esac

European Space Astronomy Centre
P.O. Box 78
28691 Villanueva de la Cañada
Madrid
Spain
Tel. (34) 91 813 1100
Fax (34) 91 813 1139
www.esa.int

DPCs/PSO-PLA INTERFACE CONTROL DOCUMENT

prepared by/*préparé par*	Monica Fernandez, Alan Macfarlane
reference/*réference*	DPC/PSO-SAT ICD
issue/*édition*	1
revision/*révision*	11
date of issue/*date d'édition*	11/02/2013
status/*état*	Issued
Document type/*type de document*	ICD
Distribution/*distribution*	

European Space Agency
Agence spatiale européenne

APPROVAL

Title DPCs/PSO-SAT ICD	
Issue 1	**Revision** 11
Author Monica Fernandez, Alan Macfarlane	**Date** 11-February-2013
Approved by HFI DPC Manager LFI DPC Manager Archive Scientist SAT Manager	**Date**

CHANGE LOG

Reason for change	Issue	Revision	Date
First raft of framework	1	3	16-March-2012
Replace XML Release Note by Release Note plain text.	1	4	05-June-2012
Two new types of Operational Files: DHF/GHF Add explicitly the flexible nature of the stage structure Explain the default policy of Timelines delivery	1	5	13-June-2012
Add ancillary data (SREM)	1	6	12-July-2012
Extending frequency maps naming convention.	1	7	19-Jul-2012
New naming convention . Add Cosmology products. Add Software products. Release Info must be associated not only to maps, but to the rest of the products.	1	8	20-Dec-2012
Update the PCCS metadata Add effective beams to the stage area	1	9	14-January-2013
Update SZ Catalogue format	1	10	18-Janurary-2013
Update naming convention to include the ZodiCorrected and Lensing maps. Add provenance metadata to maps.	1	11	11-Februrary-2013

Table of contents:

1 INTRODUCTION

1.1 Purpose

This document defines the interfaces between the Planck DPCs (Data Processing Centre's) - PSO and the SAT/PLA Team (Planck Legacy Archive), including the identification of requirements pertaining to the transfer of both data and metadata.

1.2 Scope

This document describes the following interfaces:

- I/F-1: Product Ingestion
  - I/F-1.1: DPCs-PSO transfer products to SAT/PLA ftp area.
  - I/F-1.2: Notification from DPCs-PSO to SAT/PLA of new data availability.
  - I/F-1.3: Import of new products into repository and consequent ingestion of product metadata into PLA.
  - I/F-1.4: Notification from SAT/PLA to DPCs-PSO of product ingestion.

1.3 Applicable Documentation

- AD-1: PLA URD v0.4 (Planck/PSO/2008-016)
- AD-2: PLA Product delivery to PSO interface control document (PSO-ICD-101/2008-017)
- AD-3: ICD_030 DPC-DPC Timelines Exchange
- AD-4: Planck Legacy Catalog, 0.6 (PL-LFI-OAT-IC-005)
- AD-5: Planck SZ Cluster Catalogue Format (0.2/2012-10-19)

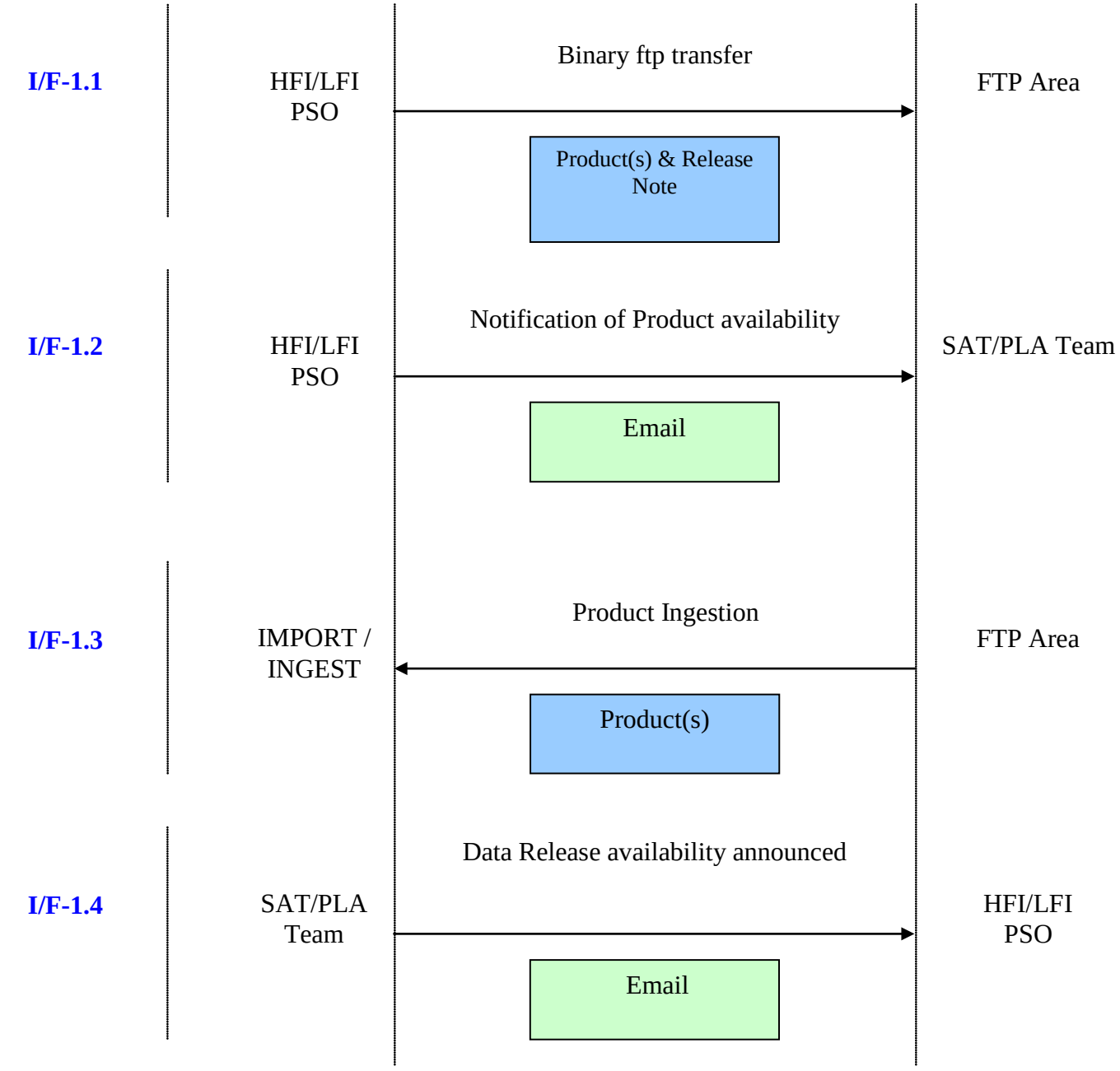
1.4 Acronyms

CMB	Cosmic Microwave Background
DPC	Data Processing Centre
DTD	Document Type Definition
ERCSC	Early Release Compact Source Catalog
ESAC	European Space Astronomy Centre
FITS	Flexible Image Transport System
HDU	Header and Data Unit
HFI	High Frequency Instrument
HK	House Keeping
IAP	Institut D'Astrophysique de Paris
INAF-OAT	Osservatorio Astronomico di Trieste
LFI	Low Frequency Instrument
PLA	Planck Legacy Archive
PSO	Planck Science Office

RIMO	Reduced Instrument Model
SAT	Science Archives Team
TBC	To be confirmed
TBD	To be done
TM	Telemetry
UTF	Unicode Transformation Format
XML	Extensible Markup Language

2 PROCEDURAL DESCRIPTION

2.1 Release Procedure



2.1.1 I/F-1

The DPCs/PSO will transfer the expected products stated above, using the following procedure:

Step	Action	Description
1	ftp plaupload.esac.esa.int	Logon to ftp account. (**hfipla**, **lfipla**, **psopla**)
2	binary	Change to binary transfer mode.
3	cd <product_type_path>	Enter area for delivering specific type of products. *(See* Staging area Structure*).*
4	(m)put <product_file>	Upload product files
5	(m)put <origin>ReleaseNoteYYYYMMDD_<desc>.txt	Upload Release Note in the root directory.
6	quit	Exit ftp environment.

2.1.2 I/F-2

Email sat_pla@sciops.esa.int and pso_operations@sciops.esa.int informing of product availability.

2.1.3 I/F-3

Upon notification from the DPCs/PSO, the ftp upload areas used to receive products will be checked against the Release Note describing the content and location of the products uploaded (*see*Release Note).

The IMPORT subsystem shall identify the products delivered and move them to the relevant location in the repository and then inform the INGEST subsystem to ingest the relevant metadata.

The INGEST subsystem will extract the metadata from the imported product, and if necessary, the Release Note, and ingest the metadata into the database.

The naming convention of the products that are to be ingested and the Release Note describing the data release must adhere to the definitions described in the products naming convention.

The errors found when importing and/or ingesting products will be suitably stored for future reference.

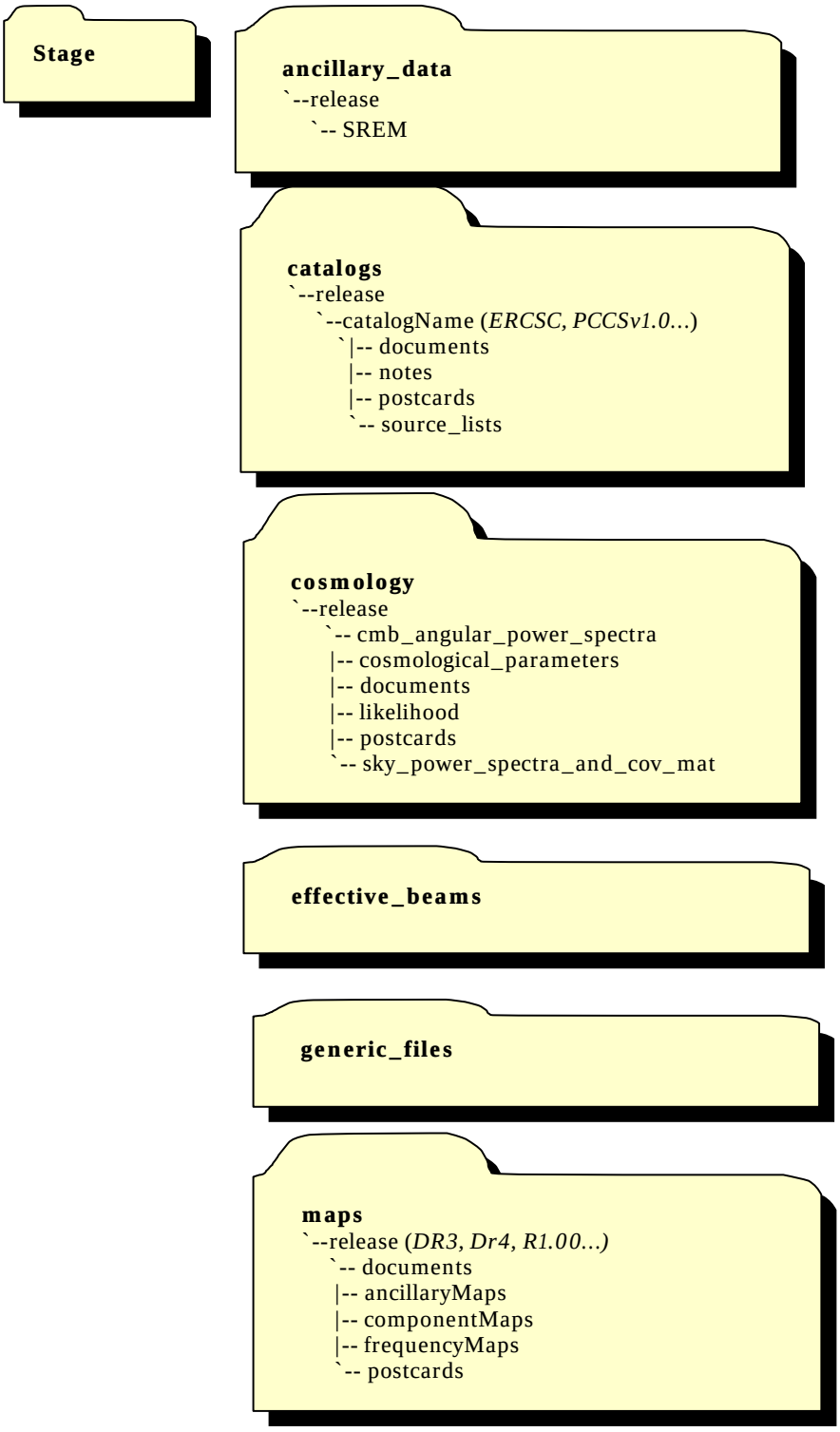
2.1.4 I/F-4

The relevant DPCs/PSO will be informed of ingestion status of their products via email (i.e. availability of product in PLA or unsuccessful ingestion):

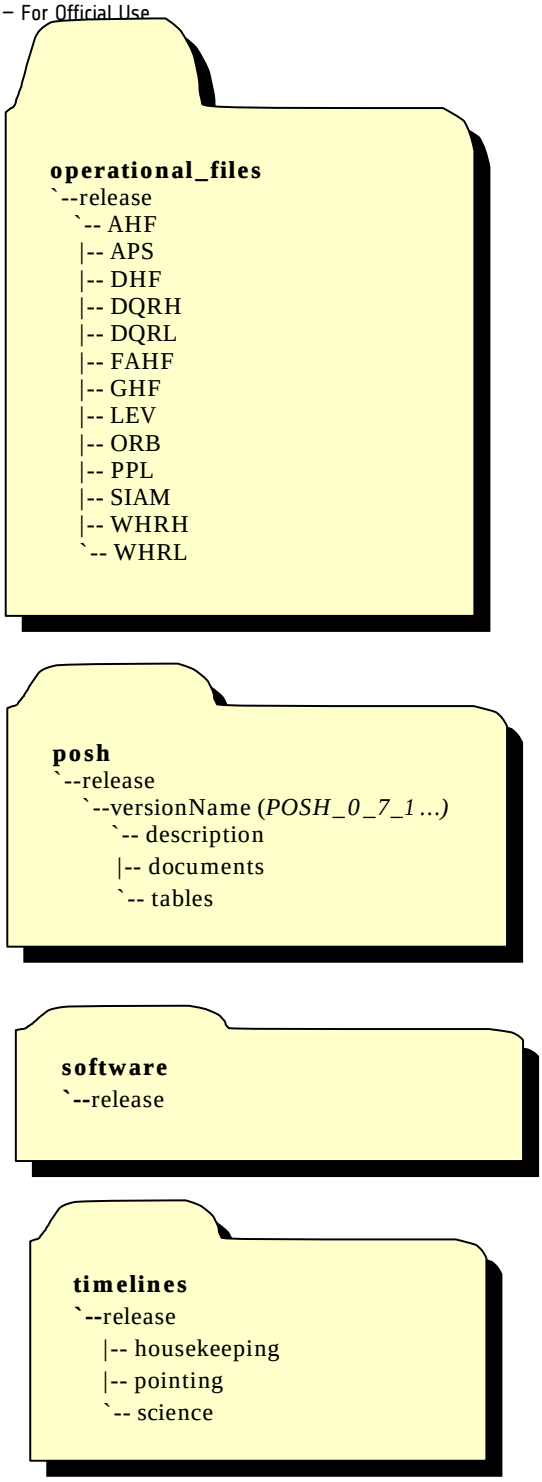
- HFI: Andrea Moneti
- LFI: Andrea Zacchei
- PSO: Xavier Dupac

3 STRUCTURAL DESCRIPTION

3.1 Staging area Structure



European Space Agency
Agence spatiale européenne



The structure of the stage area is flexible and can be updated as soon as a new type of product is foreseen.

Regarding to the Timelines, though it has been agreed between the different parts (PSO, DPCs and SAT) that the delivery must be done mainly via hard disk, rather than via ftp, there is a place for them in the PLA stage directory as a back-up solution.

4 PRODUCTS NAMING CONVENTION

In general, all PLA products must fit the following naming convention:

<Instr>_<Type>_<Ident[-method]>[_<Nside>]_<Rn.mm>[_<Coverage>].ext

***([]:** means the item is optional)*

Where:

Instr	LFI/HFI/COM	
Type	SkyMap/SimMap/CovarMat/PCCS/CompMap/PowerSpect/ POSCovarMat/Code/RIMO	
Ident	**SkyMap SimMap PowerSpect PSCovarMat**	• Frequency maps: <fff> • HFI detector maps: <fff-n(a/b)> • HFI detset maps: <fff-ds(1/2)> • LFI radiometer maps: <fff-rr(S/M)> • LFI couple horn maps:<fff-hh_hh>
	CovarMat	*TBD*
	CompMap SimMap PowerSpect PSCovarMat	• CMB/synch/free-free/AME/dust/... • CO<corr/discovery/line> • DustOpacity
	PCCS	<fff/SZ/CC...>
	Code	Likelihood/ColorCorr/other...
method	**CompMap**	Smica/sevem/commrul/other
	PCCS_SZ	Union/MWS1/MWS3/PsW
Nside	<dddd> only for SkyMaps and CompMaps	
Rn.mm	Delivery name	
Coverage	Only for SkyMaps and SimMaps Nominal/full/survey_n/[ringhalf_1/2]	

5 PRODUCT TYPES DEFINITION

This section is intended to collect all the essential information per product: stage area location, metadata, naming convention (based on the general naming convention policy described above) and some examples.

5.1.1 Ancillary Data

5.1.1.1 SREM

Staging area	ancillary_data/<release>/SREM

Naming convention	SREMPlanck_<Desc>_<Date>.SREM Desc: Descriptive literal Date: YYYYMMdd: date the data was acquired (Contains 24 hours of data starting at 00:00)
Example	SREMPlanck_PACC_20110118.fits

5.1.2 Catalogs

3.2.2.1 Source Lists

Staging area	catalogs/<relase>/<catalog>/source_lists
Naming convention	<Instr>_<Type>_<Ident[-method]>_<Rn.mm>.ext **Instr**: LFI/HFI/COM **Type**: PCCS **Ident**: <fff/SZ/CC...> **method**: For PCCS_SZ: <union/MMF{1/3}/PwS> **Rn.mm**: Delivery name
Examples	COM_PCCS_SZ-MMF1_R1.00.fits/COM_PCCS_SZ-PwS_R1.00.fits COM_PCCS_044_r1.00.fits

3.2.2.2 Postcards

Staging area	catalogs/<release>/< catalog >/postcards
Naming convention	<SourceId>[_tag].jpg tag: - psf - 353/545/857 for ECC sources
Examples	PLCKERC353_G000.01_17.97.jpg PLCKERC353_G280.70-22.09_psf.jpg PLCKECC_G000.4811.9_353.jpg PLCKECC_G000.4811.9_545.jpg PLCKECC_G000.4811.9_857.jpg
Metadata	The only required metadata is the calibrated/uncalibrated condition. By default the postcards are calibrated, otherwise include this information in the Release Note.

Apart from the individual postcards, a tar file collecting all postcards plus the index.html file may be created per channel.

Staging area	catalogs/<release>/<catalog >/postcards
Naming convention	postage_stamps_<channel>.tar channel: ecc, f030, f044, f070, f100, f143, f 217, f353, f545, f857
Examples	postage_stamps_f044.tar postage_stamps_ecc.tar

3.2.2.3 Notes

Staging area	catalogs/<release>/< catalog >/notes
Naming convention	<CatalogId>-notes.txt
Examples	COM_PCCS_044_r1.00_notes.txt

3.2.2.4 Documents

Staging area	catalogs/<release>/<catalog >/documents
Naming convention	<DocumentName>.extension
Examples	ERCSC_f217_skymap.ps.gz
Metadata *(Descriptor file)*	Descriptor file is a text file containing the associated catalogs to the document, one per line. **Staging area**: catalogs/<release>/<catalog >/documents **Naming convention**: <DocumentName>.extension.descriptor **Example** *(Descriptor file of* ERCSC_f217_skymap.ps.gz *associated to one catalog)*: *Name*: ERCSC_f217_skymap.ps.gz.descriptor; *Content*: ERCSC_f217.fits

5.1.3 Cosmology Products

5.1.3.1 CMB Angular Power Spectra

Staging area	cosmology/<release>/cmb_angular_power_spectra

<table>
<tr><td>Naming convention</td><td><Instr>_<Type>_<Ident>_<Rn.mm>.ext

<table><tr><td>Instr</td><td>LFI/HFI/COM</td></tr><tr><td>Type</td><td>PowerSpect</td></tr><tr><td>Ident</td><td><Freq[-detector][xFreq'-detector']>
Where:
Freq:<fff>
Detector:
o HFI detector: n(a/b)
o HFI detset: ds(1/2)
o LFI radiometer: rr(S/M)
o LFI couple horn:hh_hh
Or:
CMB/synch/free-free/AME/dust/CO<corr/discovery/line>/DustOpacity</td></tr><tr><td>Rn.mm</td><td>Delivery name</td></tr></table></td></tr>
<tr><td>Examples</td><td>COM_PowerSpect_CMB_R1.00.fits</td></tr>
</table>

5.1.3.2 Cosmological Parameters

Staging area	cosmology/<release>/cosmological_parameters
Naming convention	TBD
Examples	TBD

5.1.3.3 Likelihood

Staging area	cosmology/<release>/likelihood
Naming convention	Likelihood_<version>.tar.gz
Examples	Likelihood_4.0.tar.gz Likelihood_4.1.tar.gz

5.1.3.4 Documents

Staging area	cosmology/<release>/documents
Naming convention	<DocumentName>.extension
Examples	TBC

Metadata *(Descriptor file)*	Descriptor file is a text file containing the associated cosmology files to the document, one per line. **Staging area**: cosmology/<release>/documents **Naming convention**: <DocumentName>.extension.descriptor **Example**:

5.1.3.5 Postcards

Staging area	cosmology/<release>/postcards
Naming convention	<CosmologyFile>.png
Examples	

5.1.3.6 Sky Power Spectra and Covariance Matrices

Staging area	cosmology/<release>/sky_power_spectra_and_cov_mat
Naming convention	<Instr>_<Type>_<Ident>_<Rn.mm>.ext **Instr**: LFI/HFI/COM **Type**: PowerSpect/PSCovarMat **Ident**: *<Freq[-detector][xFreq'-detector']>* Where: Freq:<fff> Detector: o HFI detector: n(a/b) o HFI detset: ds(1/2) o LFI radiometer: rr(S/M) o LFI couple horn:hh_hh Or: CMB/synch/free-free/AME/dust/CO<corr/discovery/line>/DustOpacity **Rn.mm**: Delivery name
Examples	HFI_PowerSpect_100-ds1x217-1_R1.00.fits/ HFI_PowerSpect_100-ds1_R1.00.fits

5.1.4 Generic Files

These are the files to be included inside the Black Box.

Staging area	generic_files

Naming convention	N/A
Example	SupDataFile.fits
Metadata	The only metadata required is the authorization group level associated. This information must be included in the Release Note.

5.1.5 Maps

5.1.5.1 Frequency Maps

Staging area	maps/<release>/frequencyMaps
Naming convention	<Instr>_<Type>_<Ident>_<NSide>_<Rn.mm>_<Coverage>[_<JackKnife_1/2>][_ZodiCorrected].ext **Instr**: LFI/HFI/COM **Type**: SkyMap/SimMap **Ident**: *<Freq[-detector]>* Where: Freq:<fff> Detector: o HFI detector: n(a/b) (3) o HFI detset: ds(1/2) (2) o LFI radiometer: rr(S/M) (1) o LFI couple horn:hh_hh (1) **Rn.mm**: Delivery name **Coverage**: Nominal/full/survey_n **JackKnife**: ringhalf_(1/2)
Examples	HFI_SkyMap_100_2048_R1.00_nominal.fits/ HFI_SkyMap_100_2048_R1.00_nominal_ringhalf_1.fits LFI_SkyMap_070_1024_R1.00_survey_1.fits
Metadata	The only required metadata is the *provenance*, to be included in the Release Note. This metadata applies to only one map, so it must be added in the same line where the map name is indicated. There are three possible values: • Main: default one. • Secondary. • Simulation.

(1): Identifies the horn/horns used to build the map
- 24:[LFI-24M,LFI-24S]
- 25-26:[LFI-25M,LFI-25S,LFI-26M,LFI-26S]
- 18-23:[LFI-18M,LFI-18S,LFI-23M,LFI-23S]
- 19-22:[LFI-19M,LFI-19S,LFI-22M,LFI-22S]
- 20-21:[LFI-20M,LFI-20S,LFI-21M,LFI-21S]

(2): Subset of the detectors of each channel used to build the map

	Detset1	Detset2
100	[100-1a,100-1b,100-4a,100-4b]	[100-2a,100-2b,100-3a,100-3b]
143	[143-1a,143-1b,143-3a,143-3b]	[143-2a,143-2b,143-4a,143-4b]
217	[217-5a,217-5b,217-7a,217-7b]	[217-6a,217-6b,217-8a,217-8b]
353	[353-5a,353-5b,353-3a,353-3b]	[353-6a,353-6b,353-4a,353-4b]
545	[545-1,545-2]	
857	[857-1,857-2]	[857-3,857-4]

(3): HFI detectors

- 143: 5/6/7
- 217: 1/2/3/4
- 353: 1/2/7/8
- 545: 1/2/4
- 857: 1/2/3/4

5.1.5.2 Ancillary Maps

Staging area	maps/<release>/ancillaryMaps
Naming convention	<Instr>_<Type>_<NSide>_<Rn.mm>.ext **Instr**: LFI/HFI/COM **Type**: SkyMap_ZodiCorr/Mask_<GalPlane|Pointsrc>/PowerSpect_Mask **Rn.mm**: Delivery name
Examples	HFI_Mask_GalPane_2048_R1.00.fits HFI_SkyMap_ZodiCorr_2048_R1.00.fits
Metadata	The only required metadata is the *provenance*, to be included in the Release Note. This metadata applies to only one map, so it must be added in the same line where the map name is indicated. There are three possible values: • Main: default one. • Secondary. Simulation.

5.1.5.3 Component Maps

Staging area	maps/<release>/componentMaps

Naming convention	<Instr>_<Type>_<Ident[-method]>_<NSide>_<Rn.mm>.ext **Instr**: LFI/HFI/COM **Type**: CompMap/SimMap **Ident**: CMB/synch/free-free/AME/dust/CO-<corr/discovery/line>/DustOpacity/Lensing **method**: Smica/seven/commrul/ **Rn.mm**: Delivery name
Examples	COM_CompMap_CMB-smica_2048_R1.00.fits HFI_CompMap_CO-corr_2048_R1.00.fits
Metadata	The only required metadata is the *provenance*, to be included in the Release Note. This metadata applies to only one map, so it must be added in the same line where the map name is indicated. There are three possible values: • Main: default one. • Secondary. • Simulation.

5.1.5.4 Postcards

Staging area	maps/<release>/postcards
Naming convention	<MapName>.png
Examples	LFI_1024_20110719_MASK.png LFI_30_1024_20120101_survey_1.png
Metadata	The only required metadata is the calibrated/uncalibrated condition. By default the postcards are calibrated, otherwise include this information in the Release Note.

5.1.5.5 Documents

Staging area	maps/<release>/documents
Naming convention	<DocumentName>.extension
Examples	HFI_DR3_delivery_20110720.pdf RIMO_ICD_v110.pdf

Metadata *(Descriptor file)*	Descriptor file is a text file containing the associated maps to the document, one per line. **Staging area**: maps/<release>documents **Naming convention**: <DocumentName>.extension.descriptor **Example** *(Descriptor file of HFI_DR3_delivery_20110720.pdf associated to three maps)*: *Name*: HFI_DR3_delivery_20110720.pdf.descriptor *Content*: LFI_1024_20110719_MASK.fits.gz LFI_30_1024_20110101_ringhalf_2_nominal.fits.gz HFI_143-6_2048_20110101_nominal.fits.gz

5.1.6 Operational Files

5.1.6.1 AHF

Staging area	operational_files/<release>/AHF
Naming convention	<OdNumber>_<VersionNumber>.AHF OdNumber: dddd: four digit operational day number VersionNumber: vvvv: four digit version number
Example	0092_0002.AHF

5.1.6.2 APS

Staging area	operational_files/<release>/APS
Naming convention	<OdNumber>_<VersionNumber>.APS OdNumber: dddd: four digit operational day number VersionNumber: vvvv: four digit version number
Example	0190_0001.APS

5.1.6.3 DHF

Staging area	operational_files/<release>/DHF
Naming convention	<OdNumber>_<VersionNumber>.DHF OdNumber: dddd: four digit operational day number VersionNumber: vvvv: four digit version number
Example	0392_0002.DHF

5.1.6.4 DQRH

Staging area	operational_files/<release>/DQRH
Naming convention	<OdNumber>_<VersionNumber>.DQRH OdNumber: dddd: four digit operational day number VersionNumber: vvvv: four digit version number
Example	0091_0002.DQRH

5.1.6.5 DQRL

Staging area	operational_files/<release>/DQRL
Naming convention	<OdNumber>_<VersionNumber>.DQRL OdNumber: dddd: four digit operational day number VersionNumber: vvvv: four digit version number
Example	0091_0016.DQRL

5.1.6.6 FAHF

Staging area	operational_files/<release>/FAHF
Naming convention	<OdNumber>_<VersionNumber>.FAHF OdNumber: dddd: four digit operational day number VersionNumber: vvvv: four digit version number
Example	0091_0056. FAHF

5.1.6.7 GHF

Staging area	operational_files/<release>/GHF
Naming convention	<OdNumber>_<VersionNumber>.GHF OdNumber: dddd: four digit operational day number VersionNumber: vvvv: four digit version number
Example	0392_0002.GHF

5.1.6.8 LEV

Staging area	operational_files/<release>/LEV
Naming convention	P<Date>_<VersionNumber>.LEV Date: YYYYMMdd: creation date VersionNumber: vvvv: four digit version number
Example	P20110524_0001_0108.LEV

5.1.6.9 LOF

Staging area	operational_files/<release>/LOF
Naming convention	P<Date>_<VersionNumber>.LOF Date: YYYYMMdd: creation date VersionNumber: vvvv: four digit version number
Example	P20110524_0001_0112.LOF

5.1.6.10 PPL

Staging area	operational_files/<release>/PPL
Naming convention	<StartDate>_<EndDate>_<VersionNumber><PPLType>.LOF StartDate: YYYYMMdd: start date EndDate: YYYYMMdd: end date VersionNumber: vvvv: four digit version number 0000 – 8999: reserved for PSO 9000 – 9999: attitude MOC manoeuvres PPLType: R: routine C: contingency L: long-term S: special
Example	P20110524_0001_0112.PPL

5.1.6.11 SIAM

Staging area	operational_files/<release>/SIAM
Naming convention	<VersionNumber>.SIAM VersionNumber: vvvv: four digit version number

Example	0012.SIAM

5.1.6.12 WHRH

Staging area	operational_files/<release>/WHRH
Naming convention	<WeekNumber>_<VersionNumber>. WHRH WeekNumber: dddd: four digit operational week number VersionNumber: vvvv: four digit version number
Example	0004_0001.WHRH

5.1.6.13 WHRL

Staging area	operational_files/<release>/WHRL
Naming convention	< WeekNumber >_<VersionNumber>. WHRL WeekNumber: dddd: four digit operational week number VersionNumber: vvvv: four digit version number
Example	0012_0001.WHRL

5.1.7 POSH

5.1.7.1 Descriptor

The events descriptions are collected within a XML file located in this stage directory. This XML file consists of a set of Event items that contain (at least) id, title and description.

Staging area	posh/<release>/versionName/descriptor
Naming convention	<descriptorFileName>.xml
Examples	poshEDD_v07.1.xml

5.1.7.2 Documents

All POSH documents must be collected in a compressed tar file.

Staging area	posh/<release>/versionName/documents
Naming convention	POSH_<Version>_docs.zip
Examples	POSH_v06_5_beta_docs.tar.gz

5.1.7.3 Tables

Staging area	posh/<release>/tables
Naming convention	POSH_<Version>.fits
Examples	POSH_v06_5_beta.fits

5.1.8 Software

Any software package to store in PLA.

Staging area	software/<release>
Naming convention	N/A
Example	COM_Code_ColorCorr_R1.00.tgz
Metadata	TBC

5.1.9 Timelines

5.1.9.1 Science/Pointing

Staging area	timelines/<release>/science
Naming convention	<Instrument><Frequency>-<OdNumber>-<Type>-<Date>. fits Instrument: L: LFI, H: HFI Frequency: fff: three character coding the frequency OdNumber: dddd: four digit operational day number Type: C: science converted, R: science reduced, DET: detector pointing Date: YYYYMMDD: date creation

Example	L030-0133-C-20071221.fits.gz L070-0700-R-20110614.fits L070-0700-DET-20110614.fits

5.1.9.2 Housekeeping

Staging area	timelines/<release>/housekeeping
Naming convention	<Instrument><FileName>-<OdNumber>-<Date>. fits

Instrument	L: LFI H: HFI S: Sorption Cooler K: 4k Cooler
Frequency	fff: three character coding the frequency
FileName	File Identifier: LFI_DAE_FAST LFI_DAE_SlowConfiguration LFI_DAE_SlowCurrent LFI_DAE_SlowPhaseSwitch LFI_DAE_SlowVoltage LFI_REBA_Hk SCS_HSK3_EssentialASW SCS_HSK3_EssentialASWR SCS_HSK2_NonEssentialASW SCS_HSK2_NonEssentialASWR HFI_Supply_4Kcooler HFI_4K_Pid_Settings HFI_Pid4n_Temperatures HFI_4K_Temperatures
Type	C: science converted R: science reduced DET: detector pointing
Date	YYYYMMDD: date creation

Example	L-LFI_DAE_FAST-0700-20110526.fits

6 RELEASE NOTE

6.1 Concept

In order to provide a system that can ingest products from a delivered Data Release in fully autonomous manner, a plain text file describing the content, basic attributes and location of the various files uploaded to the FTP area is required to form part of the Data Releases from the DPCs/PSO.

This Release Note will be parsed by the Import software allowing it to identify the contents of the data release and start the import and ingestion processes accordingly. As an added benefit, the parsing process would also validate the existence and relationship of all the products described within it.

6.2 Process

These are the actions to be taken by the DPCs/PSO and the Import Module to successfully import a data release:

- DPCs/PSO upon deciding contents of a Data Release would prepare an appropriate Release Note based on the structure described later in this appendix (*See* Structure *section*).
- Upon data release, the Release Note file should be uploaded to the stage root directory and the products to their appropriate directories.
- Upon receipt of the delivery data notification, the Import module will then:
    1. Verify that Release Note file is present in the appropriate ftp area.
    2. Verify that the Release Note is well formed, valid and conformant to the agreed definition.
    3. Verify that product files described by the Release Note are present in location specified.
- Start nominal import of products from staging area.
- Notify to the DPCs/PSO the ingestion result via email.

6.3 Release Note Definition

6.3.1 Naming convention

The naming convention for the Release Note must be:

<origin>ReleaseNote<Date>[_<desc>].txt

Where:

- origin: lfi, hfi or pso.
- date: release date, YYYYMMDD format.
- desc**:** any descriptive string (dr4, posh…).

Examples*: lfiReleaseNote20120301.txt, hfiReleaseNote20120301_dr4.txt, psoReleaseNote20120406_posh-0.7.1.txt*

6.3.2 Structure

The Release Note is a plain text file with the list of products to be ingested in PLA, based literally on the stage structure. Keep in mind this structure has been designed with the aim of reducing the metadata to be included in this Release Note.

The list of products must be grouped by directories, one product per line, and headed by the stage directory preceded by the symbol "#". For certain products some metadata must be included as well. There are two cases:

1. The metadata affects to all items of a specific directory: add a line with the list of duplas *metadata_name=value* separated by ";" preceded by "##' after the stage directory.
2. Metadata affects only to one product: in the same line where the product name is indicated add the list of duplas *metadata_name=value* separated by ";" preceded by "##'.

```
#stage directory 1
##metadataDir1=value1;metadataDir2=value2...
Product1.1
Product1.2

#stage directory 2
Product2.1 ##metadata1Product=value1; metadata2Product=value2...
Product2.1
...
```

6.4 Examples

6.4.1 Example 1: Release Note for ancillary data

psoReleaseNote20120212_srem.txt

```
#ancillary_data/PLA1.0/SREM
SREMPlanck_PACC_20110118.fits
SREMPlanck_PACC_20110119.fits
...
```

6.4.2 Example 2: Release Note for the catalog PCCS_1.0

psoReleaseNote20121222_pccs-1.0.txt

```
#catalogs/PLA1.0/PCCS_1.0/source_lists
COM_PCCS_100_R1.00.fits
COM_PCCS_143_R1.00.fits
...

#catalogs/PLA1.0/PCCS_SZ/source_lists
COM_PCCS_SZ-MMF1_R1.00.fits
COM_PCCS_SZ-MMF3_R1.00.fits
...

# catalogs/PLA1.0/PCCS_1.0/postcards
PLCKECC_G139.17+15.07_545.jpg
PLCKERC217_G140.48+06.07.jpg
PLCKERC353_G065.27+09.21_psf.jpg
PLCKESZ_G006.78+30.46.jpg ##calibrated=false
...

#catalogs/PLA1.0/ PCCS_1.0/documents
explanatory_supplement.pdf
explanatory_supplement.pdf.descriptor
postage_stamps_ecc.tar
postage_stamps_ecc.tar.descriptor
...
```

6.4.3 Example 3: Release Note for cosmology of R1.00

psoReleaseNote20121220_cosmology_r1.00.txt

```
#cosmology/PLA1.0/likelihood
Likelihood_5.1.tar.gz

#cosmology/R1.00/cmb_angular_power_spectra
COM_PowerSpect_CMB_R1.00.fits

#cosmology/R1.00/sky_angular_power_spectra_and_cov_mat
HFI_PowerSpect_100-ds1_R1.00.fits
HFI_PSCovarMat_217-ds2_R1.00.fits
```

6.4.4 Example 4: Release Note for generic files

lfiReleaseNote20120223_genericFiles.txt

```
#generic_files
Generic_File_1.0.tar.gz ##authGroupLevel=”1”
Generic_File_2.0.tar.gz##authGroupLevel=”2”

...
```

6.4.5 Example 5: Release Note for maps (DR3)

lfiReleaseNote20120222_dr3.txt

```
#maps/DR3/ancillaryMaps
COM_2048_20110720_MASK_APODISED.fits.gz ##provenance= ”Main”
LFI_1024_20100804_MASK.fits.gz ## provenance =”Secondary”
LFI_1024_20100804_CMB_substraction.fits.gz
…

#maps/DR3/frequencyMaps
HFI_100_2048_20100802.fits.gz ## provenance = ” Main”
HFI_545_2048_20100803_ringhalf_1.fits.gz ## provenance =” Secondary”
LFI_70_1024_20100809.fits.gz
…

#maps/DR3/postcards
HFI_217_2048_20100222.png
HFI_217_2048_20100713_ringhalf_1.png
…

#maps/DR3/documents
RIMO_ICD_v110.pdf
RIMO_ICD_v110.pdf.descriptor
HFI-RIMO-20110720.fits.gz
HFI-RIMO-20110720.fits.gz.descriptor
…
```

6.4.6 Example 6: Release Note for POSH

psoReleaseNote20110622_posh-0.7.0.txt

```
#posh/DR4/POSH_0.7/tables
POSH_v0_7_0.fits

#posh/DR4/POSH_0.7/documents
POSH_v0_7_0_docs.zip

#posh/DR4/POSH_0.7/descriptor
poshEDD_v0.7.0.xml
```

6.4.7 Example 7: Release Note for operational files

lfiReleaseNote20120223_opFiles.txt

```
#operational_files/PLA1.0/AHF
0091_001.AHF
0100_001.AHF
...

#operational_files/PLA1.0/WHRH
0004_001.WHRH
0010_001.WHRH
...
```

6.4.8 Example 8: Release Note for software

lfiReleaseNote20121223_color_code.txt

```
#software/PLA1.0
COM_Code_ColorCorr_R1.00.tgz
...
```

7 APPENDIX A: PRODUCTS METADATA

7.1 Maps

7.1.1 Maps

PLA maps are delivered as fits files. The binary table located on the second extension must contain (at least) the following information:

Attribute Name	Description
COORDSYS	GALACTIC, EQUATORIAL...
ORDERING	RING/NESTED
PIXTYPE	HEALPIX
STOKES	I/Q

7.1.2 Documents

In order to associate the set of maps a specific document is related to, each document must enclose a descriptor file. This descriptor is a text file containing the list of maps identifiers related to the document, one per line. Its name must be the same as the document is associated to with the “descriptor” suffix and must be accommodated on the proper stage location (see Staging area Structure).

7.1.3 Postcards

The only required metadata for postcards is related to their calibrated/uncalibrated nature. Such information is included in the Release Note. By default all the postcards are considered calibrated.

7.2 Catalogs

7.2.1 Documents

In order to associate the set of catalogs a specific document is related to, each document must enclose a descriptor file. This descriptor is a text file containing the list of catalog identifiers related to the document, one per line. Its name must be the same as the document is associated to with the "descriptor" suffix and must be accommodated on the proper stage location (see Staging area Structure).

7.2.2 Tables

Catalog tables are delivered as fits files with two or three extensions. The metadata depends on the type of catalogue; this section collects the list of expected attributes for the existing catalogs.

7.2.2.1 PCCS catalog

The PCCS source list in each frequency is structured as a *FITS* binary table having one row for each detected source. The Fits primary header will have the following structure:

FITS Keyword	Data Type	Units	Description
INSTRUME	String		LFI or HFI
VERSION	String		Version of PCCS
DATE	String		Date file created: yyyy-mm-dd
ORIGIN	String		Name of organization responsible for the data (LFI-DPC – HFI-DPC)
TELESCOP	String		PLANCK
CREATOR	String		Pipeline Version
DATE-OBS	String	days	Start-up time of the survey: *yyyy-mm-dd*
DATE-END	String	days	Ending time of the survey: *yyyy-mm-dd*

The Fits extension is composed by several columns below described:

	Column Name	Data Type	Units	Description
Identification	**NAME**	String		Source name
	EXTENDED	Integer*2		Flag indicated that source is extended (HFI TBC)
	CIRRUS_N	Integer*2		Number of sources detected at 857 GHz within HFI TBC degrees
	EXT_VAL	String		Flag Indicating external validation
	ERCSC	String		Name of the ERCSC counterpart if any
Photometry	**FLUXDET**	Real*4	mJy	Flux density of source as determined by

				detection method
	FLUXDET_ERR	Real*4	mJy	Uncertainty (1 sigma) in derived flux density from detection method
	APERFLUX	Real*4	mJy	Flux density of source as determined from the aperture photometry
	APERFLUX_ERR	Real*4	mJy	Uncertainty (1 sigma) in derived flux density from the aperture photometry
	PSFFLUX	Real*4	mJy	Flux density of source as determined from PSF fitting
	PSFFLUX_ERR	Real*4	mJy	Uncertainty (1 sigma) in derived flux density from PSF fitting
	GAUFLUX	Real*4	mJy	Flux density of source as determined from 2-D Gaussian fitting
	GAUFLUX_ERR	Real*4	mJy	Uncertainty (1 sigma) in derived flux density from 2-D Gaussian fitting
	GAU_FWHMMAJ	Real*4	arcmin	Gaussian fit FWHM along major axis
	GAU_FWHMMIN	Real*4	arcmin	Gaussian fit FWHM along minor axis
	GAU_THETA	Real*4	arcmin	Orientation of Gaussian fit ellipse major axis
Source Position	**GLON**	Real*8	degrees	Galactic longitude based on extraction algorithm
	GLAT	Real*8	degrees	Galactic latitude based on extraction algorithm
	RA	Real*8	degrees	Right ascension (J2000) transformed from
	DEC	Real*8	degrees	Declination (J2000) transformed from (GLON,GLAT)
ONLY 857 GHz Catalogue	**FLUX_217**	Real*4	mJy	Source flux density at 217 GHz (best estimation) of the object detected at 857
	FLUX_ERR_217	Real*4	mJy	Uncertainty in source flux density
	FLUX_353	Real*4	mJy	Source flux density at 353 GHz (best estimation) of the object detected at 857
	FLUX_ERR_353	Real*4	mJy	Uncertainty in source flux density
	FLUX_545	Real*4	mJy	Source flux density at 545 GHz (best estimation) of the object detected at 857
	FLUX_ERR_545	Real*4	mJy	Uncertainty in source flux density

7.2.2.2 SZ catalog

Within PLA two type of catalogs are stored, the individual ones (MF1, MMF3 and PsW) and the cluster catalogue, constructed from the union of the last three.

7.2.2.2.1 Master Catalog

The fits file contains two extensions, the primary HDU contains the standard keywords associated with the catalogue (see PCCS catalog).

In addition to the standard keywords, the header contains the following entries describing the GNFW profile used in

the detection:

FITS Keyword	Data Type	Units	Description
GNFW ALPHA	Real(4)		alfa parameter of GNFW profile used in detection
GNFW BETA	Real(4)		beta parameter of GNFW profile used in detection
GNFW GAMMA	Real(4)		gamma parameter of GNFW profile used in detection
GNFW C500	Real(4)		C500 parameter of GNFW profile used in detection
Y TO Y500	Real(4)		Conversion factor from Y to Y500

The second HDU contains the following columns:

Column Name	Data Type	Units	Description
INDEX	Integer(4)		Index of detection
NAME	String		Name of cluster
GLON	Real(8)	degrees	Galactic longitude (0 _ l < 360)
GLAT	Real(8)	degrees	Galactic latitude (□90 _ b _ 90)
RA	Real(8)	degrees	Right ascension (J2000)
DEC	Real(8)	degrees	Declination (J2000)
POS ERR	Real(4)	arcmin	Uncertainty in position
SNR	Real(4)		Signal-to-noise ratio of detection
PIPELINE	Integer(4)		Pipeline from which information is taken
PIPE DET	Integer(4)		Information on pipelines making detection
PCCS	Boolean		Indicates whether detection matches with any in PCCS single-frequency catalogues
VALIDATION	Integer(4)		External validation status
ID EXT	String		External identifier(s) of cluster
GLON EXT	Real(8)	degrees	Galactic longitude of identified cluster
GLAT EXT	Real(8)	degrees	Galactic latitude of identified cluster
RA EXT	Real(8)	degrees	Right ascension of identified cluster
DEC EXT	Real(8)	degrees	Declination of identified cluster
REDSHIFT	Real(4)		Redshift of cluster
COSMO	Boolean		Indicates whether the cluster is in the cosmology sample
COMMENTS			Comments

7.2.2.2.2 Individual Catalog(MMF1, MMF3 and PsW)

The primary HDU is similar to the master catalog (see Master Catalog).

The second table contains the following parameters:

Column Name	Data Type	Units	Description
INDEX	Integer(4)		Index of detection
NAME	String		Name of cluster
GLON	Real(8)	degrees	Galactic longitude (0 _ l < 360)
GLAT	Real(8)	degrees	Galactic latitude (□90 _ b _ 90)
RA	Real(8)	degrees	Right ascension (J2000)
DEC	Real(8)	degrees	Declination (J2000)
POS ERR	Real(4)	arcmin	Uncertainty in position
SNR	Real(4)		Signal-to-noise ratio of detection
SNR_COMPAT	Real(4)		Signal-to-noise ratio in compatibility mode
TS MIN	Real(4)	arcmin	Limit of grid in third HDU

TS MAX	Real(4)	arcmin	Limit of grid in third HDU
Y_MIN	Real(4)	arcmin 2	Limit of grid in third HDU
Y_MAX	Real(4)	arcmin 2	Limit of grid in third HDU
COMMENTS	String		Comments

The third CHDU contains a three dimensional image with one two dimensional slice per detection.

7.2.3 Postcards

The only required metadata for postcards is their calibrated/uncalibrated nature. Such information is included in the Release Note XML file (see Example 2: Release Note for the catalog ERCSC_1.3.1). By default all the postcards are considered calibrated.

7.3 Generic Files

The only metadata required is the authorization group level associated. This information must be included in the Release Note XML file (*see* Example 7: Release Note for operational files).

7.4 POSH

7.4.1 Descriptor

The event description resides in a XML file that consists of a set of Event items containing id, title and description.

7.4.2 Tables

The Posh_<version>.fits file must contain three extensions: Events, HouseKeeping and EventIDs.

7.4.2.1 Events

Column	Description
Event_ID	Event identifier
Start_Time_UTC	Start time in UTC
Start_Time	Number seconds since launch
End_Time_UTC	End time in UTC
End_Time	Number seconds since launch
Title	Event title
Event Type	Event Type ID (info located on EventIDs extension)
SubType	Binary number identifying the event state (based on active/inactive event subtypes)

7.4.2.2 EventIDS

Column	Description
Event_Type_IDs	Event Type Identifier
Event _Type_Name	Event Type Name
S00000001	Subype name for bit 00000001
S00000010	Subype name for bit 00000010
S00000100	Subype name for bit 00000100
S00001000	Subype name for bit 00001000
S00010000	Subype name for bit 00010000
S00100000	Subype name for bit 00100000
S01000000	Subype name for bit 01000000
S10000000	Subype name for bit 10000000

7.4.2.3 HouseKeeping

Column	Description
PREF	Stable Pointing Reference
OD	Operational Days
Start_Time_UTC	Start time of stable pointing
Start_Time	Number of seconds since Planck launch
End_Time_UTC	End time of stable pointing
End_Time	Number of seconds since Planck launch
Dwell_Duration	Duration of stable pointing
ExecutedLongitude	Executed Longitude at start of stable pointing from 0 to 360 degrees
ExecutedLatitude	Executed Latitude at start of stable pointing from -90 to 90 degrees
PointingErrorLong	Longitudinal error at start of stable pointing
PointingErrorLat	Latitudinal error at start of stable pointing
AvgDriftRate	Average drift rate over a stable pointing
DistanceFromSun	Distance from Sun at start of stable pointing
PosFromEarthX	X-Coord of Planck in Earth-Moon barycentric co-rotating frame'
PosFromEarthY	Y-Coord of Planck in Earth-Moon barycentric co-rotating frame
PosFromEarthZ	Z-Coord of Planck in Earth-Moon barycentric co-rotating frame
AntiSunAngle	Maximum anti-Sun angle over stable pointing from 0 to 180 degrees'
AntiEarthAngle	Maximum anti-Earth angle over stable pointing from 0 to 180 degrees'
AntiMoonAngle	Maximum anti-Moon angle over stable pointing from 0 to 180 degrees
NutationAngle	Maximum nutation angle over stable pointing from 0 to 1000 arcmin
SpinRate	Maximum spin rate over stable pointing
AxisTilt1	Maximum Principal Axis Tilt 1 from -100 to 100 arcmin
AxisTilt2	Maximum Principal Axis Tilt 2 from -100 to 100 arcmin

Column	Description
HFI90_Average	0.1K Bolometer Plate Temperature: HD271280
HFI90_RMS	
HFI90_Peak2Peak	
HFIA2_Average	0.1K Bolometer Plate Temperature: HD279280
HFIA2_RMS	
HFIA2_Peak2Peak	
HFI94_Average	1.6K Thermometer: HD275280
HFI94_RMS	
HFI94_Peak2Peak	
Box_4K_Average	4K Box: HD494280
Box_4K_RMS	
Box_4K_Peak2Peak	
TS5L_Average	Flight Model 1 Focal Plane - Cold Plate Far Left: LM205332
TS5L_RMS	
TS5L_Peak2Peak	
TS2R_Average	Flight Model 1 Focal Plane - Cone Right Part Left: LM302332
TS2R_RMS	
TS2R_Peak2Peak	
TS6L_Average	Flight Model 2 Focal Plane - Cone Left Part Left: LM206332
TS6L_RMS	
TS6L_Peak2Peak	
TS1R_Average	Flight Model 2 Focal Plane - Right Bottom: LM301332
TS1R_RMS	
TS1R_Peak2Peak	
HFI_JFET_Average	HFI JFET Box: HD497280
HFI_JFET_RMS	
HFI_JFET_Peak2Peak	
PR_Average	Primary Reflector: DM119187
PR_RMS	
PR_Peak2Peak	
SR_Average	Secondary Reflector: DM122187
SR_RMS	
SR_Peak2Peak	
LVHX1_Average	HFI Sorption Cooler Subsystem Liquid Vapour Hear eXchanger: SM018540
LVHX1_RMS	
LVHX1_Peak2Peak	
LVHX2_Average	LFI Sorption Cooler Subsystem Liquid Vapour Hear eXchanger: SM019540
LVHX2_RMS	

Column	Description
LVHX2_Peak2Peak	
H1_4K_Average	K Shield Horn Entry Plate: HD281280
H1_4K_RMS	
H1_4K_Peak2Peak	
H2_4K_Average	4K Shield Horn Entry Plate: HD287280
H2_4K_RMS	
H2_4K_Peak2Peak	
L1_4K_Average	30&44GHz reference load temperature: HD282280
L1_4K_RMS	
L1_4K_Peak2Peak	
L2_4K_Average	30&44GHz reference load temperature: HD288280
L2_4K_RMS	
L2_4K_Peak2Peak	
PID4N_4K_Average	70GHz reference load temperature: HD276280
PID4N_4K_RMS	
PID4N_4K_Peak2Peak	
PID4R_4K_Average	70GHz reference load temperature: HD286280
PID4R_4K_RMS	
PID4R_4K_Peak2Peak	
Cernox_4K_Average	4K Cold End Temperature: HD028260
Cernox_4K_RMS	
Cernox_4K_Peak2Peak	
TSA_Average	Temperature Stabilisation Assembly: SM020540
TSA_RMS	
TSA_Peak2Peak	
VG3_PC3C_Average	50K V-Groove Final pre-cooling stage: SM022540
VG3_PC3C_RMS	
VG3_PC3C_Peak2Peak	
D1D2_Average	Standard Radiation Environment Monitor Proton Detector
D1D2_RMS	

Column	Description
D1D2_Peak2Peak	
D3_Average	Standard Radiation Environment Monitor Electron Detector
D3_RMS	
D3_Peak2Peak	
TC1_Average	Proton Counter TC1
TC1_RMS	
TC1_Peak2Peak	
TC3_Average	Electron Counter TC3
TC3_RMS	
TC3_Peak2Peak	