE software), or OBSMS files (produced by MOC).

`spi_psd_memcomp` has been developed under ISDC support platform 4.1.

## 2 Getting started

Before installing `spi_psd_memcomp`, make sure that the ISDC support platform 4.1 or higher is installed on your system.

After downloading the `spi_psd_memcomp.tar.gz` file, step into a directory that should hold the distribution, move the `spi_psd_memcomp.tar.gz` file into this directory and type:

```
$ gunzip spi_psd_memcomp.tar.gz
$ tar xvf spi_psd_memcomp.tar
```

The first command uncompresses the distribution file, the second unpacks the files.

Before configuration, the distribution needs to be reset to a clean state. To do this, type

```
$ make distclean
```

Then, configure the distribution. It is assumed here that you have previously installed the ISDC support platform, thus you should type

```
$ ~/bin/ac_stuff/configure
```

Finally, build the distribution by typing

```
$ make global_install
```

To perform a unit test, type

```
$ make test
```

### 3 Parameter file

```
#####
#
#           Centre d'Etude Spatiale des Rayonnements           #
#           (in collaboration with ISDC)                       #
#
#           PSD MEMORY DUMP COMPARISON                         #
#
# -----#
#
# File:      spi_psd_memcomp.par                               #
# Version:   1.1.0                                             #
# Component: analysis                                          #
#
# Author:    Juergen Knoedlseder                              #
#            knodlseder@cesr.fr                               #
#            CESR                                             #
#
# Purpose:   Parameter file of the SPI PSD memory dump comparison #
#            executable                                        #
#
# History:   1.1.0 24-Oct-2002 First ISDC delivery (Rev. 1)   #
#
#####
#
# The input filenames
#=====
imgfile,s,ql, "img/DSP.obsms",,, "Memory image filename"
reffile,s,ql, "img/DSP.obsms",,, "OBSMS reference memory image filename"
#
# Task parameters
#=====
imgtype,      s,ql, "OBSMS",WMB|INTEGR|OBSMS,,"Memory image type (WMB, INTEGR, OBSMS)"
startaddress, i,ql, 524288,0,16777215,      "Memory image start address (for WMB)"
```

The parameters have the following meaning:

- **imgfile** specifies the filename of the memory image that should be compared to the reference. The following formats are allowed: **OBSMS** (MOC standard), **WMB** (PSD Berkeley GSE standard), and **INTEGR** (PSD UCSD GSE standard). Please specify the format of the image using the parameter **imgtype**.
- **reffile** specifies the filename of the reference memory image in OBSMS format (MOC standard).
- **imgtype** specifies the memory image type of the file **imgfile**. The following formats are allowed: **OBSMS** (MOC standard), **WMB** (PSD Berkeley GSE standard), and **INTEGR** (PSD UCSD GSE standard). In case of the **WMB** format, specify the start address of the image using the parameter **startaddress**.
- **startaddress** specifies the start address of the **WMB** image. For all other image types, this parameter is meaningless.

## 4 Interface definition

On input, `spi_psd_memcomp` takes a memory image and a reference image. The memory image may be in one of the following formats:

- **OBSMS** MOC standard
- **WMB** PSD Berkeley GSE standard
- **INTEGR** PSD UCSD GSE standard

The reference image has always be defined in the OBSMS standard.

`spi_psd_memcomp` produces no output file, all results are dumped into the log file. Mismatches between the memory image and the reference image will be signalled as alerts. It may happen that not all memory cells of the image have a corresponding reference memory cell, and this case will be signalled as warning in the summary.

## 5 Error codes

The following error codes that are proper to `spi_psd_memcomp` may occur during task execution.

|   |         |
|---|---------|
| <code>SPI_PSD_MEMCOMP_ERROR_MEM_ALLOC</code>    | -230800 |
| <code>SPI_PSD_MEMCOMP_ERROR_FILE_OPEN</code>    | -230801 |
| <code>SPI_PSD_MEMCOMP_ERROR_BAD_IMG_TYPE</code> | -230802 |
| <code>SPI_PSD_MEMCOMP_ERROR_NO_ADDRESS</code>   | -230803 |
| <code>SPI_PSD_MEMCOMP_ERROR_BAD_HEADER</code>   | -230804 |
| <code>SPI_PSD_MEMCOMP_ERROR_OBSMS_ERR</code>    | -230805 |

They have the following meaning:

- `SPI_PSD_MEMCOMP_ERROR_MEM_ALLOC` : the allocation of dynamical memory has failed. Probable your system resources are too limited to run this task.
- `SPI_PSD_MEMCOMP_ERROR_FILE_OPEN` : an error ocured while opening one of the input files.
- `SPI_PSD_MEMCOMP_ERROR_BAD_IMG_TYPE` : the memory image type is not one of the valid types.
- `SPI_PSD_MEMCOMP_ERROR_NO_ADDRESS` : no start address has been found for the memory image.
- `SPI_PSD_MEMCOMP_ERROR_BAD_HEADER` : the OBSMS header is incorrect.
- `SPI_PSD_MEMCOMP_ERROR_OBSMS_ERR` : the OBSMS file is incorrect.