



Maintenance and Operations of Earth Observation



Title:	ENVISAT-1 PRODUCTS SPECIFICATIONS VOLUME 9: DORIS PRODUCTS SPECIFICATIONS		
Contract Ref.:	ESA/Esrin 19049/05/I-OL		
Document Ref.:	PO-RS-MDA-GS-2009	Issue: 3	Rev.: B
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TITLE: ENVISAT-1 PRODUCTS SPECIFICATIONS

VOLUME 9: DORIS PRODUCTS SPECIFICATIONS

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SUMMARY: This document specifies the ENVISAT-1 products.



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CHANGE RECORD

ISSUE	REVISION	DATE	CHANGE STATUS	ORIGIN
1	A	12/01/96	Issue 1	
1	B	16/02/96	<p>SCR #16, CR #16 Issue 1, Revision B</p> <p>Reason for Change:</p> <p>Updated to reflect information in PO-TN-ESA-GS-0381 and to address RIDs of Feb. 2/96 pertaining to the Level 0 structure.</p> <p>MPH, SPH, DSD, and DSR structures modified.</p> <p>Table added showing generalized Level 0 product structure.</p> <p>RIDs Addressed:</p> <p>ESA/0001: FEP header defined</p> <p>ESA/0002: PF-Host time stamp clarified</p> <p>ESA/0004: Processing PCD added</p> <p>ESA/0006: AF PCD ADS and DSD added</p> <p>ESA/0007: page A-3 updated</p> <p>ESA/0008: page B-3 updated</p> <p>ESA/0009: Table 8.1.1 modified</p> <p>ESA/0011: TBD changed to Range/Doppler</p> <p>ESA/0013: FEP header defined</p> <p>ESA/0014: Table 8.4.7.4-2 corrected</p> <p>CSF/1: filename in MPH corrected</p> <p>CSF/2: page A-3 updated</p>	

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ISSUE	REVISION	DATE	CHANGE STATUS	ORIGIN
1	C	04/04/96	<p>CSF/3: MPH PCD information updated CSF/5: DSD added to Level 0 SPH CSF/6: Section on AATSR updated and re-issued CSF/8: AATSR_O Summary Sheet updated SCR #38, CR #38 Issue 1, Revision C</p> <p>Reason for Change: Updated Sections 1-6, 17 and Annex A to reflect changes discussed at the Products Review Meeting #1, March 5-8, 1996, as per action item "AI MDA 6 April 96" from PO-MN-ESA-00416, Pg. 35.</p>	Products Review Meeting #1
2	A	20/05/96	<p>SCR #71, CR #71 Issue 2</p> <p>Separate volume created.</p> <p>Updated with new product information from Document A-3.</p>	
2	B	14/04/97	<p>SCR #145, CR #145 Issue 2, Revision B Format descriptions of the Level 2 products included (formerly found in Volume 16).</p>	

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ISSUE	REVISION	DATE	CHANGE STATUS	ORIGIN
3	A	16/10/98	SCR #218 , CR # 218 Issue 3, Revision A Updated to contain the DORIS Level 1B product format and DORIS auxiliary data file formats. Also updated according to the decisions of the ENVISAT PDS Progress Meeting #14 (PO-MN-CSF-GS-2653)	
3	B	29/01/08	Issue 3, Revision B Reason for Change: Taking into account Change Request DM-241-CN introducing “DORIS orbit quality flag definition“ with impacts on both DORIS Processor Configuration data file (DOR_CON) and DORIS Instrument Characterization File (DOR_INS)	DM-241-CN

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REGISTER OF CHANGES

Affected pages:

- p. 26, par. 9.6.1, GADS size updated
- p. 27, Table 9.6.1.1.1-1 Configuration Models GADS, modified
- p. 28, Table 9.6.1.1.2-1 Satellite and Solar Array Macromodels GADS, modified
- p. 30, par. 9.6.1.1.3, text changed
- p. 31, Table 9.6.1.1.3-1 Satellite Attitude Information GADSR, modified
- p. 31, Table 9.6.1.1.4-1 Stations Characterization and Positions GADSR, modified
- p. 33, par. 9.6.2, GADS size updated
- p. 34, Table 9.6.2.1.1-1 Characterization GADS modified



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9 DORIS PRODUCTS SPECIFICATIONS

9.1 INSTRUMENT OVERVIEW

The Doppler Orbitography and Radio-positioning Integrated by Satellite instrument is a microwave tracking system that can be utilized to determine the precise location of the ENVISAT satellite. Versions of the DORIS instrument are currently flying on the SPOT-2 and Topex-Poseidon missions. DORIS operates by measuring the Doppler frequency shift of a radio signal transmitted from ground stations and received on-board the satellite. The reference frequency for the measurement is generated by identical ultra-stable oscillators on the ground and on-board the spacecraft. Currently there are about 50 ground beacons placed around the globe which cover about 75% of the ENVISAT orbit.

On board measurements are performed every 7 - 10 seconds. Precise Doppler shift measurements are taken using an S-band frequency of 2.03625 GHz, while a second VHS band signal at 401.25 MHz is used for ionospheric correction of the propagation delay.

On the ground, DORIS data is used to create precise orbit reconstruction models which are then used for all satellite instruments requiring precise orbit position information. In addition, DORIS operates in a “Navigator” mode in which on-board positioning calculations are performed in real-time and relayed to the ground segment. The accuracy of the various levels of orbit estimation provided by DORIS are shown in Table 9.1-1. As well, the use of a Laser Retro-Reflector will complement the positioning data achieved using DORIS.



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Table 9.1-1 DORIS Orbit Reconstruction Accuracy

Orbit Estimate	Radial Accuracy (RMS)	Along-Track Accuracy (RMS)	Cross-Track Accuracy (RMS)
Navigator Estimate: position velocity	10 m 1 cm/s	10 m 1 cm/s	10 m 1 cm/s
Preliminary Doppler Estimate	0.2 m	0.4 m	0.4 m
Precise Doppler Estimate	0.1 m	0.3 m	0.3 m



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9.2 PRODUCTS OVERVIEW

DORIS products are divided into three primary levels: Level 0, Level 1B, and Level 2, each corresponding to a higher degree of processing. The products are summarized by the product tree diagram in Figure 9.2-1 and Table 9.2-1.

Table 9.2-1 DORIS Products

Instrument / mode	Product ID	Description
DORIS	DOR_NAV__0P	DORIS Navigator Level 0
	DOR_DOP_0P	DORIS Doppler Level 0
	DOR_DOP_1P	DORIS Doppler Level 1B
	DOR_POR_AX	DORIS Preliminary Orbit
	DOR_VOR_AX	DORIS Precise Orbit



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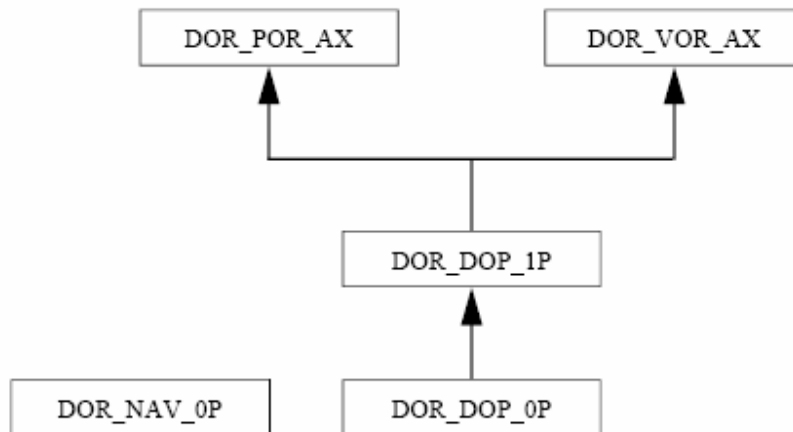


Figure 9.2-1 DORIS Product Tree



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9.3 LEVEL 0 PRODUCTS

DORIS has two level 0 products, the Doppler Level 0 and the Navigator Level 0. Both share the common Level 0 product format described in Volume 6.

9.3.1 Navigator Level 0

The DORIS Navigator Level 0 Product is a file containing time ordered AISPs which are output from the on-board DORIS Navigator software. This product provides the first estimate of satellite positioning available from the DORIS sensor, the accuracy of which is described in Table 9.1-1. No further processing is applied to the Level 0 Navigator Product. The NRT version of the product is available within 3 hours of data acquisition. The OFL (fully consolidated) version is available 2 weeks after acquisition.

9.3.2 Doppler Level 0

The DORIS Doppler Level 0 Product contains time ordered AISPs which hold the raw Doppler shift measurements of the instrument. These measurements are the basis of all further DORIS processing which is performed to produce the preliminary and precise orbit estimates. The NRT version of the product is available within 3 hours of data acquisition. The OFL (fully consolidated) version is available 2 weeks after acquisition.

9.3.3 Input Data

Annotated ISPs as received from the Front End Processor (FEP) plus auxiliary data.

9.3.4 Auxiliary Data Used

The Level 0 product requires the following auxiliary information (refer to Volume 6):

- Phase, cycle and orbit number data,
- ID of the systems and subsystem that collect and process the data,
- ENVISAT orbital state vectors,
- Processor Configuration file, which includes PCD error codes and threshold values, and
- SBT to UTC conversion data.

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9.3.5 Processing Performed

The determination of the satellite position and conversion of Satellite Binary Time (SBT) to Universal Time Co-ordinates (UTC) is accomplished using ESA software. These are the only algorithms applied when forming the Level 0 product.

9.3.6 Product Structure

As defined in Volume 6. The detailed description of the Instrument Source Packets is contained in Document A-1.



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9.4 LEVEL 1B PRODUCTS

There is one DORIS Level 1B product.

9.4.1 DORIS Doppler Level 1B Product

DORIS Doppler data which has been corrected for instrument and atmospheric effects.

9.4.1.1 Input Data

DORIS Doppler Level 0 product plus auxiliary data.

9.4.1.2 Auxiliary Data Used

Information not available. Must include at least:

Table 9.4.1.2-1 Auxiliary Data Files for DORIS Level 1B Processing

Description	Auxiliary File ID
DORIS Processor Configuration file	DOR_CON_AX
DORIS Instrument Characterization file	DOR_INS_AX

9.4.1.3 Processing Performed

Information not available

9.4.1.4 Product Structure

The high level structure of the product is shown below:

Table 9.4.1.4-1 DORIS Level 1B Product Structure

MPH
SPH
MDS



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9.4.1.5 Main Product Header

The MPH is described in Volume 5.

9.4.1.6 Specific Product Header

The SPH is an ASCII header and as such follows the ASCII conventions described in Volume 5. The content of the Specific Product Header shall be as follows.

Table 9.4.1-1 DORIS Level 1B SPH

N	Description	Units	Byte Length	Data Type	Dim.
1	SPH_DESCRIPTOR=	keyword	15	uc	15
	quotation mark (“	-	1	uc	1
	SPH Descriptor ASCII string describing the file: DORIS_LEVEL_1B_PRODUCT	-	28	uc	28
	quotation mark (“	-	1	uc	1
	newline character	terminator	1	uc	1
2	Spare (blanks)	-	51	uc	51
	newline character	terminator	1	uc	1
3	DSD for the MDS DS_NAME = DORIS_LEVEL_1B_DATA_SET	-	280	dsd	1
4	DSD referencing the Processing Configuration Auxiliary Data File used to process the product DS_NAME = DOR_CONFIGURATION_DATA	-	280	dsd	1
5	DSD referencing the Characterization Auxiliary Data File used to process the product DS_NAME = DOR_CHARACTERIZATION_DATA	-	280	dsd	1
TOTAL		-	938		



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9.4.1.7 Data Sets

The contents of the Data Sets are described in the following sections. Data Sets are in mixed binary format. They may contain ASCII strings, but the ASCII strings are not contained within quotation marks as for the MPH/SPH.

9.4.1.7.1 MDS

The DORIS L1B MDS consists of several MDSRs. Each MDSR has the format described in the table below.

NOTE THAT THE MDSRS OF THIS MDS DO NOT FOLLOW THE STANDARD ENVISAT-PDS FORMAT.

Table 9.4.1.7.1-1 DORIS Level 1B MDSR

N	Description	Units	Byte Length	Data Type	Dim.
1	Satellite Identification	-	7	uc	7
2	Measurement Type	-	2	uc	2
3	Time System Indicator	-	1	uc	1
4	Type Time	-	1	uc	1
5	Station Identifier	-	5	uc	5
6	Year	-	2	uc	2
7	Day of Year	-	3	uc	3
8	Seconds from midnight	s	5	uc	5
9	Fractional part of seconds	μs	6	uc	6
10	Ionospheric correction indicator	-	1	uc	1
11	Tropospheric correction indicator	-	1	uc	1



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Table 9.4.1.7.1-1 DORIS Level 1B MDSR

N	Description	Units	Byte Length	Data Type	Dim.
12	Editing flag	-	1	uc	1
13	Count Interval	0.1 μ s	10	uc	10
14	Range rate in micrometers/second (Doppler1)	μ s/s	11	uc	11
15	Surface Pressure	mbar	4	uc	4
16	Surface Temperature	K	3	uc	3
17	relative Humidity	%	3	uc	3
18	Observation Standard deviation (Noise)	μ s/s	6	uc	6
19	Ionospheric refraction correction	μ s/s	8	uc	8
20	Tropospheric refraction correction	μ s/s	7	uc	7
21	Meteorological data source : Source Type	-	1	uc	1
22	Meteorological data source : Meteo Origin	-	1	uc	1
23	Beacon Type (Function type)	-	1	uc	1
24	Center of Mass Correction	μ s/s	6	uc	6
25	UT Number	-	1	uc	1
Total			97		



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9.5 LEVEL 2 PRODUCTS

There are two DORIS Level 2 products, the Preliminary Orbit product and the Precise Orbit product. These products are considered to be Auxiliary Data in the ENVISAT PDS, and are therefore described in Volume 16.



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9.6 AUXILIARY DATA FILES

The following sections provide definitions of the auxiliary data files used in AATSR processing.

9.6.1 DORIS Processor Configuration Data File

This file contains parameters used to configure the processor for Level 1B processing.

FILE ID: DOR_CON_AX

TYPE: Auxiliary

USE: Level 1B processing

UPDATED: Infrequently.

SIZE: MPH(1247 bytes) + SPH(1218 bytes) + GADS(809 bytes) = 3274 bytes

9.6.1.1 Format

The high level breakdown of the file is shown below.

Table 9.6.1.1-1 Schematic Structure of the Level 1B Processor Configuration File

MPH



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SPH - standard Auxiliary Data SPH as described in Volume 16 with SPH_DESCRIPTOR =

“DORIS_CONFIGURATION_FILE” and 4 DSDs:

DSD for the Configuration Models GADS

(*DS_NAME = “DOR_MODELS_DATA”*)

DSD for the Satellite and Solar Array Macromodels GADS

(*DS_NAME = “DOR_SAT_MACROMODELS_DATA”*)

DSD for the Satellite Attitude Information GADS

(*DS_NAME = “DOR_SAT_ATT_DATA”*)

DSD for the Stations Characterization and Positions GADS

(*DS_NAME = “DOR_STATIONS_DATA”*)

Configuration Models GADS

Satellite and Solar Array Macromodels GADS

Satellite Attitude Information GADS

Stations Characterization and Positions GADS

9.6.1.1.1 Configuration Models GADS

The format of the GADS is defined below.

Table 9.6.1.1.1-1 Configuration Models GADS

N	Description	Units	Byte Length	Data Type	Dim.
1	Potential Model (Geoid)	-	10	uc	10
2	Oceanic Tide Model	-	10	uc	10
3	Atmospheric Model	-	10	uc	10
	New Line Character	-	1	uc	1
Total			31		

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9.6.1.1.2 Satellite and Solar Array Macromodels GADS

The format of the GADS is defined below.

Table 9.6.1.1.2-1 Satellite and Solar Array Macromodels GADS

N	Description	Units	Byte Length	Data Type	Dim.
	Adjusted satellite macromodel				
	Satellite side surface #1				
1	Adjusted satellite Side Surface #1 + NL Char	m ²	8 + 1	Ado33+ uc1	1
2	Adjusted Re-emission coefficient spec. and diff. in visible, front side #1	-	2*7	Ado14	2
3	Adjusted Re-emission coefficient spec. and diff. in IR, front side #1	-	2*7	Ado14	2
4	Adjusted Temperature of front side #1, min. and max. + NL Char	K	2*8 + 1	Ado33+ uc1	2
5	Adjusted Re-emission coefficient spec. and diff. in visible, back side #1	-	2*7	Ado14	2
6	Adjusted Re-emission coefficient spec. and diff. in IR, back side #1	-	2*7	Ado14	2
7	Adjusted Temperature of back side #1, min. and max. + NL Char	K	2*8 + 1	Ado33+ uc1	2
	Satellite side surface #2				
8	Adjusted satellite Side Surface #2 + NL Char	m ²	8 + 1	Ado33+	1



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Table 9.6.1.1.2-1 Satellite and Solar Array Macromodels GADS

N	Description	Units	Byte Length	Data Type	Dim.
				uc1	
9	Adjusted Re-emission coefficient spec. and diff. in visible, front side #2	-	2*7	Ado14	2
10	Adjusted Re-emission coefficient spec. and diff. in IR, front side #2	-	2*7	Ado14	2
11	Adjusted Temperature of front side #2, min. and max. + NL Char	K	2*8 + 1	Ado33+ uc1	2
12	Adjusted Re-emission coefficient spec. and diff. in visible, back side #2	-	2*7	Ado14	2
13	Adjusted Re-emission coefficient spec. and diff. in IR, back side #2	-	2*7	Ado14	2
14	Adjusted Temperature of back side #2, min. and max. + NL Char	K	2*8 + 1	Ado33+ uc1	2
	Satellite side surface #3				
15	Adjusted satellite Side Surface #3 + NL Char	m ²	8 + 1	Ado33+ uc1	1
16	Adjusted Re-emission coefficient spec. and diff. in visible, front side #3	-	2*7	Ado14	2
17	Adjusted Re-emission coefficient spec. and diff. in IR, front side #3	-	2*7	Ado14	2
18	Adjusted Temperature of front side #3, min. and max. + NL Char	K	2*8 + 1	Ado33+ uc1	2
19	Adjusted Re-emission coefficient spec. and diff. in visible, back side #3	-	2*7	Ado14	2
20	Adjusted Re-emission coefficient spec. and diff. in IR, back side #3	-	2*7	Ado14	2



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Table 9.6.1.1.2-1 Satellite and Solar Array Macromodels GADS

N	Description	Units	Byte Length	Data Type	Dim.
21	Adjusted Temperature of back side #3, min. and max. + NL Char	K	2*8 + 1	Ado33+ uc1	2
	Solar Array Macromodel				
22	Solar Array Surface + NL Char	m ²	8 + 1	Ado33+ uc1	1
23	Solar Array Re-emission coefficient spec. and diff. In visible, front side	-	2*7	Ado14	2
24	Solar Array Re-emission coefficient spec. and diff. In IR, front side	-	2*7	Ado14	2
25	Solar Array Temperature, min. and max, front side. + NL Char	K	2*8 + 1	Ado33+ uc1	2
26	Solar Array Re-emission coefficient spec. and diff. In visible, back side	-	2*7	Ado14	2
27	Solar Array Re-emission coefficient spec. and diff. In IR, back side	-	2*7	Ado14	2
28	Solar Array Temperature, min. and max, back side + NL Char	K	2*8 + 1	Ado33+ uc1	2
Total			396		

9.6.1.1.3 Satellite Attitude Information GADS

This GADS contains several GADSRs, one for each attitude mode that occurs during the period.

The format of each GADSR is identical and is defined below.



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Table 9.6.1.1.3-1 Satellite Attitude Information GADSR

N	Description	Units	Byte Length	Data Type	Dim.
1	Julian day of Attitude Mode starting	-	6	As	1
2	Seconds from midnight of attitude mode starting	s	15	Afl	1
3	Julian day of Attitude Mode ending	-	6	As	1
4	Seconds from midnight of attitude mode ending	s	15	Afl	1
5	Attitude mode	-	20	uc	20
	New Line Character	-	1	uc	1
Total			63		

9.6.1.1.4 Stations Characterization and Positions GADS

This GADS contains several GADSRs, one for each station. The format of each GADSR is identical and is defined below.

Table 9.6.1.1.4-1 Stations Characterization and Positions GADSR

N	Description	Units	Byte Length	Data Type	Dim.
1	Station ID	-	6	uc	6
2	Beacon Number	-	3	uc	3
3	5 characters for Site Dome Number ; 4 characters for Equipment Number ; 1 blank character	-	10	uc	10
4	Serial Number : 7 characters for Beacon Serial Number; 6 last characters for OUS Serial Number ;	-	14	uc	14



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Table 9.6.1.1.4-1 Stations Characterization and Positions GADSR

N	Description	Units	Byte Length	Data Type	Dim.
	1 blank character				
5	Julian Day of Starting	-	6	As	1
6	Seconds from midnight of Starting	s	6	As	1
7	Beacon physical type : ‘ 1.0’=beacon 1.0 ; ‘ 2.0’=beacon 2.0 ; ‘ 3.0’=beacon 3.0	-	3	uc	3
	New Line Character	-	1	uc	1
8	Beacon Position	m	3*15	Afl	3
9	Standard Deviation of Beacon Reference Position	m	3*15	Afl	3
10	Beacon Position Referential Source (ITRF referential identification for example)	-	15	uc	15
11	Julian Day of Beacon Position Reference	-	6	As	1
12	Seconds from midnight of Beacon Position Reference	s	6	As	1
	New Line Character	-	1	uc	1
13	Beacon Velocity	mm/ year	3*15	Afl	3
14	Standard Deviation of Beacon Velocity	mm/ year	3*15	Afl	3
15	Velocity Referential Source (Tectonic plate model for example)	-	15	uc	15
	New Line Character	-	1	uc	1
16	Beacon USO nominal frequency	Hz	15	Afl	1



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Table 9.6.1.1.4-1 Stations Characterization and Positions GADSR

N	Description	Units	Byte Length	Data Type	Dim.
17	Multiplication Ratio 2 GHz	-	15	Afl	1
18	Multiplication Ratio 400 MHz	-	15	Afl	1
	New Line Character	-	1	uc	1
Total			319		

9.6.2 DORIS Instrument Characterization File

This file contains parameters which describe the characteristics of the DORIS instrument. FILE ID: DOR_INS_AX

TYPE: Auxiliary

USE: Level 1B processing

UPDATED: Infrequently.

SIZE: MPH(1247 bytes) + SPH(378 bytes) + GADS(340 bytes) = 1929 bytes

9.6.2.1 Format

The high level breakdown of the file is shown below.

Table 9.6.2.1-1 Schematic Structure of the Level 1B Processor Configuration File

MPH



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**SPH - standard Auxiliary Data SPH as described in Volume 16 with
SPH_DESCRIPTOR = "DORIS_CHARACTERIZATION_FILE" and 1 DSD:**

*DSD for the Characterization GADS
(DS_NAME = "DOR_CHARACTERIZATION_DATA")*

Characterization GADS

9.6.2.1.1 Characterization GADS

The format of the GADS is defined below.

Table 9.6.2.1.1-1 Characterization GADS

N	Description	Units	Byte Length	Data Type	Dim.
	Receiver Technological Data				
1	On Board Multiplication Ratio 2 GHz <i>+ NL Char</i>	-	15 + 1	Afl+uc1	1
2	On Board Multiplication Ratio 400 MHz <i>+ NL Char</i>	-	15 + 1	Afl+uc1	1
3	USO Nominal Frequency <i>+ NL Char</i>	Hz	15 + 1	Afl+uc1	1
	On Ground Geometrical Data				
4	Vector from Reference point of DORIS A (¹) beacon, to Antenna Centre of Phase, channel 2 GHz, local coordinates system, along +Z <i>+ NL Char</i>	m	15 + 1	Afl+uc1	1
5	Vector from Reference point of DORIS A beacon, to Antenna Centre of Phase, channel 400 MHz, local coordinates system, along +Z <i>+ NL Char</i>	m	15 + 1	Afl+uc1	1
6	Vector from Reference point of DORIS B (²) beacon, to Antenna Centre of Phase, channel 2 GHz, local coordinates system, along	m	15 + 1	Afl+uc1	1

¹ DORIS A Beacon : Beacon which station ID last character is 'A'



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Table 9.6.2.1.1-1 Characterization GADS

N	Description	Units	Byte Length	Data Type	Dim.
	+Z + <i>NL Char</i>				
7	Vector from Reference point of DORIS B beacon, to Antenna Centre of Phase, channel 400 MHz, local coordinates system, along +Z + <i>NL Char</i>	m	15 + 1	Afl+uc1	1
On Board Geometrical Data					
8	Vector from DORIS Antenna Reference point, to Antenna Centre of Phase, channel 2 GHz, platform coordinates system, X component + <i>NL Char</i>	m	15 + 1	Afl+uc1	1
9	Vector from DORIS Antenna Reference point, to Antenna Centre of Phase, channel 400 MHz, platform coordinates system, X component + <i>NL Char</i>	m	15 + 1	Afl+uc1	1
10	Vector from DORIS Antenna Reference point, to Antenna Centre of Phase, channel 2 GHz, platform coordinates system, Y component + <i>NL Char</i>	m	15 + 1	Afl+uc1	1
11	Vector from DORIS Antenna Reference point, to Antenna Centre of Phase, channel 400 MHz, platform coordinates system, Y component + <i>NL Char</i>	m	15 + 1	Afl+uc1	1
12	Vector from DORIS Antenna Reference point, to Antenna Centre of Phase, channel 2 GHz, platform coordinates system, Z component + <i>NL Char</i>	m	15 + 1	Afl+uc1	1
13	Vector from DORIS Antenna Reference point, to Antenna Centre of Phase, channel 400 MHz, platform coordinates system, Z component + <i>NL Char</i>	m	15 + 1	Afl+uc1	1
14	Vector from Initial Mass Centre, to reference point of DORIS Antenna, platform coordinates system, X component + <i>NL Char</i>	m	15 + 1	Afl+uc1	1

² DORIS B Beacon : Beacon which station ID last character is 'B'



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Table 9.6.2.1.1-1 Characterization GADS

N	Description	Units	Byte Length	Data Type	Dim.
15	Vector from Initial Mass Centre, to reference point of DORIS Antenna, platform coordinates system, Y component <i>+ NL Char</i>	m	15 + 1	Afl+uc1	1
16	Vector from Initial Mass Centre, to reference point of DORIS Antenna, platform coordinates system, Z component <i>+ NL Char</i>	m	15 + 1	Afl+uc1	1
17	Evolution of Mass Centre, platform coordinates system, X component <i>+ NL Char</i>	m	15 + 1	Afl+uc1	1
18	Evolution of Mass Centre, platform coordinates system, Y component <i>+ NL Char</i>	m	15 + 1	Afl+uc1	1
19	Evolution of Mass Centre, platform coordinates system, Z component <i>+ NL Char</i>	m	15 + 1	Afl+uc1	1
Total			304		

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9.7 PRODUCT SUMMARY SHEETS

The data on the following pages is extracted from the product summary information contained in the DDT data base.

Maintenance and Operations of Earth Observation

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