



NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM (NPOESS)

**NPOESS Common Data Format Control Book -
External Volume III – SDR/TDR Formats
D34862-03 Rev C
CDRL No. A014**

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NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM (NPOESS)

NPOESS Common Data Format Control Book - External Volume III – SDR/TDR Formats D34862-03 Rev C CDRL No. A014

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1.0 INTRODUCTION

1.1 Document Purpose and Scope

The Common Data Format Control Book – External (CDFCB-X) Volume III contains the specifications for the format of Sensor Data Records (SDRs) and Temperature Data Records (TDRs). This specification includes the format of the Hierarchical Data Format Release 5 (HDF5) files, as well as the product definitions. These formats are available to external users of the National Polar-orbiting Operational Environmental Satellite System (NPOESS). For an overview of the CDFCB-X and the list of reference documents, see the CDFCB-X Volume I-Overview, D34862-01.

1.2 Document Overview

The sections of this volume are organized in the following manner:

Section 1.0: Introduction – Provides a brief overview of the document’s purpose and scope.

Section 2.0: Sensor Data Records Content – Provides a description of the contents of each NPOESS SDR.

Section 3.0: Temperature Data Records Content – Provides a description of the contents of each NPOESS TDR.

Within Sections 2.0 and 3.0, each instrument’s SDR/TDR is described using a series of sub-sections: A general data content summary, product profile representation, and HDF5 details; geolocation data content summary and geolocation product profile (where applicable).

Within each data content summary table, granule parameters are listed with their respective field names, data types, dimension sizes, and units. For the aggregation dimension size, an “N” is indicative of the number of granules that would occur within a delivered file’s aggregation. For example, [N*3] would indicate an array size of 300 if 100 granules were aggregated in the file.

Within the product profile table, the granule is described using the XML product profile supplied with the data set. More information on product profiles and definitions of table

headings can be found in CDFCB-X, Volume V – Metadata, D34862-05. A general discussion of the HDF5 file and product profiles can be found in CDFCB-X, Volume I – Overview, D34862-01.

In Section 2.2, SDR HDF5 Structure, a Unified Modeling Language (UML) diagram outlines the structure of the HDF5 file for SDRs. Each class within the structure can contain a set of metadata attributes. These attributes are defined in more detail in the CDFCB-X Volume V – Metadata, D34862-05.

2.0 SENSOR DATA RECORDS

SDR processing is instrument-specific and is an event-driven process. All instrument data required to create an SDR granule is contained within relevant Raw Data Record (RDR) granule(s). Processing an RDR into an SDR involves unpacking and de-commutating the Application Packet (AP) data, as necessary, applying calibration (radiometric, geometric, engineering), and finally geo-locating, as needed, using ephemeris and attitude information and earth model information.

An SDR contains the following:

- Calibrated sensor data
- Geolocation data (where applicable)
- Quality flags
- Metadata at the granule and aggregation level

2.1 DELETED

2.2 Sensor Data Records and Temperature Data Records HDF5 Details

Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, depicts the HDF5 SDR/TDR organization as a Unified Modeling Language (UML) class diagram. Each HDF5 SDR/TDR file contains an HDF5 Root Group, '1', a Data Products Group, Product Groups (Collection Short Name), an optional Geolocation Group (depending upon packaging option, see the CDFCB-X Volume I for a description of the geolocation packaging), and an All Data Group (dataset arrays). The Product Groups and Geolocation Group both contain datasets – an Aggregation Dataset (Collection Short Name_Aggr) and Granule Datasets (Collection Short Name_Gran_n) – where n indicates the nth granule in a temporal aggregation of granules (1 .. n). A granule is a general term used to describe the minimum quanta of data collected per processing period, generally on the order of seconds. For the definition and organization of the metadata attributes contained in the HDF5 files, see the CDFCB-X Volume V – Metadata, D34862-05. Attributes that are specific to a particular SDR/TDR are listed with the specific SDR/TDR's data format definition. For the generalized formats and packaging options for the Geolocation data, see the CDFCB-X Volume I – Overview.

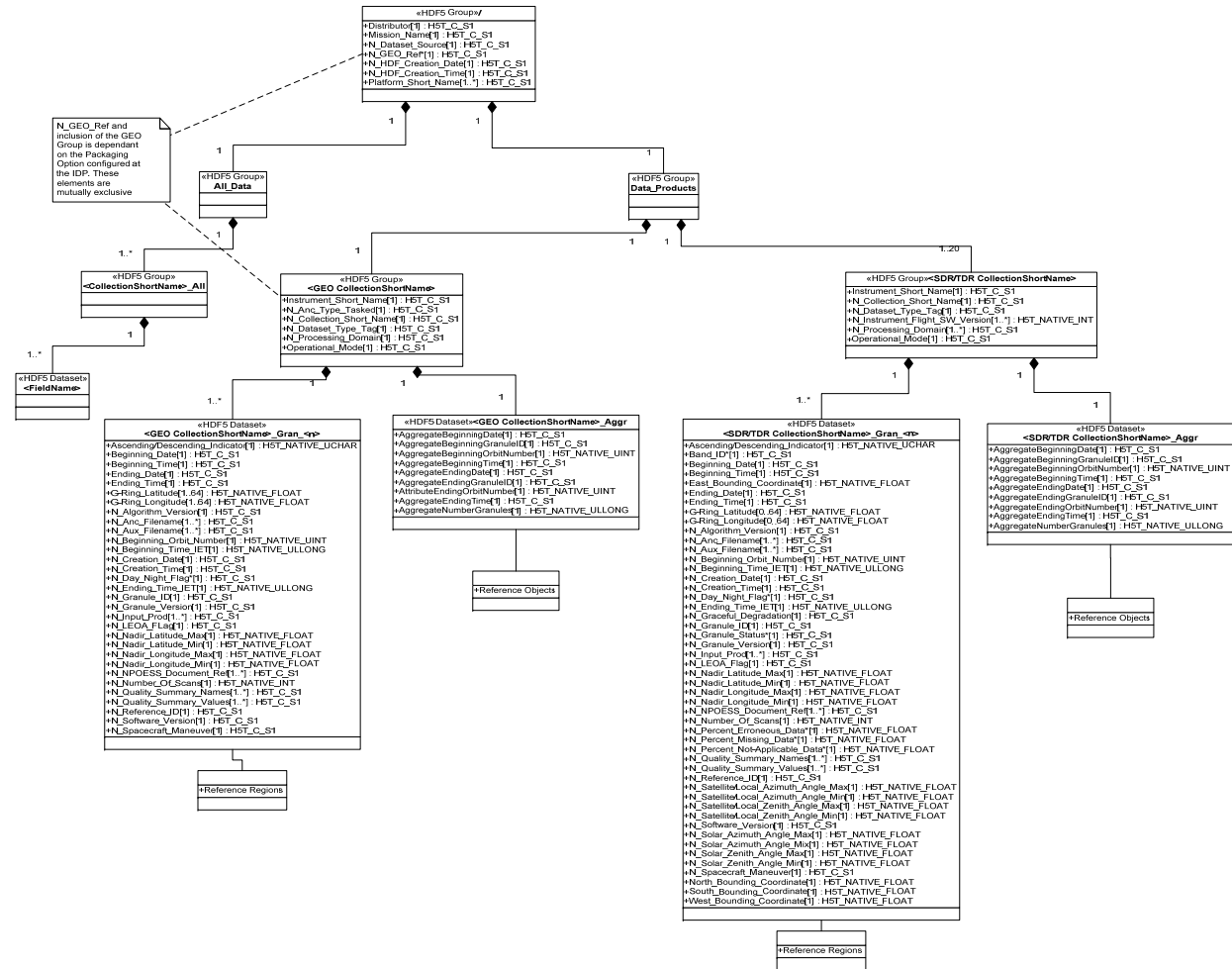


Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files

2.3 SDR Granule Size

The granule sizes for SDRs given below are not absolute over the life of the sensor. Application software will need to determine the SDR array size by using the HDF5 software API.

The SDR granule is the smallest component of an HDF5 aggregation. Each HDF5 file will be composed of an aggregation of contiguous granules covering the time period specified in a request (the range being from one granule to the total number of granules in one orbit). To correctly use the HDF5 SDR files, operational software will need to determine the SDR array size by examining the appropriate HDF5 API's returned values per granule, or aggregation, as desired. The estimated size for each SDR granule is given in the SDR Data Unit Format.

2.4 Advanced Technology Microwave Sounder SDR

Data Mnemonic	SDRE-ATMS-C0030
Description/ Purpose	<p>Advanced Technology Microwave Sounder (ATMS) sensor data calibrated to support Environmental Data Record (EDR) generation.</p> <p>Data from ATMS, along with processing coefficients and spacecraft attitude and ephemeris, are processed by the ATMS Sensor Data Record (SDR) routines to produce geolocated, corrected, calibrated scene brightness temperatures. ATMS and Cross-track Infrared Sounder (CrIS) SDRs are used by the Cross-track Infrared Microwave Sounder Suite (CrIMSS) EDR processors to produce CrIMSS EDRs.</p> <p>ATMS rotates three times every 8 seconds resulting in three scans for every single scan of CrIS. For optimal performance within the NPOESS processing system, the length of each ATMS granule is set to 32 seconds, which is equivalent to 12 scans.</p> <p>ATMS rotates counter-clockwise (w.r.t. the positive velocity direction) producing 104 views, with each view taking approximately 18 milliseconds. 96 earth view brightness temperatures are reported in the SDR for each of the 22 channels. As part of the normal ATMS calibration process, there are also four “cold” space views and four “warm” target views. Noise-Equivalent delta Temperatures (NEdT) are reported for each of the calibration views.</p> <p>Quality Flags: There are two “warm” calibration targets --one for K, Ka, and V-bands (KAV Target) and one for W and G-band (WG Target). The KAV target has eight Platinum Resistance Thermistors (PRT) and the WG target has seven PRTs. Also, each of the four shelf receivers has a PRT: one for each K/Ka, V, W, and G Bands. In all quality flags which reference PRTs, the least significant bit (lsb) of the 8 bit quality flag corresponds to the 1st item (e.g. PRT #1 or K/Ka). For quality flags which reference space views, the lsb corresponds to the first space view.</p>
File-Naming Construct	See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.
File Size	<p>Approximately 63 KiB per data granule.</p> <p>Approximately 82 KiB per geolocation granule.</p> <p>Sizes do not include HDF5 overhead or metadata.</p>
File Format Type	HDF5
Data Content	See Section 2.4.1, ATMS SDR Data Content Summary.

and Data Format See Section 2.4.5, ATMS SDR Geolocation Content Summary

2.4.1 ATMS SDR Product Data Content Summary

Table 2.4.1-1, ATMS Product Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
BeamTime	The time in IET of the end of the view period for this observation	64-bit integer	[N*12, 96]	[12, 96]	microse cond
BrightnessTemperature	Calibrated scene brightness temperature for each ATMS channel and beam position. This output is the Rayleigh equivalent temperature.	unsigned 16-bit integer	[N*12, 96, 22]	[12, 96, 22]	kelvin
NEdTCold	Noise-equivalent delta Temperature while viewing cold space	32-bit floating point	[N*12, 22]	[12, 22]	kelvin
NEdTWarm	Noise-equivalent delta Temperature while viewing warm target	32-bit floating point	[N*12, 22]	[12, 22]	kelvin
GainCalibration	Gain factor used in calibrating earth scene brightness temperatures	32-bit floating point	[N*12, 22]	[12, 22]	kelvin
InstrumentMode	Instrument mode word 73 in the Health & Status APID 531	unsigned 16-bit integer	[N*4]	[4]	unitless
QF1_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF2_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF3_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF4_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF5_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF6_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF7_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF8_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF9_GRAN_HEAL THSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF10_GRAN_HEA LTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF11_GRAN_QUADRATICCORRECTION	Quadratic correction applied to the radiometric transfer function for non-linearity correction.	unsigned 8-bit char	[N]	[1]	unitless
QF12_SCAN_KAVPRTCONVERR	If a divide-by-zero condition exists, or if computation loop fails to converge in the temperature computations for the 8 KAV PRTs, the condition is flagged by the corresponding bit in the flag to indicate which PRT has failed.	unsigned 8-bit char	[N*12]	[12]	unitless
QF13_SCAN_WGVRTCONVERR	If a divide-by-zero condition exists, or if computation loop fails to converge in the temperature computations for the 7 WG PRTs, the condition is flagged by the corresponding bit in the flag to indicate which PRT has failed.	unsigned 8-bit char	[N*12]	[12]	unitless
QF14_SCAN_SHELLFPRTCONVERR	If a divide-by-zero condition exists, or if the computation loop fails to converge in the temperature computations for the 4 Receiver Shelf (KKa, V, W and G) PRTs, the condition is flagged by the corresponding bit in the flag to indicate which PRT has failed.	unsigned 8-bit char	[N*12]	[12]	unitless
QF15_SCAN_KAVPRTTEMLIMIT	Each of the 8 KAV PRT temperatures is checked against a lower limit and an upper limit. Out of range conditions are flagged by the corresponding bit in the flag to indicate which PRT has failed the test.	unsigned 8-bit char	[N*12]	[12]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF16_SCAN_WGP RTTEMPLIMIT	Each of the 7 WG PRT temperatures is checked against a lower limit and an upper limit. Out of range conditions are flagged by the corresponding bit in the flag to indicate which PRT has failed the test.	unsigned 8-bit char	[N*12]	[12]	unitless
QF17_SCAN_KAVP RTTEMPCONSIST ENCY	The 8 KAV PRT temperatures are checked against each other for consistency. The check failure shall be flagged by the corresponding bit in the flag to indicate which PRT has failed the test.	unsigned 8-bit char	[N*12]	[12]	unitless
QF18_SCAN_WGP RTTEMPCONSIST ENCY	The 7 WG PRT temperatures are checked against each other for consistency. The check failure shall be flagged by the corresponding bit in the flag to indicate which PRT has failed the test.	unsigned 8-bit char	[N*12]	[12]	unitless
QF19_SCAN_ATM SSDR	Scan-level Quality Flag	unsigned 8-bit char	[N*12]	[12]	unitless
QF20_ATMSSDR	Scan-level Quality Flag per channel	unsigned 8-bit char	[N*12, 22]	[12, 22]	unitless
QF21_ATMSSDR	Out of range - Space and Blackbody View Quality Flag	unsigned 8-bit char	[N*12, 22]	[12, 22]	unitless
QF22_ATMSSDR	Space and Blackbody View Quality Flag	unsigned 8-bit char	[N*12, 22]	[12, 22]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*7]	[7]	unitless
BrightnessTemperat ureFactors	Scale = first array element; offset = second array element	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = kelvin

2.4.2 ATMS SDR Product Profile

Table 2.4.2-1, ATMS SDR Product Profile

Name	Data Size	Dimensions										
BeamTime	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		The time in IET of the end of the view period for this observation	0			microsecond	No		64-bit integer	Name	Value	Name Value
										NA_INT64_FILL	-999	
										MISS_INT64_FILL	-998	
										ERR_INT64_FILL	-995	
										VDNE_INT64_FILL	-993	
BrightnessTemperature	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Channel	No	No	22	22						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Calibrated scene brightness temperature for each ATMS channel and beam	0			kelvin	Yes	Brightness Temperature Factors	unsigned 16-bit integer	Name	Value	Name Value
										NA_UINT16_FILL	65535	
										MISS_UINT16_FILL	65534	
										ERR_UINT16_FILL	65531	
								VDNE_UINT16_FILL	65529			
								SOUB_UINT16_FILL	65528			

		position. This output is the Rayleigh equivalent temperature.									
NEdTCold	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	12	12					
		Channel	No	No	22	22					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	
Noise equivalent delta Temperature while viewing cold space	0			kelvin	No		32-bit floating point	Name	Value	Name Value	
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		
NEdTWarm	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	12	12					
		Channel	No	No	22	22					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	
Noise-equivalent delta Temperature while viewing warm target	0			kelvin	No		32-bit floating point	Name	Value	Name Value	
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		
GainCalibration	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	12	12					
		Channel	No	No	22	22					
		Datum									
		Description	Datum Offset	Unscaled Valid	Unscaled Valid	Measurement Units	Scaled	Scale Factor	Data Type	Fill Values	

				Range Min	Range Max			Name																																															
		Gain factor used in calibrating earth scene brightness temperatures	0			kelvin	No		32-bit floating point	<table border="1"> <tr> <th>Name</th> <th>Value</th> </tr> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3																																			
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VDNE_FLOAT32_FILL	-999.3																																																						
InstrumentMode	2byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Status</td> <td>Yes</td> <td>No</td> <td>4</td> <td>4</td> </tr> </table> <table border="1"> <tr> <th colspan="11">Datum</th> </tr> <tr> <th>Description</th> <th>Datum Offset</th> <th>Unscaled Valid Range Min</th> <th>Unscaled Valid Range Max</th> <th>Measurement Units</th> <th>Scaled</th> <th>Scale Factor Name</th> <th>Data Type</th> <th colspan="2">Fill Values</th> <th>Legend Entries</th> </tr> <tr> <td>Instrument mode word 73 in the Health & Status APID 531</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>unsigned 16 bit integer</td> <td>Name</td> <td>Value</td> <td>Name Value</td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Status	Yes	No	4	4	Datum											Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	Instrument mode word 73 in the Health & Status APID 531	0			unitless	No		unsigned 16 bit integer	Name	Value	Name Value
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Instrument mode word 73 in the Health & Status APID 531	0			unitless	No		unsigned 16 bit integer	Name	Value	Name Value																																													

Table 2.4.2-2, ATMS SDR Product Profile - Quality Flags

Name	Data Size	Dimensions																																																																												
QF1_GRAN_HEALTHSTATUS	1byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Time</td> <td>Yes</td> <td>No</td> <td>4</td> <td>4</td> </tr> </table> <table border="1"> <tr> <th colspan="11">Datum</th> </tr> <tr> <th>Description</th> <th>Datum Offset</th> <th>Unscaled Valid Range Min</th> <th>Unscaled Valid Range Max</th> <th>Measurement Units</th> <th>Scaled</th> <th>Scale Factor Name</th> <th>Data Type</th> <th colspan="2">Fill Values</th> <th>Legend Entries</th> </tr> <tr> <td>Spare</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name Value</td> </tr> <tr> <td>SPA_P5V_A_VMON or SPA_P5V_B_VMON health check failed</td> <td>1</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Na m e</td> <td>Valu e</td> <td>Name Value False 0 True 1</td> </tr> <tr> <td>SPA_P15V_A_VMON or SPA_P15V_B_VMON health check failed</td> <td>2</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name Value False 0 True 1</td> </tr> <tr> <td>SPA_N15V_A_VMON or SPA_N15V_B_VMON health check failed</td> <td>3</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name Value False 0 True 1</td> </tr> </table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Time	Yes	No	4	4	Datum											Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	Spare	0			unitless	No		1 bit(s)	Name	Value	Name Value	SPA_P5V_A_VMON or SPA_P5V_B_VMON health check failed	1			unitless	No		1 bit(s)	Na m e	Valu e	Name Value False 0 True 1	SPA_P15V_A_VMON or SPA_P15V_B_VMON health check failed	2			unitless	No		1 bit(s)	Name	Value	Name Value False 0 True 1	SPA_N15V_A_VMON or SPA_N15V_B_VMON health check failed	3			unitless	No		1 bit(s)	Name	Value	Name Value False 0 True 1
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SPA_P5V_A_VMON or SPA_P5V_B_VMON health check failed	1			unitless	No		1 bit(s)	Na m e	Valu e	Name Value False 0 True 1																																																																				
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		RCV_P6V_RF_VMON health check failed	4			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																																																																										
		RCV_P12V_RF2_VMON health check failed	5			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																																																																										
		RCV_P15V_RF_VMON health check failed	6			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																																																																										
		RCV_N15V_RF_VMON health check failed	7			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																																																																										
QF2_GRAN_HEALTHSTATUS	1byte(s)	<table border="1"> <tr> <td>Name</td> <td>Granule Boundary</td> <td>Dynamic</td> <td>Min Array Size</td> <td>Max Array Size</td> <td colspan="9"></td> </tr> <tr> <td>Time</td> <td>Yes</td> <td>No</td> <td>4</td> <td>4</td> <td colspan="9"></td> </tr> <tr> <td colspan="13">Datum</td> </tr> <tr> <td>Description</td> <td>Datum Offset</td> <td>Unscaled Valid Range Min</td> <td>Unscaled Valid Range Max</td> <td>Measurement Units</td> <td>Scaled</td> <td>Scale Factor Name</td> <td>Data Type</td> <td colspan="2">Fill Values</td> <td colspan="3">Legend Entries</td> </tr> <tr> <td>RCV_P15V_ANA_VMON health check failed</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td>False 0</td> <td>True 1</td> </tr> <tr> <td>RCV_N15V_ANA_VMON health check failed</td> <td>1</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td>False 0</td> <td>True 1</td> </tr> <tr> <td>K_RFE_PRT health check failed</td> <td>2</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td>False 0</td> <td>True 1</td> </tr> <tr> <td>KA_RFE_PRT health check failed</td> <td>3</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td>False 0</td> <td>True 1</td> </tr> <tr> <td>V_RFE_PRT health check failed</td> <td>4</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td>False 0</td> <td>True 1</td> </tr> <tr> <td>V_PRI_PLO_PRT health check failed</td> <td>5</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td>False 0</td> <td>True 1</td> </tr> </table>												Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size										Time	Yes	No	4	4										Datum													Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			RCV_P15V_ANA_VMON health check failed	0			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1	RCV_N15V_ANA_VMON health check failed	1			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1	K_RFE_PRT health check failed	2			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1	KA_RFE_PRT health check failed	3			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1	V_RFE_PRT health check failed	4			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1	V_PRI_PLO_PRT health check failed	5			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1
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RCV_P15V_ANA_VMON health check failed	0			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1																																																																																																																																										
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KA_RFE_PRT health check failed	3			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1																																																																																																																																										
V_RFE_PRT health check failed	4			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0	True 1																																																																																																																																										
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V_SHELF_PRT health check failed	4			unitless	No		1 bit(s)	<table border="1"><tr><td>Name</td><td>Value</td></tr><tr><td>False</td><td>0</td></tr><tr><td>True</td><td>1</td></tr></table>	Name	Value	False	0	True	1	<table border="1"><tr><td>Name</td><td>Value</td></tr><tr><td>False</td><td>0</td></tr><tr><td>True</td><td>1</td></tr></table>	Name	Value	False	0	True	1																																																																																																																																																																														
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RCVPS_A_PRT health check failed	5			unitless	No		1 bit(s)	<table border="1"><tr><td>Name</td><td>Value</td></tr><tr><td>False</td><td>0</td></tr><tr><td>True</td><td>1</td></tr></table>	Name	Value	False	0	True	1	<table border="1"><tr><td>Name</td><td>Value</td></tr><tr><td>False</td><td>0</td></tr><tr><td>True</td><td>1</td></tr></table>	Name	Value	False	0	True	1																																																																																																																																																																														
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RCVPS_B_PRT health check failed	6			unitless	No		1 bit(s)	<table border="1"><tr><td>Name</td><td>Value</td></tr><tr><td>False</td><td>0</td></tr><tr><td>True</td><td>1</td></tr></table>	Name	Value	False	0	True	1	<table border="1"><tr><td>Name</td><td>Value</td></tr><tr><td>False</td><td>0</td></tr><tr><td>True</td><td>1</td></tr></table>	Name	Value	False	0	True	1																																																																																																																																																																														
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												True	1
		OCXO_PRI_PRT health check failed	7			unitless	No		1 bit(s)			Name	Value
												Name	Value
												False	0
												True	1
QF5_GRAN_HEALTHSTATUS	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Time	Yes	No	4	4							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		OCXO_RED_PRT health check failed	0			unitless	No		1 bit(s)	Name	Value	Name	Value
												False	0
												True	1
		DSPA_1553_PRT health check failed	1			unitless	No		1 bit(s)	Name	Value	Name	Value
												False	0
												True	1
		DSPB_1553_PRT health check failed	2			unitless	No		1 bit(s)	Name	Value	Name	Value
												False	0
												True	1
		SPA_PS_A_PRT health check failed	3			unitless	No		1 bit(s)	Name	Value	Name	Value
												False	0
												True	1
		SPA_PS_B_PRT health check failed	4			unitless	No		1 bit(s)	Name	Value	Name	Value
												False	0
												True	1
		DSPA_PROC_PRT health check failed	5			unitless	No		1 bit(s)	Name	Value	Name	Value
												False	0
												True	1
		DSPB_PROC_PRT health check failed	6			unitless	No		1 bit(s)	Name	Value	Name	Value
												False	0
												True	1
		SD_MECH_TEMP health check failed	7			unitless	No		1 bit(s)	Name	Value	Name	Value

										e	e	e	e	False	0	True	1	
QF6_GRAN_HEALTHSTATUS	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size												
		Time	Yes	No	4	4												
		Datum																
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries							
		SD_PS_PRT health check failed	0			unitless	No		1 bit(s)	Name Value	Name	Value	False	0	True	1		
		V_PLO_A_LOCK_VMON health check failed	1			unitless	No		1 bit(s)	Name Value	Name	Value	False	0	True	1		
		V_PLO_B_LOCK_VMON health check failed	2			unitless	No		1 bit(s)	Name Value	Name	Value	False	0	True	1		
		HK_2WREST1_A or HK_2WREST1_B health check failed	3			unitless	No		1 bit(s)	Name Value	Name	Value	False	0	True	1		
		HK_2WREST2_A or HK_2WREST2_B health check failed	4			unitless	No		1 bit(s)	Name Value	Name	Value	False	0	True	1		
		4W_GND_A or 4W_GND_B health check failed	5			unitless	No		1 bit(s)	Name Value	Name	Value	False	0	True	1		
2W_GND_A or 2W_GND_B health check failed	6			unitless	No		1 bit(s)	Name Value	Name	Value	False	0	True	1				
VD_REF_A or VD_REF_B; Module 1 health check failed	7			unitless	No		1 bit(s)	Name Value	Name	Value	False	0	True	1				
QF7_GRAN_HEALTHSTATUS	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size												
		Time	Yes	No	4	4												
		Datum																
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries							

			Min	Max									
		VD_REF_A or VD_REF_B; Module 2 health check failed	0			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		VD_REF_A or VD_REF_B; Module 3 health check failed	1			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		VD_REF_A or VD_REF_B; Module 4 health check failed	2			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		VD_GND_A or VD_GND_B; Module 1 health check failed	3			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		VD_GND_A or VD_GND_B; Module 2 health check failed	4			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		VD_GND_A or VD_GND_B; Module 3 health check failed	5			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		VD_GND_A or VD_GND_B; Module 4 health check failed	6			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		SD_P5V_VMON health check failed	7			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
QF8_GRAN_HEALTHSTATUS	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Time	Yes	No	4	4							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		SD_P12V_VMON health check failed	0			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		SD_N12V_VMON health check failed	1			unitless	No		1 bit(s)	Name Value		Name Value	False 0 True 1
		MAIN_MOTOR_CUR health check failed	2			unitless	No		1 bit(s)	Name Value		Name Value	False 0

												True	1
		COMP_MOTOR_CUR health check failed	3			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		RESOLVER_VMON health check failed	4			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		SD_MAIN_MOTOR_VEL health check failed	5			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		SD_COMP_MOTOR_VEL health check failed	6			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		SD_MAIN_LOOP_ERROR health check failed	7			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
QF9_GRAN_HEALTHSTATUS	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Time	Yes	No	4	4							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		SD_MAIN_LOOP_INT_ERROR health check failed	0			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		SD_MAIN_LOOP_VEL_ERROR health check failed	1			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		SD_COMP_LOOP_ERROR health check failed	2			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		SD_MAIN_MOTOR_REQ_VOLTAGE health check failed	3			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		SD_COMP_MOTOR_REQ_VOLTAGE health check failed	4			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	
		SD_FEED_FORWARD_VOLTAGE health check failed	5			unitless	No		1 bit(s)	Name Value		Name Value	False 0
												True 1	

												False 0 True 1																																																															
		COMP_MOTOR_POS health check failed	6			unitless	No		1 bit(s)	Name Value		Name Value False 0 True 1																																																															
		Spare	7			unitless	No		1 bit(s)	Name Value		Name Value																																																															
QF10_GRAN_HEALTHSTATUS	1byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Time</td> <td>Yes</td> <td>No</td> <td>4</td> <td>4</td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Time	Yes	No	4	4																																																					
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Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																																																																	
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Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																																																							
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Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																																																																	
Quadratic correction applied to the radiometric transfer function for non-linearity correction.	0			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0 True 1																																																															
Spare	1			unitless	No		7 bit(s)	Name Value		Name Value																																																																	
QF12_SCAN_KAVPRTCONVE	1byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Scan</td> <td>Yes</td> <td>No</td> <td>12</td> <td>12</td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Scan	Yes	No	12	12																																																					
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																																																							
Scan	Yes	No	12	12																																																																							
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Datum																																																																											
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																																																																	
Divide-by-zero condition or computation loop failed to converge in the K/Ka and V (KAV) Band PRT #1 temperature computation.	0			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0 True 1																																																															
Divide-by-zero condition or computation loop failed to converge in the K/Ka and V (KAV) Band PRT #2 temperature computation.	1			unitless	No		1 bit(s)	Name	Value	Name	Value	False 0 True 1																																																															
Divide-by-zero condition or computation	2			unitless	No		1	Name	Value	Name Value																																																																	

		loop failed to converge in the K/Ka and V (KAV) Band PRT #3 temperature computation.								bit(s)	e	e	False	0																																																																						
		Divide-by-zero condition or computation loop failed to converge in the K/Ka and V (KAV) Band PRT #4 temperature computation.	3			unitless	No			1 bit(s)	Name	Value	False	0																																																																						
		Divide-by-zero condition or computation loop failed to converge in the K/Ka and V (KAV) Band PRT #5 temperature computation.	4			unitless	No			1 bit(s)	Name	Value	False	0																																																																						
		Divide-by-zero condition or computation loop failed to converge in the K/Ka and V (KAV) Band PRT #6 temperature computation.	5			unitless	No			1 bit(s)	Name	Value	False	0																																																																						
		Divide-by-zero condition or computation loop failed to converge in the K/Ka and V (KAV) Band PRT #7 temperature computation.	6			unitless	No			1 bit(s)	Name	Value	False	0																																																																						
		Divide-by-zero condition or computation loop failed to converge in the K/Ka and V (KAV) Band PRT #8 temperature computation.	7			unitless	No			1 bit(s)	Name	Value	False	0																																																																						
QF13_SCAN_WGPRTCONVE RR	1byte(s)	<table border="1"> <tr> <td>Name</td> <td>Granule Boundary</td> <td>Dynamic</td> <td>Min Array Size</td> <td>Max Array Size</td> </tr> <tr> <td>Scan</td> <td>Yes</td> <td>No</td> <td>12</td> <td>12</td> </tr> </table> <p>Datum</p> <table border="1"> <thead> <tr> <th>Description</th> <th>Datum Offset</th> <th>Unscaled Valid Range Min</th> <th>Unscaled Valid Range Max</th> <th>Measurement Units</th> <th>Scaled</th> <th>Scale Factor Name</th> <th>Data Type</th> <th>Fill Values</th> <th>Legend Entries</th> </tr> </thead> <tbody> <tr> <td>Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #1 temperature computation..</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value False 0 True 1</td> </tr> <tr> <td>Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #2 temperature computation.</td> <td>1</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value False 0 True 1</td> </tr> <tr> <td>Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #3 temperature computation.</td> <td>2</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value False 0 True 1</td> </tr> <tr> <td>Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #4 temperature computation.</td> <td>3</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value False 0 True 1</td> </tr> <tr> <td>Divide-by-zero condition or computation loop failed to converge in the WG Band</td> <td>4</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value False 0</td> </tr> </tbody> </table>													Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Scan	Yes	No	12	12	Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #1 temperature computation..	0			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #2 temperature computation.	1			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #3 temperature computation.	2			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #4 temperature computation.	3			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	Divide-by-zero condition or computation loop failed to converge in the WG Band	4			unitless	No		1 bit(s)	Name Value	Name Value False 0
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																																																																
Scan	Yes	No	12	12																																																																																
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Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #1 temperature computation..	0			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1																																																																											
Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #2 temperature computation.	1			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1																																																																											
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Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #4 temperature computation.	3			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1																																																																											
Divide-by-zero condition or computation loop failed to converge in the WG Band	4			unitless	No		1 bit(s)	Name Value	Name Value False 0																																																																											

		PRT #5 temperature computation.									True	1	
		Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #6 temperature computation.	5			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		Divide-by-zero condition or computation loop failed to converge in the WG Band PRT #7 temperature computation.	6			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		Spare	7										
QF14_SCAN_SHELFPRTRCON VERR	1byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size											
		Scan	Yes	No	12	12							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Divide-by-zero condition or computation loop failed to converge in the K/Ka, V, W, G Band Receiver Shelf PRT K temperature computation.	0			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		Divide-by-zero condition or computation loop failed to converge in the K/Ka, V, W, G Band Receiver Shelf PRT V temperature computation.	1			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		Divide-by-zero condition or computation loop failed to converge in the K/Ka, V, W, G Band Receiver Shelf PRT W temperature computation.	2			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		Divide-by-zero condition or computation loop failed to converge in the K/Ka, V, W, G Band Receiver Shelf PRT G temperature computation.	3			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		Spare	4			unitless			4 bit(s)	Name Value	Name Value		
QF15_SCAN_KAVPRTEMPLI MIT	1byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size											
		Scan	Yes	No	12	12							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Out of range condition for the K/Ka and V Band PRT #1 temperatures.	0			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	

		Out of range condition for the K/Ka and V Band PRT #2 temperatures.	1			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																		
		Out of range condition for the K/Ka and V Band PRT #3 temperatures.	2			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																		
		Out of range condition for the K/Ka and V Band PRT #4 temperatures.	3			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																		
		Out of range condition for the K/Ka and V Band PRT #5 temperatures.	4			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																		
		Out of range condition for the K/Ka and V Band PRT #6 temperatures.	5			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																		
		Out of range condition for the K/Ka and V Band PRT #7 temperatures.	6			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																		
		Out of range condition for the K/Ka and V Band PRT #8 temperatures.	7			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																		
QF16_SCAN_WGPRTEMPLIMIT	1byte(s)	<table border="1"> <tr> <td>Name</td> <td>Granule Boundary</td> <td>Dynamic</td> <td>Min Array Size</td> <td>Max Array Size</td> </tr> <tr> <td>Scan</td> <td>Yes</td> <td>No</td> <td>12</td> <td>12</td> </tr> </table> <table border="1"> <thead> <tr> <th colspan="12">Datum</th> </tr> <tr> <th>Description</th> <th>Datum Offset</th> <th>Unscaled Valid Range Min</th> <th>Unscaled Valid Range Max</th> <th>Measurement Units</th> <th>Scaled</th> <th>Scale Factor Name</th> <th>Data Type</th> <th>Fill Values</th> <th colspan="3">Legend Entries</th> </tr> </thead> <tbody> <tr> <td>Out of range condition for the WG Band PRT #1 temperatures.</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value</td> <td>False 0</td> <td>True 1</td> </tr> <tr> <td>Out of range condition for the WG Band PRT #2 temperatures.</td> <td>1</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value</td> <td>False 0</td> <td>True 1</td> </tr> <tr> <td>Out of range condition for the WG Band PRT #3 temperatures.</td> <td>2</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value</td> <td>False 0</td> <td>True 1</td> </tr> <tr> <td>Out of range condition for the WG Band PRT #4 temperatures.</td> <td>3</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value</td> <td>False 0</td> <td>True 1</td> </tr> </tbody> </table>												Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Scan	Yes	No	12	12	Datum												Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			Out of range condition for the WG Band PRT #1 temperatures.	0			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1	Out of range condition for the WG Band PRT #2 temperatures.	1			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1	Out of range condition for the WG Band PRT #3 temperatures.	2			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1	Out of range condition for the WG Band PRT #4 temperatures.	3			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																																																																											
Scan	Yes	No	12	12																																																																																											
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Out of range condition for the WG Band PRT #1 temperatures.	0			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																				
Out of range condition for the WG Band PRT #2 temperatures.	1			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																				
Out of range condition for the WG Band PRT #3 temperatures.	2			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																				
Out of range condition for the WG Band PRT #4 temperatures.	3			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1																																																																																				

		Out of range condition for the WG Band PRT #5 temperatures.	4			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1	
		Out of range condition for the WG Band PRT #6 temperatures.	5			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1	
		Out of range condition for the WG Band PRT #7 temperatures.	6			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1	
		Spare	7			unitless	No		1 bit(s)	Name Value	Name Value			
QF17_SCAN_KAVPRTEMPC ONSISTENCY	1byte(s)	Name Granule Boundary Dynamic		Min Array Size	Max Array Size									
		Scan	Yes	No	12	12								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor	Scale Name	Data Type	Fill Values	Legend Entries		
		KAV PRT #1 temperature inconsistency	0			unitless	No			1 bit(s)	Name Value	Name Value	False 0	True 1
		KAV PRT #2 temperature inconsistency	1			unitless	No			1 bit(s)	Name Value	Name Value	False 0	True 1
		KAV PRT #3 temperature inconsistency	2			unitless	No			1 bit(s)	Name Value	Name Value	False 0	True 1
		KAV PRT #4 temperature inconsistency	3			unitless	No			1 bit(s)	Name Value	Name Value	False 0	True 1
		KAV PRT #5 temperature inconsistency	4			unitless	No			1 bit(s)	Name Value	Name Value	False 0	True 1
		KAV PRT #6 temperature inconsistency	5			unitless	No			1 bit(s)	Name Value	Name Value	False 0	True 1
KAV PRT #7 temperature inconsistency	6			unitless	No			1 bit(s)	Name Value	Name Value	False 0	True 1		
KAV PRT #8 temperature inconsistency	7			unitless	No			1 bit(s)	Name Value	Name Value				

										bit(s)		False 0 True 1	
QF18_SCAN_WGPRTEMPC ONSISTENCY	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		WG PRT #1 temperature inconsistency	0			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		WG PRT #2 temperature inconsistency	1			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		WG PRT #3 temperature inconsistency	2			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		WG PRT #4 temperature inconsistency	3			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		WG PRT #5 temperature inconsistency	4			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		WG PRT #6 temperature inconsistency	5			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
		WG PRT #7 temperature inconsistency	6			unitless	No		1 bit(s)	Name Value	Name Value	False 0 True 1	
Spare	7			unitless			1 bit(s)	Name Value	Name Value				
QF19_SCAN_ATMSSDR	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12							
		Datum											
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries				
Time Sequence Error - The nominal scan period of ATMS is 8/3 sec. The scan start time	0			unitless	No		1 bit(s)	Name Value	Name Value				

		is defined as the start of sample 1. The scan start time of the current scan is compared to the scan start time of the previous scan. If the time difference is not within 8/3 sec +/- allowable_dev (initially 18 msec), the Time Sequence Error Flag is set. allowable_dev is a tunable parameter.								False 0 True 1																				
		Data Gap - Missing scan(s) preceding the current scan.	1		unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1																				
		KAV PRT Sufficiency - Insufficient KAV PRT data are available, either because of missing data or failing to pass the quality checks.	2		unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1																				
		WG PRT Sufficiency - Insufficient WG PRT data are available, either because of missing data or failing to pass the quality checks.	3		unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1																				
		Space View antenna position error - There are 4 space view antenna groupings. ATMS is commanded to use one of the 4 groupings. The grouping selected is indicated by the Scan Pattern ID (Bit No. 7-9) in InstrumentMode . Values are interpreted as: 001, 010, 011, 100 = RAM profiles 1, 2, 3, 4. If any of the actual space view positions (as determined from the scan angle counts in the Science Data packet) does not fall within the range of the expected counts +/- εc, the Space View Antenna Position Error flag is set. The expected counts and εc are tunable parameters. εc is set to 7 counts.	4		unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1																				
		Blackbody antenna position error - There are 4 blackbody view positions. If any of the actual blackbody view position (as determined from the scan angle counts in the Science Data packet) does not fall within the range of the expected count +/- εw, the Blackbody Antenna Position Error flag is set. The expected counts and εw are tunable parameters. εw is set to 7 counts.	5		unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1																				
		Spare	6		unitless	No		2 bit(s)	Name Value	Name Value																				
QF20_ATMSSDR	1byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td>Scan</td> <td>Yes</td> <td>No</td> <td>12</td> <td>12</td> </tr> <tr> <td>Channel</td> <td>No</td> <td>No</td> <td>22</td> <td>22</td> </tr> <tr> <td colspan="5">Datum</td> </tr> </tbody> </table>									Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Scan	Yes	No	12	12	Channel	No	No	22	22	Datum				
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																										
Scan	Yes	No	12	12																										
Channel	No	No	22	22																										
Datum																														

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
								Name	Value	Name	Value
Moon in Space View - The Moon appears in any of the four calibration space views.	0			unitless	No		1 bit(s)			False	0
Gain Error - The lowest blackbody count is smaller than or equal to the highest space view count in a scan.	1			unitless	No		1 bit(s)			True	1
Calibration With Fewer Than Preferred Samples - Scan line has been calibrated with fewer than the preferred number of samples and/or scans either because of missing data or some data failing the quality checks.	2			unitless	No		1 bit(s)			False	0
Space View Data Sufficiency Check - Insufficient space view samples are available, either because of missing data or failing to pass the quality checks.	3			unitless	No		1 bit(s)			True	1
Blackbody View Data Sufficiency Check - Insufficient blackbody view samples are available, either because of missing data or failing to pass the quality checks.	4			unitless	No		1 bit(s)			False	0
Spare	5			unitless	No		3 bit(s)			True	1

QF21_ATMSSDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
		Scan	Yes	No	12	12
		Channel	No	No	22	22

Datum											
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Space View #1 out of range condition	0			unitless	No		1 bit(s)			False	0
Space View #2 out of range condition	1			unitless	No		1 bit(s)			True	1
Space View #3 out of range condition	2			unitless	No		1 bit(s)			False	0
Space View #4 out of range condition	3			unitless	No		1 bit(s)			True	1

											False 0	
											True 1	
		BlackBody View #1 out of range condition	4			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
		BlackBody View #2 out of range condition	5			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
		BlackBody View #3 out of range condition	6			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
		BlackBody View #4 out of range condition	7			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
QF22_ATMSSDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		Channel	No	No	22	22						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Space view #1 inconsistency	0			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
		Space view #2 inconsistency	1			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
		Space view #3 inconsistency	2			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
		Space view #4 inconsistency	3			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
		BlackBody view #1 inconsistency	4			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	
		BlackBody view #2 inconsistency	5			unitless	No		1 bit(s)	Name Value	Name Value	
											False 0	
											True 1	

		BlackBody view #3 inconsistency	6			unitless	No		1 bit(s)	Name Value	Name Value	Name Value	Name Value	
		BlackBody view #4 inconsistency	7			unitless	No		1 bit(s)	Name Value	Name Value	Name Value	Name Value	
PadByte1	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size		Max Array Size						
		Granule	Yes	No	7	7								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
Pad byte	0			Unitless	No		unsigned 8-bit char	Name Value	Name Value	Name Value	Name Value	Name Value		

Table 2.4.2-3, ATMS SDR Product Profile - Factors

Name	Data Size	Dimensions												
BrightnessTemperature Factors	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size		Max Array Size						
		Factors	Yes	No	2	2								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
Scale = first array element; offset = second array element	0			Scale = unitless; Offset = kelvin	No		32-bit floating point	Name Value	Name Value	Name Value	Name Value	Name Value		

2.4.3 ATMS SDR HDF5 Details

Figure 2.4.3-1 provides the details on the content and data types of the ATMS SDR. This UML diagram provides details at the product level only. In addition to this UML diagram, refer to Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

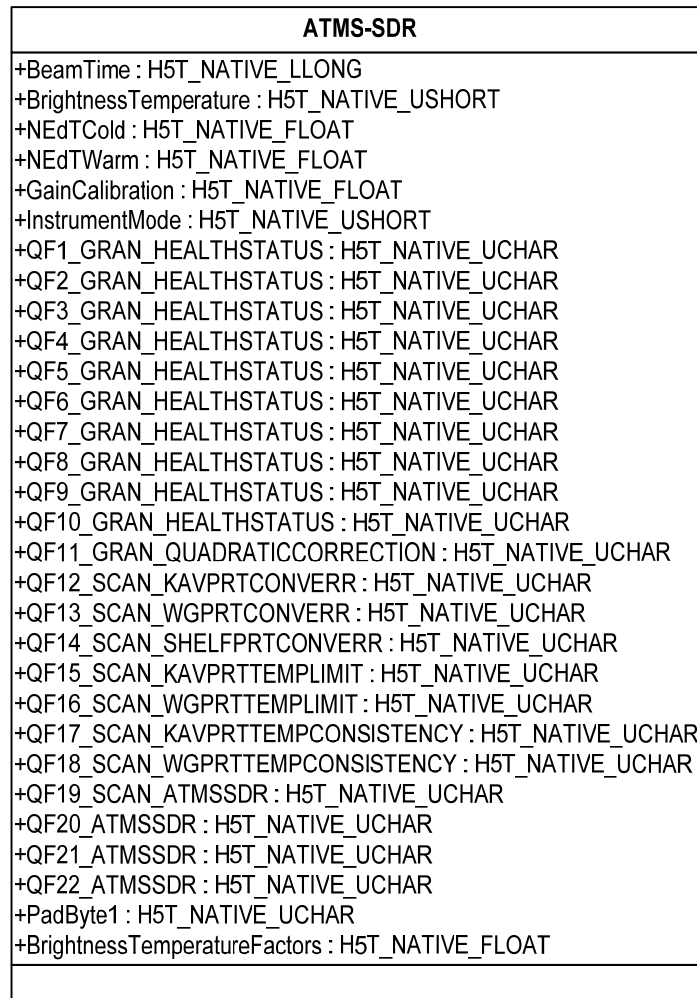


Figure 2.4.3-1, ATMS SDR UML Diagram

2.4.4 ATMS SDR Metadata Details

The HDF5 metadata elements associated with the ATMS SDR are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The ATMS SDR metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the ATMS SDR, the items listed in Table

2.4.4-1, ATMS SDR Quality Summary Metadata are included as name/value pair items under the granule level metadata attribute “N_Quality_Summary”. The listed name/value pair items in the table are the granule level quality summary flags for the ATMS SDRs.

Table 2.4.4-1, ATMS SDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary ATMS SDR Quality	0 – 100 %	Percentage of good quality earth view observations in granule	

2.4.5 ATMS SDR Geolocation Content Summary

Table 2.4.5-1, ATMS SDR Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
StartTime	Starting Time of scan in IET(1/1/1958)	64-bit integer	[N*12]	[12]	microsecond
MidTime	Mid Time of scan in IET (1/1/1958)	64-bit integer	[N*12]	[12]	microsecond
Latitude	Latitude of channel 17 beam position center (positive North)	32-bit floating point	[N*12, 96]	[12, 96]	degree
Longitude	Longitude of channel 17 beam position center (positive East)	32-bit floating point	[N*12, 96]	[12, 96]	degree
SolarZenithAngle	Zenith angle of sun at the geolocated beam position center	32-bit floating point	[N*12, 96]	[12, 96]	degree
SolarAzimuthAngle	Azimuth angle (measured clockwise positive from North) of sun at the geolocated beam position center	32-bit floating point	[N*12, 96]	[12, 96]	degree
SatelliteZenithAngle	Zenith angle to satellite at the geolocated beam position center	32-bit floating point	[N*12, 96]	[12, 96]	degree

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to satellite at the geolocated beam position center	32-bit floating point	[N*12, 96]	[12, 96]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*12, 96]	[12, 96]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*12, 96]	[12, 96]	meter
BeamLatitude	Latitude of individual beam position centers (channels 1, 2, 3, 16, 17)	32-bit floating point	[N*12, 96, 5]	[12, 96, 5]	degree
BeamLongitude	Longitude of individual beam position centers (channels 1, 2, 3, 16, 17)	32-bit floating point	[N*12, 96, 5]	[12, 96, 5]	degree
SCPosition	Spacecraft position in Earth Centered Rotating (ECR) Coordinates (X, Y, Z) at the mid-time of scan	32-bit floating point	[N*12, 3]	[12, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	32-bit floating point	[N*12, 3]	[12, 3]	m/s
SCAttitude	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the mid-time of scan	32-bit floating point	[N*12, 3]	[12, 3]	arcsecond
QF1_ATMSSDRGEO	Attitude and Ephemeris availability status	unsigned 8-bit char	[N*12]	[12]	unitless

2.4.6 ATMS SDR Geolocation Product Profile

Table 2.4.6-1, ATMS SDR Geolocation Product Profile

Fields														
Name	Data Size	Dimensions												
StartTime	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	12	12								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Starting Time of scan in IET (1/1/1958)	0			microseconds	No		64-bit integer	Name	Value	Name	Value	
										NA_INT64_FILL	-999			
								MISS_INT64_FILL	-998					
								ERR_INT64_FILL	-995					
								VDNE_INT64_FILL	-993					
MidTime	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	12	12								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Mid Time of scan in IET (1/1/1958)	0			microseconds	No		64-bit integer	Name	Value	Name	Value	
										NA_INT64_FILL	-999			
								MISS_INT64_FILL	-998					
								ERR_INT64_FILL	-995					
								VDNE_INT64_FILL	-993					

Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Latitude of channel 17 beam position center (positive North)	0	-90	90	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
Longitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Longitude of channel 17 beam position center (positive East)	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
SolarZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Zenith angle to sun at the geolocated beam position center	0	0	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	

SolarAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Azimuth angle (measured clockwise positive from North) of sun at the geolocated beam position center	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value		
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
SatelliteZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Zenith angle to satellite at the geolocated beam position center	0	0	~70	degree	No		32-bit floating point	Name	Value	Name Value		
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
SatelliteAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Azimuth angle (measured clockwise positive from North) at the geolocated beam position center	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value		
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			

Height	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Ellipsoid-Geoid separation	0			meter	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
SatelliteRange	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Line of sight distance from the ellipsoid intersection to the satellite	0			meter	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
BeamLatitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Channel	No	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Latitude of individual beam position centers (channels 1, 2, 3, 16, 17)	0	-90	90	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
								VDNE_FLOAT32_FILL	-999.3			

BeamLongitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		BeamPosition	No	No	96	96						
		Channel	No	No	5	5						
		Datum										
	Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
	Longitude of individual beam position centers (channels 1, 2, 3, 16, 17)	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value	
									NA_FLOAT32_FILL	-999.9		
									MISS_FLOAT32_FILL	-999.8		
									ERR_FLOAT32_FILL	-999.5		
									VDNE_FLOAT32_FILL	-999.3		
SCPosition	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		ECRCoordinate	No	No	3	3						
		Datum										
			Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	
	Spacecraft position in Earth Centered Rotating (ECR) Coordinates (X, Y, Z) at the mid-time of scan	0			meter	No		32-bit floating point	Name	Value	Name Value	
									NA_FLOAT32_FILL	-999.9		
									MISS_FLOAT32_FILL	-999.8		
									ERR_FLOAT32_FILL	-999.5		
									VDNE_FLOAT32_FILL	-999.3		
SCVelocity	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	12	12						
		ECRCoordinate	No	No	3	3						
		Datum										
			Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	
	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	0			m/s	No		32-bit floating point	Name	Value	Name Value	
									NA_FLOAT32_FILL	-999.9		
									MISS_FLOAT32_FILL	-999.8		
									ERR_FLOAT32_FILL	-999.5		
									VDNE_FLOAT32_FILL	-999.3		

SCAttitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		Scan	Yes	No	12	12																									
		GRFCoordinate	No	No	3	3																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the mid-time of scan	0			arcsecond	No		32-bit floating point	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3			
Name	Value	Name	Value																												
NA_FLOAT32_FILL	-999.9																														
MISS_FLOAT32_FILL	-999.8																														
ERR_FLOAT32_FILL	-999.5																														
VDNE_FLOAT32_FILL	-999.3																														

Table 2.4.6-2, ATMS SDR Geolocation Product Profile -- Quality Flags

Name	Data Size	Dimensions																													
QF1_ATMSSDRGEO	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		Scan	Yes	No	12	12																									
		Datum																													
				Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																		
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td>Nominal - E&A data available</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>Missing Data <= Small Gap</td> <td>1</td> <td></td> <td></td> </tr> <tr> <td>Small Gap < Missing Data < Granule Boundary</td> <td>2</td> <td></td> <td></td> </tr> <tr> <td>Missing Data >= Granule Boundary</td> <td>3</td> <td></td> <td></td> </tr> </table>	Name	Value	Name	Value	Nominal - E&A data available	0			Missing Data <= Small Gap	1			Small Gap < Missing Data < Granule Boundary	2			Missing Data >= Granule Boundary	3			
Name	Value	Name	Value																												
Nominal - E&A data available	0																														
Missing Data <= Small Gap	1																														
Small Gap < Missing Data < Granule Boundary	2																														
Missing Data >= Granule Boundary	3																														
		Spare	2			unitless	No		6 bit(s)	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> </table>	Name	Value	Name	Value																	
Name	Value	Name	Value																												

2.4.7 ATMS SDR Geolocation HDF5 Details

Figure 2.4.7-1 provides the details on the content and data types of the ATMS SDR. This UML diagram provide details at the product level only. In addition to this UML diagram, refer to Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

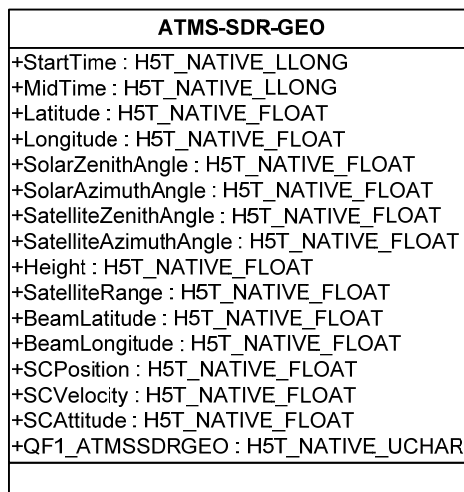


Figure 2.4.7-1, ATMS SDR Geolocation UML Diagram

2.4.8 ATMS SDR Geolocation Metadata Details

There are no quality summary metadata items in the ATMS SDR Geolocation.

2.5 ATMS Remapped to CrIS SDR

Data Mnemonic	SDRE-ATMR-C0030
Description/ Purpose	Advanced Technology Microwave Sounder (ATMS) Sensor Data Records remapped onto the CrIS field of regard (Field of View (FOV) #5) locations. ATMS and Cross-track Infrared Sounder (CrIS) SDRs are used by the Cross-track Infrared Microwave Sounder Suite (CrIMSS) EDR processors to produce CrIMSS EDRs.
File-Naming Construct	See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.
File Size	Approximately 5.6 KiB per data granule. Approximately 4.9 KiB per geolocation granule. Sizes do not include HDF5 overhead or metadata.
File Format Type	HDF5
Data Content and Data Format	See Section 2.5.1 ATMS Remapped to CrIS SDR Product Data Content Summary See Section 2.5.5 ATMS Remapped to CrIS SDR Geolocation Data Content Summary

2.5.1 ATMS Remapped to CrIS SDR Product Data Content Summary

Table 2.5.1-1, ATMS Remapped to CrIS SDR Product Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
BrightnessTemperature	Calibrated scene brightness temperature for each ATMS channel and beam position remapped to each CrIS FOR. This output is the Rayleigh equivalent temperature..	unsigned 16-bit integer	[N*4, 30, 22]	[4,30, 22]	kelvin
QF1_ATMSREMAP	If a fill value is found for an ATMS sample used in resampling to an FOR, this flag is set to true for that FOR and ATMS channel (each bit corresponds to an ATMS channel 1 through 8)	unsigned 8-bit char	[N*4, 30]	[4,30]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF2_ATMSREMAP	If a fill value is found for an ATMS sample used in resampling to an FOR, this flag is set to true for that FOR and ATMS channel (each bit corresponds to an ATMS channel 9 through 16)	unsigned 8-bit char	[N*4, 30]	[4,30]	unitless
QF3_ATMSREMAP	If a fill value is found for an ATMS sample used in resampling to an FOR, this flag is set to true for that FOR and ATMS channel (each bit corresponds to an ATMS channel 17 to 22 with 2 spare bits)	unsigned 8-bit char	[N*4, 30]	[4,30]	unitless
QF4_ATMSREMAP	Set to true if an ATMS scan is synched and the CrIS scan cannot be found.	unsigned 8-bit char	[N*4]	[4]	unitless
BrightnessTemperature Factors	Scale = first array element; offset = second array element	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = kelvin

2.5.2 ATMS Remapped to CrIS SDR Product Profile

Table 2.5.2-1, ATMS Remapped to CrIS SDR Product Profile

Fields																																			
Name	Data Size	Dimensions																																	
Brightness Temperature	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																													
		Scan	Yes	No	4	4																													
		FOR	No	No	30	30																													
		Channel	No	No	22	22																													
		Datum																																	
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																								
		Calibrated scene brightness temperature for each ATMS channel and beam position remapped to the CrIS FORs. This output is the Rayleigh equivalent temperature.	0			kelvin	Yes	Brightness Temperature Factors	unsigned 16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_UINT16_FILL</td> <td>65535</td> <td></td> <td></td> </tr> <tr> <td>MISS_UINT16_FILL</td> <td>65534</td> <td></td> <td></td> </tr> <tr> <td>ERR_UINT16_FILL</td> <td>65531</td> <td></td> <td></td> </tr> <tr> <td>VDNE_UINT16_FILL</td> <td>65529</td> <td></td> <td></td> </tr> <tr> <td>Soub_UINT16_FILL</td> <td>65528</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_UINT16_FILL	65535			MISS_UINT16_FILL	65534			ERR_UINT16_FILL	65531			VDNE_UINT16_FILL	65529			Soub_UINT16_FILL	65528			
Name	Value	Name	Value																																
NA_UINT16_FILL	65535																																		
MISS_UINT16_FILL	65534																																		
ERR_UINT16_FILL	65531																																		
VDNE_UINT16_FILL	65529																																		
Soub_UINT16_FILL	65528																																		

Table 2.5.2-2, ATMS Remapped to CrIS SDR Product Profile - Quality Flags

Fields																			
Name	Data Size	Dimensions																	
QF1_ATMSREMAP	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size													
		Scan	Yes	No	4	4													
		FOR	No	No	30	30													
		Datum																	
				Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries						
		ATMS channel 1	0			unitless	No		1	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value					
Name	Value	Name	Value																

		missing samples in resampling							bit(s)		False 0 True 1	
		ATMS channel 2 missing samples in resampling	1			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		ATMS channel 3 missing samples in resampling	2			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		ATMS channel 4 missing samples in resampling	3			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		ATMS channel 5 missing samples in resampling	4			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		ATMS channel 6 missing samples in resampling	5			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		ATMS channel 7 missing samples in resampling	6			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		ATMS channel 8 missing samples in resampling	7			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
QF2_ATMSREMAP	1byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size										
		Scan	Yes	No	4	4						
		FOR	No	No	30	30						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		ATMS channel 9 missing samples in resampling	0			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		ATMS channel 10 missing samples in resampling	1			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	

		ATMS channel 11 missing samples in resampling	2			unitless	No		1 bit(s)	Name Value	Name Value																																																																																																											
										False	0																																																																																																											
										True	1																																																																																																											
		ATMS channel 12 missing samples in resampling	3			unitless	No		1 bit(s)	Name Value	Name Value																																																																																																											
										False	0																																																																																																											
										True	1																																																																																																											
		ATMS channel 13 missing samples in resampling	4			unitless	No		1 bit(s)	Name Value	Name Value																																																																																																											
										False	0																																																																																																											
										True	1																																																																																																											
		ATMS channel 14 missing samples in resampling	5			unitless	No		1 bit(s)	Name Value	Name Value																																																																																																											
										False	0																																																																																																											
										True	1																																																																																																											
		ATMS channel 15 missing samples in resampling	6			unitless	No		1 bit(s)	Name Value	Name Value																																																																																																											
										False	0																																																																																																											
										True	1																																																																																																											
		ATMS channel 16 missing samples in resampling	7			unitless	No		1 bit(s)	Name Value	Name Value																																																																																																											
										False	0																																																																																																											
										True	1																																																																																																											
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		ATMS channel 22 missing samples in resampling	5			unitless	No		1 bit(s)	Name Value	Name Value																																																																								
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Table 2.5.2-3, ATMS Remapped to CrIS SDR Product Profile - Factors

Fields											
Name	Data Size	Dimensions									
BrightnessTemperatureFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Factors	Yes	No	2	2					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Scale = first array	0			Scale = unitless;	No		32-bit	Name Value	Name Value

		element; offset = second array element				Offset = kelvin			floating point		
--	--	--	--	--	--	-----------------	--	--	-------------------	--	--

2.5.3 ATMS Remapped to CrIS SDR HDF5 Details

Figure 2.5.3-1 provides the details on the content and data types of the ATMS Remapped to CrIS SDR. This UML diagram provide details at the product level only. In addition to this UML diagram, refer to Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

ATMS-REMAP-SDR
+BrightnessTemperature : H5T_NATIVE_USHORT
+QF1_ATMSREMAP : H5T_NATIVE_UCHAR
+QF2_ATMSREMAP : H5T_NATIVE_UCHAR
+QF3_ATMSREMAP : H5T_NATIVE_UCHAR
+QF4_ATMSREMAP : H5T_NATIVE_UCHAR
+BrightnessTemperatureFactors : H5T_NATIVE_FLOAT

Figure 2.5.3-1, ATMS Remapped to CrIS SDR UML Diagram

2.5.4 ATMS Remapped to CrIS SDR Metadata Details

There are no quality summary metadata items in the ATMS Remapped to CrIS SDR.

2.5.5 ATMS Remapped to CrIS SDR Geolocation Content Summary

Table 2.5.5-1, ATMS Remapped to CrIS SDR Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
StartTime	Starting Time of CrIS Scan in IET	64-bit integer	[N*4]	[4]	microse cond
MidTime	Mid Time of CrIS Scan in IET	64-bit integer	[N*4]	[4]	microse cond
CrIS_FORTime	CrIS Field of Regard times (IET) used to create remapped product.	64-bit integer	[N*4, 30]	[4, 30]	microse cond
Latitude	Latitude (positive North)	32-bit floating point	[N*4, 30]	[4, 30]	degree
Longitude	Longitude (positive East)	32-bit floating point	[N*4, 30]	[4, 30]	degree
SolarZenithAngle	Solar Zenith Angle at the CrIS FOV #5 position.	32-bit floating point	[N*4, 30]	[4, 30]	degree
SolarAzimuthAngle	Solar Azimuth Angle at the CrIS FOV #5 position.	32-bit floating point	[N*4, 30]	[4, 30]	degree

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
SatelliteZenithAngle	Satellite Zenith Angle at the CriS FOV #5 position.	32-bit floating point	[N*4, 30]	[4, 30]	degree
SatelliteAzimuthAngle	Satellite Azimuth Angle at the CriS FOV #5 position. Positive east of north.	32-bit floating point	[N*4, 30]	[4, 30]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*4, 30]	[4, 30]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*4, 30]	[4, 30]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at the midtime of scan.	32-bit floating point	[N*4, 3]	[4, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the midtime of scan.	32-bit floating point	[N*4, 3]	[4, 3]	m/s
SCAttitude	Spacecraft attitude with respect to the Geodetic Reference Frame (roll, pitch, yaw) at the midtime of scan.	32-bit floating point	[N*4,3]	[4,3]	arcsecond
QF1_ATMSSDRGEO	Attitude and Ephemeris availability status	unsigned 8-bit char	[N*4]	[4]	unitless

2.5.6 ATMS Remapped to CrIS SDR Geolocation Product Profile

Table 2.5.6-1, ATMS Remapped to CrIS SDR Geolocation Product Profile

Fields																				
Name	Data Size	Dimensions																		
StartTime	8byte(s))	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size														
		Scan	Yes	No	4	4														
		Datum																		
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries									
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										VDNE_FLOAT32_FILL	-999.3			
SCAttitude	4byte(s))	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan		Yes	No	4	4							
		GRFCoordinate		No	No	3	3							
				Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
Spacecraft attitude with respect to Geodetic Reference Frame (roll, pitch, yaw) at the midtime of	0			arcsecond	No		32-bit floating point	Name		Value	Name	Value		
										NA_FLOAT32_FILL			-999.9	
										MISS_FLOAT32_FILL	-999.8			
										ERR_FLOAT32_FILL	-999.5			
										VDNE_FLOAT32_FIL	-999.3			

scan.									
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Table 2.5.6-2, ATMS Remapped to CrIS SDR Geolocation Product Profile - Quality Flags

Name	Data Size	Dimensions													
QF1_ATMSSDRGEO	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		Scan	Yes	No	4	4									
		Datum													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries				
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name Value	Name	Value			
									Nominal - E&A data available	0					
									Missing Data <= Small Gap	1					
									Small Gap < Missing Data < Granule Boundary	2					
									Missing Data >= Granule Boundary	3					
Spare	2				unitless	No	6 bit(s)	Name Value	Name Value						

2.5.7 ATMS Remapped to CrIS SDR Geolocation HDF5 Details

Figure 2.5.7-1 provides the details on the content and data types of the ATMS Remapped to CrIS SDR Geolocation. This UML diagram provides details at the product level only. In addition to this UML diagram, refer to Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

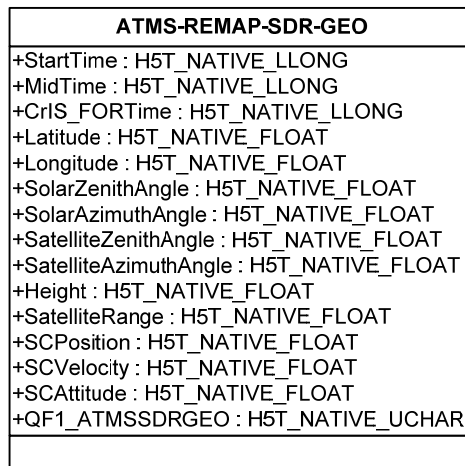


Figure 2.5.7-1, ATMS Remapped to CrIS SDR Geolocation UML Diagram

2.5.8 ATMS Remapped to CrIS SDR Geolocation Metadata Details

There are no quality summary metadata items in the ATMS Remapped to CrIS SDR Geolocation.

2.6 Cross-Track Infrared Sounder SDR

Data Mnemonic	SDRE-CrIS-C0030
Description/ Purpose	<p>CrIS is an infrared sounder (Michelson Interferometer) designed to measure scene radiance and calculate the vertical distribution of temperature, moisture, and pressure in the Earth's atmosphere. CrIS is designed to work in unison with the Advanced Technology Microwave Sounder (ATMS); together they create the Cross-track Infrared Microwave Sounding Suite (CrIMSS).</p> <p>The CrIS SDR algorithms transform the scene interferograms into fully calibrated, unapodized, spectral information.</p> <p>Raw data (earth view, internal calibration and space view) are preprocessed, undergo radiometric, spectral, and geometric calibrations, and are quality checked prior to SDR creation. This output is then used in subsequent atmospheric parameter calculations.</p> <p>As depicted in Figure 2.6-1, CrIS Field-of-Regard (FOR), the FOR is a 3 x 3 element detector field-of-view (FOV) array. Each FOV subtends slightly less than 1 degree with a 1.1 degree separation between FOVs. The first element of data arrays with dimensions associated with FOV is from detector #1, and so on sequentially through 9.</p> <p>Although the Earth Scene (prefixed with ES_) data presented in the SDR is a contiguous array of FOVs and FORs, the SDR data should always be used with its respective geolocation in order to georeference the data.</p>
File-Naming Construct	See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.
File Size	Approximately 16703 KiB per data granule. Approximately 35 KiB per geolocation granule. Sizes do not include HDF5 overhead or metadata.
File Format Type	HDF5
Data Content and Data Format	See Section 2.6.1 CrIS SDR Product Data Content Summary See Section 2.6.5, CrIS SDR Geolocation Content Summary

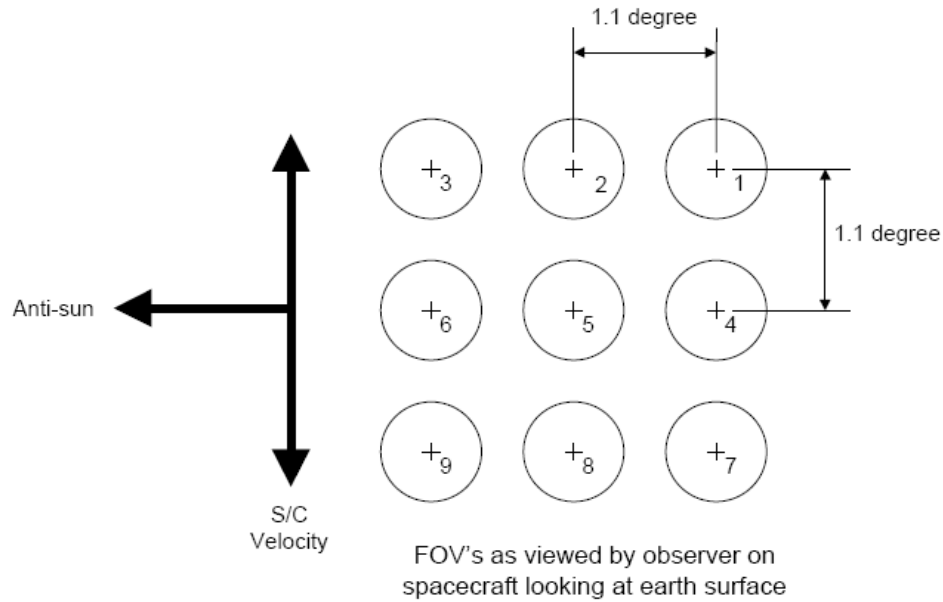


Figure 2.6.1-1, CrIS Field of Regard

2.6.1 CrIS SDR Product Data Content Summary

Table 2.6.1-1, CrIS Product Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
ES_RealLW	CrIS LW Band spectrally and radiometrically calibrated radiances (real part of spectra)	32-bit floating point	[N*4, 30, 9, 717]	[4, 30, 9, 717]	mW/(m ² sr cm ⁻¹)
ES_RealMW	CrIS MW Band spectrally and radiometrically calibrated data for mid-wave band (real part of spectra)	32-bit floating point	[N*4, 30, 9, 437]	[4, 30, 9, 437]	mW/(m ² sr cm ⁻¹)

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
ES_RealSW	CrIS SW Band spectrally and radiometrically calibrated data for short-wave band (real part of spectra)	32-bit floating point	[N*4, 30, 9, 163]	[4, 30, 9, 163]	mW/(m ² sr cm ⁻¹)
ES_ImaginaryLW	Imaginary part of spectra for long-wave band	32-bit floating point	[N*4, 30, 9, 717]	[4, 30, 9, 717]	mW/(m ² sr cm ⁻¹)
ES_ImaginaryMW	Imaginary part of spectra for mid-wave band	32-bit floating point	[N*4, 30, 9, 437]	[4, 30, 9, 437]	mW/(m ² sr cm ⁻¹)
ES_ImaginarySW	Imaginary part of spectra for short-wave band	32-bit floating point	[N*4, 30, 9, 163]	[4, 30, 9, 163]	mW/(m ² sr cm ⁻¹)
ES_NEdNLW	Spectral Noise Estimate - long-wave	32-bit floating point	[N*4, 30, 9, 717]	[4, 30, 9, 717]	mW/(m ² sr cm ⁻¹)
ES_NEdNMW	Spectral Noise Estimate - mid-wave	32-bit floating point	[N*4, 30, 9, 437]	[4, 30, 9, 437]	mW/(m ² sr cm ⁻¹)
ES_NEdNSW	Spectral Noise Estimate - short-wave	32-bit floating point	[N*4, 30, 9, 163]	[4, 30, 9, 163]	mW/(m ² sr cm ⁻¹)
DS_WindowSize	The number of Deep Space (DS) spectra used to calibrate the earth scene.	unsigned 16-bit integer	[N*4, 2, 9, 3]	[4, 2, 9, 3]	unitless
ICT_WindowSize	The number of Internal Calibration Target (ICT) spectra used to calibrate the earth scene.	unsigned 16-bit integer	[N*4, 2, 9, 3]	[4, 2, 9, 3]	unitless
ES_ZPDMagnitude	Interferogram magnitude at zero path difference	unsigned 16-bit integer	[N*4, 30, 9, 3]	[4, 30, 9, 3]	unitless
ES_ZPDFringeCount	Interferogram fringe count at zero path difference before decimation	unsigned 16-bit integer	[N*4, 30, 9, 3]	[4, 30, 9, 3]	unitless
SDRFringeCount	The calculated number of fringes that the interferogram was advanced or delayed.	unsigned 16-bit integer	[N*4, 30, 9, 3]	[4, 30, 9, 3]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
ES_RDRImpulseNoise	This flag represents the number of samples in an interferogram that exceeded the impulse noise mask and were set to zero; if > 1 the resultant spectrum is flagged as having excess noise.	unsigned 8-bit char	[N*4, 30, 9, 3]	[4, 30, 9, 3]	unitless
MonitoredLaserWavelength	This flag represents the monitored laser metrology wavelength, calculated using data from the 4-min engineering packets and Neon calibrated laser metrology wavelength.	64-bit floating point	[N*4]	[4]	nm
MeasuredLaserWavelength	This quality flag represents the measured metrology laser wavelength with neon lamp calibration.	64-bit floating point	[N*4]	[4]	nm
ResamplingLaserWavelength	This flag represents the wavelength used for the spectral resampling, which is half of the current metrology laser wavelength.	64-bit floating point	[N*4]	[4]	nm
DS_Symmetry	This flag is intended to identify the asymmetry in the measured DS IGMs.	64-bit floating point	[N*4, 9, 3]	[4, 9, 3]	unitless
DS_SpectralStability	This flag monitors the spectral variability of the DS views within the moving window.	64-bit floating point	[N*4, 2, 9, 3]	[4, 2, 9, 3]	unitless
ICT_SpectralStability	This flag monitors the spectral variability of the ICT views within the moving window.	64-bit floating point	[N*4, 2, 9, 3]	[4, 2, 9, 3]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
ICT_TemperatureStability	This flag measures the stability of the two Platinum Resistance Temperature measurements of the Internal Calibration Target.	32-bit floating point	[N*4, 2]	[4, 2]	K
ICT_TemperatureConsistency	This flag measures the consistency between the two Platinum Resistance Temperature measurements of the Internal Calibration Target.	32-bit floating point	[N*4]	[4]	K
NumberOfValidPRTTemps	Number of valid PRT Temperatures used	unsigned 8-bit char	[N*4, 2]	[4, 2]	unitless
QF1_SCAN_CRISDR	Scan-level Quality Flags	unsigned 8-bit char	[N*4]	[4]	unitless
QF2_CRISDR	Calibration Quality Flags	unsigned 8-bit char	[N*4, 9, 3]	[4, 9, 3]	unitless
QF3_CRISDR	FOV Quality Flags	unsigned 8-bit char	[N*4, 30, 9, 3]	[4, 30, 9, 3]	unitless
QF4_CRISDR	FOV Quality Flags	unsigned 8-bit char	[N*4, 30, 9, 3]	[4, 30, 9, 3]	unitless

2.6.2 CrIS SDR Product Profile

Table 2.6.2-1, CrIS SDR Product Profile

Name	Data Size	Dimensions										
ES_RealLW	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4						
		FOR	No	No	30	30						
		FOV	No	No	9	9						
		LWPoint	No	No	717	717						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		CrIS LW Band spectrally and radiometrically calibrated radiances (real part of spectra)	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
ES_RealMW	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4						
		FOR	No	No	30	30						
		FOV	No	No	9	9						
		MWPoint	No	No	437	437						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		CrIS MW Band spectrally and radiometrically calibrated data for mid-wave band (real part	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			

		of spectra)											
ES_RealSW	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan	Yes	No	4	4							
		FOR	No	No	30	30							
		FOV	No	No	9	9							
		SWPoint	No	No	163	163							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		CrIS SW Band spectrally and radiometrically calibrated data for short-wave band (real part of spectra)	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
ERR_FLOAT32_FILL	-999.5												
VDNE_FLOAT32_FILL	-999.3												
ES_ImaginaryLW	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan	Yes	No	4	4							
		FOR	No	No	30	30							
		FOV	No	No	9	9							
		LWPoint	No	No	717	717							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Imaginary part of spectra for long-wave band	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
ERR_FLOAT32_FILL	-999.5												
VDNE_FLOAT32_FILL	-999.3												
ES_ImaginaryMW	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan	Yes	No	4	4							
		FOR	No	No	30	30							
		FOV	No	No	9	9							
		MWPoint	No	No	437	437							
		Datum											

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																					
		Imaginary part of spectra for mid-wave band	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3				
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ES_ImaginarySW	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		Scan	Yes	No	4	4																										
		FOR	No	No	30	30																										
		FOV	No	No	9	9																										
		SWPoint	No	No	163	163																										
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			Imaginary part of spectra for short-wave band	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3			
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ES_NEdNLW	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		Scan	Yes	No	4	4																										
		FOR	No	No	30	30																										
		FOV	No	No	9	9																										
		LWPoint	No	No	717	717																										
	Datum																															
			Spectral Noise Estimate - long-wave	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5							
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										VDNE_FLOAT32_FILL -999.3		
ES_NEdNMW	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4						
		FOR	No	No	30	30						
		FOV	No	No	9	9						
		MWPoint	No	No	437	437						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Spectral Noise Estimate - mid-wave	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
ES_NEdNSW	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4						
		FOR	No	No	30	30						
		FOV	No	No	9	9						
		SWPoint	No	No	163	163						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Spectral Noise Estimate - short-wave	0			mW/(m ² sr cm ⁻¹)	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
DS_WindowSize	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4						
		DS_View	No	No	2	2						
		FOV	No	No	9	9						
		Band	No	No	3	3						
		Datum										

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries															
		The number of Deep Space (DS) spectra used to calibrate the earth scene.	0			unitless	No		unsigned 16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_UINT16_FILL</td> <td>65535</td> </tr> <tr> <td>MISS_UINT16_FILL</td> <td>65534</td> </tr> <tr> <td>ERR_UINT16_FILL</td> <td>65531</td> </tr> <tr> <td>VDNE_UINT16_FILL</td> <td>65529</td> </tr> </tbody> </table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ERR_UINT16_FILL	65531	VDNE_UINT16_FILL	65529	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value			
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Name	Value																									
ICT_WindowSize	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																			
		Scan	Yes	No	4	4																				
		ICT_View	No	No	2	2																				
		FOV	No	No	9	9																				
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			Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
			The number of Internal Calibration Target (ICT) spectra used to calibrate the earth scene.	0			unitless	No		unsigned 16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_UINT16_FILL</td> <td>65535</td> </tr> <tr> <td>MISS_UINT16_FILL</td> <td>65534</td> </tr> <tr> <td>ERR_UINT16_FILL</td> <td>65531</td> </tr> <tr> <td>VDNE_UINT16_FILL</td> <td>65529</td> </tr> </tbody> </table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ERR_UINT16_FILL	65531	VDNE_UINT16_FILL	65529	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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ES_ZPDMagnitude	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																			
		Scan	Yes	No	4	4																				
		FOR	No	No	30	30																				
		FOV	No	No	9	9																				
		Band	No	No	3	3																				
	Datum																									
			Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
			Interferogram magnitude at	0			unitless	No		unsigned 16-bit	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value			<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value								
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		zero path difference.							integer	<table border="1"> <tr><td>NA_UINT16_FILL</td><td>65535</td></tr> <tr><td>MISS_UINT16_FILL</td><td>65534</td></tr> <tr><td>ERR_UINT16_FILL</td><td>65531</td></tr> <tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr> </table>	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ERR_UINT16_FILL	65531	VDNE_UINT16_FILL	65529																																																														
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ES_RDRImpulseNoise	1byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr><td>Scan</td><td>Yes</td><td>No</td><td>4</td><td>4</td></tr> <tr><td>FOR</td><td>No</td><td>No</td><td>30</td><td>30</td></tr> </tbody> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Scan	Yes	No	4	4	FOR	No	No	30	30																																																											
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		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		This flag represents the number of samples in an interferogram that exceeded the impulse noise mask and were set to zero; if > 1 the resultant spectrum is flagged as having excess noise.	0			unitless	No		unsigned 8-bit char	Name	Value	Name Value
										NA_UINT8_FILL	255	
										MISS_UINT8_FILL	254	
										ERR_UINT8_FILL	251	
										VDNE_UINT8_FILL	249	
MonitoredLaserWavelength	8byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size										
		Scan	Yes	No	4	4						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		This flag represents the monitored laser metrology wavelength, calculated using data from the 4-min engineering packets and	0			nm	No		64-bit floating point	Name	Value	Name Value
										NA_FLOAT64_FILL	-999.9	
										MISS_FLOAT64_FILL	-999.8	
										ERR_FLOAT64_FILL	-999.5	
										VDNE_FLOAT64_FILL	-999.3	

		Neon calibrated laser metrology wavelength.											
MeasuredLaserWavelength	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
This quality flag represents the measured metrology laser wavelength with neon lamp calibration.	0			nm	No		64-bit floating point	Name	Value	Name	Value		
								NA_FLOAT64_FILL	-999.9				
								MISS_FLOAT64_FILL	-999.8				
								ERR_FLOAT64_FILL	-999.5				
								VDNE_FLOAT64_FILL	-999.3				
ResamplingLaserWavelength	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
This flag represents the wavelength used for the spectral resampling, which is half of the current metrology laser wavelength.	0			nm	No		64-bit floating point	Name	Value	Name	Value		
								NA_FLOAT64_FILL	-999.9				
								MISS_FLOAT64_FILL	-999.8				
								ERR_FLOAT64_FILL	-999.5				
								VDNE_FLOAT64_FILL	-999.3				
DS_Symmetry	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						

		Scan	Yes	No	4	4																			
		FOV	No	No	9	9																			
		Band	No	No	3	3																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
		This flag is intended to identify the asymmetry in the measured DS IGMs.	0			unitless	No		64-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT64_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT64_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT64_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT64_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT64_FILL	-999.9	MISS_FLOAT64_FILL	-999.8	ERR_FLOAT64_FILL	-999.5	VDNE_FLOAT64_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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DS_SpectralStability	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
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		This flag monitors the spectral variability of the DS views within the moving window.	0			unitless	No		64-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT64_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT64_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT64_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT64_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT64_FILL	-999.9	MISS_FLOAT64_FILL	-999.8	ERR_FLOAT64_FILL	-999.5	VDNE_FLOAT64_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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ICT_SpectralStability	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Scan	Yes	No	4	4																			
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		FOV	No	No	9	9																			
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				Range Min	Range Max			Name																								
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		This flag measures the stability of the two Platinum Resistance Temperature measurements of the Internal Calibration Target.	0			kelvin	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3				
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		This flag measures the consistency between the two Platinum Resistance Temperature	0			kelvin	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3				
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Table 2.6.2-2, CrIS SDR Product Profile - Quality Flags

Name	Data Size	Dimensions																				
QF1_SCAN_CRISDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																
		Scan	Yes	No	4	4																
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		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries											
		Data Gap - There is a data gap in the RDRs, i.e. missing scan(s), preceding the current scan.	0			unitless	No		1 bit(s)	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td></td> <td></td> <td>False</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			False	0			True	1
Name	Value	Name	Value																			
		False	0																			
		True	1																			
Timing sequence Error - The recorded time is not in sequence. Set if scan start time is out of sequence.	1			unitless	No		1 bit(s)	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td></td> <td></td> <td>False</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			False	0			True	1		
Name	Value	Name	Value																			
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		True	1																			
Lamda Monitored Quality -Invalid laser wavelength calculation due to invalid diode current and/or temperature measurements. This	2			unitless	No		1 bit(s)	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td></td> <td></td> <td>False</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			False	0			True	1		
Name	Value	Name	Value																			
		False	0																			
		True	1																			

		flag is set by checking if the laser diode current and temperature measurements are out of the predetermined allowable ranges. The ranges are tunable. (0 – Lamda Monitored calculation is valid and updated; 1 – Lamda Monitored is not updated due to invalid laser diode bias current or invalid laser diode temperature).								
		Invalid Instrument Temperatures - 3 The measured temperature of any instrument components (e.g., beam-splitter, scan mirror, scan baffle, etc.) are out of allowable ranges. These temperatures are used to compute the “environmental” contribution to the ICT radiances. If this happens, the invalid temperature are replaced with the validated temperature value of the ICT.			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Excess Thermal Drift (over threshold): At least one of the monitored instrument temperatures has drifted more than a specified tolerance value.	4		unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Suspect neon calibration flag is set	5		unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Spare	6		unitless	No		2 bit(s)	Name Value	Name Value

QF2_CRISSDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4						
		FOV	No	No	9	9						
		Band	No	No	3	3						
	Datum											
	Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
	Lunar Intrusion - If set at least one spectrum in the Deep Space moving average was invalidated due to a lunar intrusion.	0			unitless	No		2 bit(s)	Name	Value	Name	Value
											No intrusion	0
											Lunar intrusion on first DS view	1
											Lunar intrusion on second DS view	2
		Intrusion on both DS views.	3									
Spare	2			unitless	No		6 bit(s)	Name	Value	Name	Value	

QF3_CRISSDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4						
		FOR	No	No	30	30						
		FOV	No	No	9	9						
		Band	No	No	3	3						
Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		SDR Quality - 2 (invalid): if Bit Trim Failed = 1; OR FCE Detect = 1; OR Invalid RDR = 1; OR Invalid Radiometric Calibration = 2; OR Invalid Spectral Calibration = 2.	0			unitless	No		2 bit(s)	Name Value	Name	Value
											Good	0
											Degraded	1
											Invalid	2
		Invalid Geolocation - The geolocation information included in the SDR is invalid.	2			unitless	No		1 bit(s)	Name Value	Name	Value
											False	0
											True	1
		Invalid Radiometric Calibration - 2(invalid): if radiometric calibration is not performed or performed with invalid calibration data (e.g., DS Window size = 0).	3			unitless	No		2 bit(s)	Name Value	Name	Value
											Good	0
											Degraded	1
											Invalid	2
		Invalid Spectral Calibration - 2 (Invalid): if FCE corrected = 1; or if Suspect Neon Calibration =1 AND Lamda Monitored Quality = 1.	5			unitless	No		2 bit(s)	Name Value	Name	Value
											Good	0
											Degraded	1
											Invalid	2
		Fringe Count Error Correction Failed.	7			unitless	No		1 bit(s)	Name Value	Name	Value
											False	0
											True	1

QF4_CRISSDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size															
		Scan	Yes	No	4	4															
		FOR	No	No	30	30															
		FOV	No	No	9	9															
		Band	No	No	3	3															
	Datum																				
	Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries								
	Day/Night Indicator				0			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td>Day (Solar Zenith Angle < 90)</td> <td>0</td> <td>Night (Solar Zenith Angle >= 90)</td> <td>1</td> </tr> </table>	Name	Value	Name	Value	Day (Solar Zenith Angle < 90)	0	Night (Solar Zenith Angle >= 90)	1	
	Name	Value	Name	Value																	
	Day (Solar Zenith Angle < 90)	0	Night (Solar Zenith Angle >= 90)	1																	
Invalid RDR Data - The instrument exhibited operational errors and the associated interferogram(s) is excluded from SDR processing.				1			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td>False</td> <td>0</td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value	False	0	True	1		
Name	Value	Name	Value																		
False	0	True	1																		
Fringe Count Error Detection - A significant number of fringes have been missed, shifting the interferogram ZPD outside of a window monitored by the instrument, and the interferogram is excluded from SDR processing.				2			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td>False</td> <td>0</td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value	False	0	True	1		
Name	Value	Name	Value																		
False	0	True	1																		
Bit Trim Failed				3			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td>False</td> <td>0</td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value	False	0	True	1		
Name	Value	Name	Value																		
False	0	True	1																		
Spare				4			unitless	No		4 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </table>	Name	Value	Name	Value						
Name	Value	Name	Value																		

2.6.3 CrIS SDR HDF5 Details

Figure 2.6.3-1 provides the details on the content and data types of the CrIS SDR. This UML diagram provides details at the product level only. In addition to this UML diagram, refer to Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

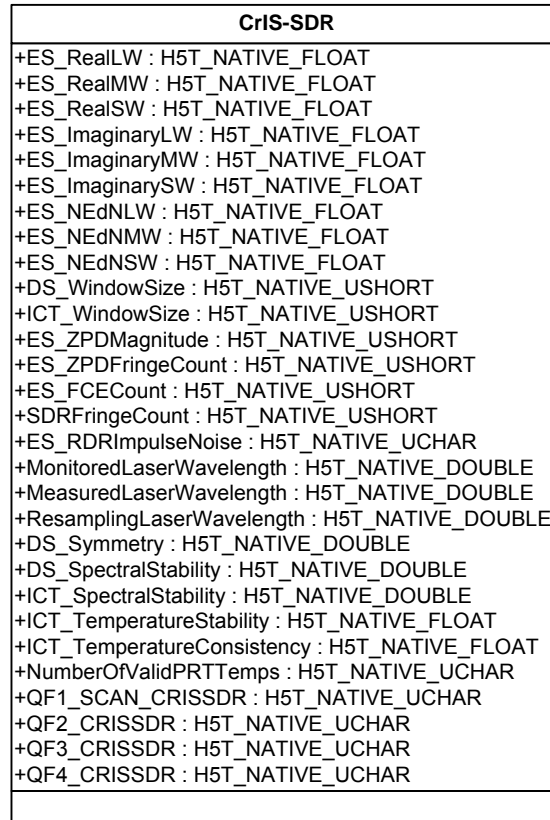


Figure 2.6.3-1, CrIS SDR UML Diagram

2.6.4 CrIS SDR Metadata Details

The HDF5 metadata elements associated with the CrIS SDR are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The CrIS SDR metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the CrIS SDR, the items listed in Table 2.6.4-1, CrIS SDR Quality Summary Metadata are included as name/value pair items under the granule level metadata attribute “N_Quality_Summary”. The listed

name/value pair items in the table are the granule level quality summary flags for the CrIS SDRs.

Table 2.6.4-1, CrIS SDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary CrIS RDR Quality	0 – 100 %	Percentage of good quality earth view observations in granule	
Summary CrIS SDR Quality	0 – 100 %	Percentage of good quality earth view observations in granule	
Invalid Radiometric Calibration Yield	0 – 100 %	Percentage of calibrations that are invalid - Indicates the quality of the radiometric calibration	

2.6.5 CrIS SDR Geolocation Content Summary

Table 2.6.5-1, CrIS SDR Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
FORTime	Time for each FOR in IET (1/1/1958)	64-bit integer	[N*4, 30]	[4, 30]	microsecond
StartTime	Starting time of scan in IET (1/1/1958)	64-bit integer	[N*4]	[4]	microsecond
MidTime	Mid time of scan in IET (1/1/1958)	64-bit integer	[N*4]	[4]	microsecond
Latitude	Latitude (positive North) of the geolocated FOV center	32-bit floating point	[N*4, 30, 9]	[4, 30, 9]	degree
Longitude	Longitude (positive East) of the geolocated FOV center	32-bit floating point	[N*4,30, 9]	[4, 30, 9]	degree
SolarZenithAngle	Zenith angle of sun at the geolocated FOV center	32-bit floating point	[N*4, 30, 9]	[4, 30, 9]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at the geolocated FOV center	32-bit floating point	[N*4, 30, 9]	[4, 30, 9]	degree

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
SatelliteZenithAngle	Zenith angle to satellite at the geolocated FOV center	32-bit floating point	[N*4, 30, 9]	[4, 30, 9]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to satellite at the geolocated FOV center	32-bit floating point	[N*4, 30, 9]	[4, 30, 9]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*4, 30, 9]	[4, 30, 9]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*4, 30, 9]	[4, 30, 9]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	32-bit floating point	[N*4, 3]	[4, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	32-bit floating point	[N*4, 3]	[4, 3]	m/s
SCAttitude	Spacecraft attitude with respect to the Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the mid-time of scan	32-bit floating point	[N*4, 3]	[4, 3]	arcsecond
QF1_CRISSDRGEO	Attitude and Ephemeris availability status	unsigned 8-bit char	[N*4]	[4]	unitless

2.6.6 CrIS SDR Geolocation Product Profile

Table 2.6.6-1, CrIS SDR Geolocation Product Profile

Name	Data Size	Dimensions																		
FORTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size													
		Scan	Yes	No	4	4														
		FOR	No	No	30	30														
		Datum																		
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries									
Time for each FOR in IET (1/1/1958)	0			microsecond	No		64-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT64_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT64_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT64_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT64_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT64_FILL	-999	MISS_INT64_FILL	-998	ERR_INT64_FILL	-995	VDNE_INT64_FILL	-993	Name	Value
Name	Value																			
NA_INT64_FILL	-999																			
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StartTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size													
		Scan	Yes	No	4	4														
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MidTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size													
		Scan	Yes	No	4	4														
		Datum																		
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries									

		Mid time of scan in IET (1/1/1958)	0			microsecond	No		64-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT64_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT64_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT64_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT64_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT64_FILL	-999	MISS_INT64_FILL	-998	ERR_INT64_FILL	-995	VDNE_INT64_FILL	-993		
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Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																
		Scan	Yes	No	4	4																
		FOR	No	No	30	30																
		FOV	No	No	9	9																
		Datum																				
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries													
Latitude (positive North) of the geolocated FOV center	0	-90	90	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3				
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		Scan	Yes	No	4	4																
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Longitude (positive East) of the geolocated FOV center	0	-180	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3				
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SolarZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																
		Scan	Yes	No	4	4																
		FOR	No	No	30	30																
		FOV	No	No	9	9																

		Datum																																	
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																							
		Zenith angle of sun at the geolocated FOV center	0	0	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value												
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Name	Value																																		
SolarAzimuthAngle	4byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td>Scan</td> <td>Yes</td> <td>No</td> <td>4</td> <td>4</td> </tr> <tr> <td>FOR</td> <td>No</td> <td>No</td> <td>30</td> <td>30</td> </tr> <tr> <td>FOV</td> <td>No</td> <td>No</td> <td>9</td> <td>9</td> </tr> </tbody> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Scan	Yes	No	4	4	FOR	No	No	30	30	FOV	No	No	9	9									
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		Azimuth angle of sun (measured clockwise positive from North) at the geolocated FOV center	0	-180	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value												
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		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																							
		Zenith angle to satellite at the geolocated FOV center	0	0	~70	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value																
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										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
SatelliteAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan	Yes	No	4	4							
		FOR	No	No	30	30							
		FOV	No	No	9	9							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Azimuth angle (measured clockwise positive from North) to satellite at the geolocated FOV center	0	-180	180	degree	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3				
Height	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan	Yes	No	4	4							
		FOR	No	No	30	30							
		FOV	No	No	9	9							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Ellipsoid-Geoid separation	0			meter	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3				
SatelliteRange	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan	Yes	No	4	4							
		FOR	No	No	30	30							
		FOV	No	No	9	9							
		Datum											
		Description	Datum	Unscaled	Unscaled	Measurement	Scaled	Scale	Data	Fill Values		Legend	

		Offset	Valid Range Min	Valid Range Max	Units		Factor Name	Type			Entries		
		0			meter	No		32-bit floating point	Name	Value	Name	Value	
									NA_FLOAT32_FILL	-999.9			
									MISS_FLOAT32_FILL	-999.8			
									ERR_FLOAT32_FILL	-999.5			
									VDNE_FLOAT32_FILL	-999.3			
SCPosition	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4							
		ECRCoordinate	No	No	3	3							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	0			meter	No		32-bit floating point	Name	Value	Name	Value		
									NA_FLOAT32_FILL	-999.9			
									MISS_FLOAT32_FILL	-999.8			
									ERR_FLOAT32_FILL	-999.5			
									VDNE_FLOAT32_FILL	-999.3			
SCVelocity	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4							
		ECRCoordinate	No	No	3	3							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	0			m/s	No		32-bit floating point	Name	Value	Name	Value		
									NA_FLOAT32_FILL	-999.9			
									MISS_FLOAT32_FILL	-999.8			
									ERR_FLOAT32_FILL	-999.5			
									VDNE_FLOAT32_FILL	-999.3			
SCAttitude	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	4	4							
		GRFCoordinate	No	No	3	3							

Datum											
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Spacecraft attitude with respect to the Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the mid-time of scan	0			arcsecond	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		

Table 2.6.6-2, CrIS SDR Geolocation Product Profile - Quality Flags

Name	Data Size	Dimensions											
QF1_CRISDRGEO	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan	Yes	No	4	4							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name	Value	Name	Value
										Nominal - E&A data available	0		
										Missing Data <= 1 Small Gap	1		
										Small Gap < Missing Data < Granule Boundary	2		
										Missing Data >= 3 Granule Boundary	3		
Spare	2				unitless	No	6 bit(s)	Name	Value	Name	Value		

2.6.7 CrIS SDR Geolocation HDF5 Details

Figure 2.6.7-1 provides the details on the content and data types of the CrIS SDR Geolocation. This UML diagram provides details at the product level only. In addition to this UML diagram, refer to Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

CrIS-SDR-GEO
+FORTime : H5T_NATIVE_LLONG
+StartTime : H5T_NATIVE_LLONG
+MidTime : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_FLOAT
+SatelliteRange : H5T_NATIVE_FLOAT
+SCPosition : H5T_NATIVE_FLOAT
+SCVelocity : H5T_NATIVE_FLOAT
+SCAttitude : H5T_NATIVE_FLOAT
+QF1_CRISDRGEO : H5T_NATIVE_UCHAR

Figure 2.6.7-1, CrIS SDR Geolocation UML Diagram

2.6.8 CrIS SDR Geolocation Metadata Details

There are no quality summary metadata items in the CrIS SDR Geolocation.

2.7 Advanced - Data Collection System SDR

Data Mnemonic	SDRE-ADSD-C0030
(NPOESS Only)	
Description/ Purpose	EDFCB3-TBR-8783 Advanced Data Collection System (A-DCS) telemetry converted into engineering units.
File-Naming Construct	See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.
File Size	EDFCB3-TBD-8784
File Format Type	HDF5
Data Content and Data Format	EDFCB3-TBD-8786

2.7.1 A-DCS SDR Product Profile

EDFCB3-TBD-8787

2.7.2 A-DCS SDR HDF5 Details

EDFCB3-TBD-8788

2.8 DELETED

2.9 Ozone Mapping and Profiler Suite (OMPS) Nadir Profile SDRs

Data Mnemonic SDRE-OMPS-C0030 Nadir Profile (Science)
SDRE-OMPS-C0031 Calibration
GEOE-OMPS-C0030 Geolocation - ellipsoid

**Description/
Purpose** The OMPS raw sensor data is decommutated, corrected, and calibrated by the SDR software and then stored in the Nadir Profile (NP) SDR product. In addition to the data needed to support IP/EDR generation, the NP SDR includes a number of other parameters described in more detail in Section 2.9.1, OMPS Nadir Profile SDR Format.

In addition to the production of the NP SDR, the generation of special Calibration SDRs supports the on-going, continuous calibration of the NP sensor. The Calibration SDR is described in Section 2.9.2, OMPS Nadir Profile Calibration SDR Format.

The OMPS nadir sensor uses a wide field-of-view push-broom telescope to feed two separate spectrometers. The nadir profile spectrometer measures the scene radiance between approximately 250 and 310 nanometers (nm) with a resolution of 1 nm sampled every 0.42 nm.

In the parameters described below certain array dimensions are sized to a maximum expected value to allow some flexibility in sensor and algorithm configuration. For example, the actual number of Integrated Field of Views (IFOVs), Swaths, and Spectral Pixels could change based on the configuration. In the case where actual data does not complete the array, fill values (Does Not Exist) are used. For these three dimensions, parameters available in the product indicate the number of actual values to be interpreted.

Example geospatial coverage: The across-track pixels are binned into a single IFOV within a single swath (time integration), per granule. The IFOV is 250 km cross track with a 250 km along track. The 250km along track interval is a result of the pixel extent combined with the spacecraft motion during the 37.44 second integration time.

The OMPS NP SDR is used in the generation of the Ozone EDR/IPs.

**File-Naming
Construct** See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.

File Size Science: 43.97 KiB
Science Geolocation: 2.04 KiB

Calibration: 108,152.11 KiB

Calibration Geolocation: 12.90 KiB

Sizes are for a single granule without HDF5 overhead.

File Format Type HDF5

Data Content and Data Format The NP SDR format is described in Section 2.9.1, OMPS NP SDR Format, and the NP Calibration SDR format is described in Section 2.9.2, OMPS NP Calibration SDR Format.

2.9.1 OMPS NP SDR Format

The OMPS NP SDR format is described in the following subparagraphs.

2.9.1.1 OMPS NP SDR Data Content Summary

The OMPS NP SDR product structure contains the data arrays shown below in Table 2.9.1.1-1, OMPS NP SDR Data Content Summary.

Table 2.9.1.1-1, OMPS NP SDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SmearDataEarth	Raw smear counts of Earth image	32-bit floating point	[N*5, 1, 200]	[5, 1, 200]	count
RadianceEarth	Calibrated Earth View Radiances	32-bit floating point	[N*5, 5, 200]	[5, 5, 200]	W/(cm ³ *sr)
Wavelengths	Wavelengths used in SDR processing (wref)	64-bit floating point	[N*5, 200]	[5, 200]	nanometer
SolarFlux	Reference solar flux from calibration database (rsf_piece)	32-bit floating point	[N*5, 200]	[5, 200]	W/cm ³
Bias1	Average electronics bias CCD Side 1	32-bit floating point	[N]	[1]	count
DarkCurrentEarth	Dark current in earth data (dark_piece)	32-bit floating point	[N*6, 200]	[6, 200]	count
DarkExposeEarth	Integration time for dark data (expose_dark)	64-bit floating point	[N]	[1]	second

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
Cal	Radiometric calibration	32-bit floating point	[N*5, 200]	[5, 200]	W/(cm ³ *sr)
NumberOfSwaths	Number of actual swaths in granule	16-bit integer	[N]	[1]	unitless
NumberOfIFOVs	Number of actual IFOVs	16-bit integer	[N]	[1]	unitless
NumberOfSpectralPixels	Number of actual spectral pixels	16-bit integer	[N]	[1]	unitless
LinearityTblVersion	Version and Profile ID of on-board Linearity Table from RDR	unsigned 16-bit integer	[N*2]	[2]	unitless
GainTblVersion	Version and Profile ID of on-board Gain Table from RDR	unsigned 16-bit integer	[N*2]	[2]	unitless
BadCal	Cal factor is out of date (greater than 28 days old)	unsigned 8-bit char	[N]	[1]	unitless
SunGlint	Sun glint indication (scattering angle and surface type thresholds)	unsigned 8-bit char	[N*5, 5]	[5, 5]	unitless
SolarEclipse	All or part of the IFOV is affected by a solar eclipse, umbra or penumbra viewing.	unsigned 8-bit char	[N*5, 5]	[5, 5]	unitless
WaveFlag	Wavelength limits exceeded	unsigned 8-bit char	[N*5, 5]	[5, 5]	unitless
RadFlag	Ratio of the median radiance per spatial FOV to the maximum	32-bit floating point	[N*5, 5]	[5, 5]	unitless
NPLinearCorrection	Indicates Linearity Correction performed in flight	unsigned 8-bit char	[N*5]	[5]	unitless
SAA	Spacecraft within South Atlantic Anomaly (extent in percent based on Climatological data)	unsigned 8-bit char	[N*5]	[5]	unitless
QualityEarth	Earth processing reliability (cumulative relative quality indicator count)	16-bit integer	[N*5]	[5]	unitless

2.9.1.2 OMPS NP SDR – Product Profile Data

The OMPS NP SDR data array structures are shown below in Table 2.9.1.2-1 OMPS NP SDR Product Profile.

Table 2.9.1.2-1, OMPS NP SDR Product Profile

Name	Data Size	Dimensions																														
SmearDataEarth	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																										
		Swath	Yes	No	5	5																										
		CCD	No	No	1	1																										
		SpectralPixel	No	No	200	200																										
		Datum																														
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																					
		Raw smear counts of Earth image	0			count	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3				
		Name	Value	Name	Value																											
		NA_FLOAT32_FILL	-999.9																													
		MISS_FLOAT32_FILL	-999.8																													
ERR_FLOAT32_FILL	-999.5																															
VDNE_FLOAT32_FILL	-999.3																															
RadianceEarth	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																										
		Swath	Yes	No	5	5																										
		Ifov	No	No	5	5																										
		SpectralPixel	No	No	200	200																										
		Datum																														
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																					
		Calibrated Earth View Radiances	0			W/(cm ³ •sr)	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3				
		Name	Value	Name	Value																											
		NA_FLOAT32_FILL	-999.9																													
		MISS_FLOAT32_FILL	-999.8																													
ERR_FLOAT32_FILL	-999.5																															
VDNE_FLOAT32_FILL	-999.3																															
Wavelengths	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																										
		Ifov	Yes	No	5	5																										
		SpectralPixel	No	No	200	200																										
		Datum																														
		Description	Datum Offset	Unscaled Valid	Unscaled Valid	Measurement Units	Scaled	Scale Factor	Data Type	Fill Values	Legend Entries																					

				Range Min	Range Max			Name					
		Wavelengths used in SDR processing (wref)	0			nanometer	No		64-bit floating point	Name	Value	Name	Value
										NA_FLOAT64_FILL	-999.9		
										MISS_FLOAT64_FILL	-999.8		
										ERR_FLOAT64_FILL	-999.5		
										VDNE_FLOAT64_FILL	-999.3		
SolarFlux	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		IFOV	Yes	No	5	5							
		SpectralPixel	No	No	200	200							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values			Legend Entries
		Reference solar flux (rsf_piece)	0			W/cm^3	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
Bias1	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values			Legend Entries
		Average electronics bias CCD Side 1	0			count	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
DarkCurrentEarth	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		IFOV	Yes	No	6	6							
		SpectralPixel	No	No	200	200							
		Datum											
		Description	Datum Offset	Unscaled Valid	Unscaled Valid	Measurement Units	Scaled	Scale Factor	Data Type	Fill Values			Legend Entries

				Range Min	Range Max			Name					
		Dark current in earth data (dark_piece)	0			count	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
DarkExposeEarth	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Integration time for dark data (expose_dark)	0			second	No		64-bit floating point	Name	Value	Name	Value
										NA_FLOAT64_FILL	-999.9		
										MISS_FLOAT64_FILL	-999.8		
										ERR_FLOAT64_FILL	-999.5		
										VDNE_FLOAT64_FILL	-999.3		
Cal	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Ifov	Yes	No	5	5							
		SpectralPixel	No	No	200	200							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Radiometric calibration	0			W/(cm^3*sr)	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
NumberOfSwaths	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	

			Min	Max										
		Number of actual swaths in granule	0			unitless	No			16-bit integer	Name	Value	Name	Value
											NA_INT16_FILL	-999		
											MISS_INT16_FILL	-998		
											ERR_INT16_FILL	-995		
											VDNE_INT16_FILL	-993		
NumberOfIFOVs	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	1	1								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values			Legend Entries	
		Number of actual IFOVs	0			unitless	No		16-bit integer	Name	Value	Name	Value	
										NA_INT16_FILL	-999			
										MISS_INT16_FILL	-998			
										ERR_INT16_FILL	-995			
										VDNE_INT16_FILL	-993			
NumberOfSpectralPixels	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	1	1								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values			Legend Entries	
		Number of actual spectral pixels	0			unitless	No		16-bit integer	Name	Value	Name	Value	
										NA_INT16_FILL	-999			
										MISS_INT16_FILL	-998			
										ERR_INT16_FILL	-995			
										VDNE_INT16_FILL	-993			
LinearityTblVersion	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	2	2								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values			Legend Entries	
		Version and	0			unitless	No		Unsigned	Name	Value	Name	Value	

		Profile ID of on-board Linearity Table from RDR							16-bit integer	<table border="1"> <tr><td>NA_INT16_FILL</td><td>-999</td></tr> <tr><td>MISS_INT16_FILL</td><td>-998</td></tr> <tr><td>ERR_INT16_FILL</td><td>-995</td></tr> <tr><td>VDNE_INT16_FILL</td><td>-993</td></tr> </table>	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993																																																				
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GainTblVersion	2byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> <th></th> </tr> <tr> <td>Granule</td> <td>Yes</td> <td>No</td> <td>2</td> <td>2</td> <td></td> </tr> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size		Granule	Yes	No	2	2		<table border="1"> <tr> <th colspan="10">Datum</th> </tr> <tr> <th>Description</th> <th>Datum Offset</th> <th>Unscaled Valid Range Min</th> <th>Unscaled Valid Range Max</th> <th>Measurement Units</th> <th>Scaled</th> <th>Scale Factor Name</th> <th>Data Type</th> <th colspan="2">Fill Values</th> <th>Legend Entries</th> </tr> <tr> <td>Version and Profile ID of on-board Gain Table from RDR</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>Unsigned 16-bit integer</td> <td> <table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td>NA_INT16_FILL</td><td>-999</td></tr> <tr><td>MISS_INT16_FILL</td><td>-998</td></tr> <tr><td>ERR_INT16_FILL</td><td>-995</td></tr> <tr><td>VDNE_INT16_FILL</td><td>-993</td></tr> </table> </td> <td> <table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td></td><td></td></tr> </table> </td> </tr> </table>					Datum										Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	Version and Profile ID of on-board Gain Table from RDR	0			unitless	No		Unsigned 16-bit integer	<table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td>NA_INT16_FILL</td><td>-999</td></tr> <tr><td>MISS_INT16_FILL</td><td>-998</td></tr> <tr><td>ERR_INT16_FILL</td><td>-995</td></tr> <tr><td>VDNE_INT16_FILL</td><td>-993</td></tr> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td></td><td></td></tr> </table>	Name	Value				
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Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																																																												
Version and Profile ID of on-board Gain Table from RDR	0			unitless	No		Unsigned 16-bit integer	<table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td>NA_INT16_FILL</td><td>-999</td></tr> <tr><td>MISS_INT16_FILL</td><td>-998</td></tr> <tr><td>ERR_INT16_FILL</td><td>-995</td></tr> <tr><td>VDNE_INT16_FILL</td><td>-993</td></tr> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td></td><td></td></tr> </table>	Name	Value																																																	
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SunGlint	1byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> <th></th> </tr> <tr> <td>Swath</td> <td>Yes</td> <td>No</td> <td>5</td> <td>5</td> <td></td> </tr> <tr> <td>Ifov</td> <td>No</td> <td>No</td> <td>5</td> <td>5</td> <td></td> </tr> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size		Swath	Yes	No	5	5		Ifov	No	No	5	5		<table border="1"> <tr> <th colspan="10">Datum</th> </tr> <tr> <th>Description</th> <th>Datum Offset</th> <th>Unscaled Valid Range Min</th> <th>Unscaled Valid Range Max</th> <th>Measurement Units</th> <th>Scaled</th> <th>Scale Factor Name</th> <th>Data Type</th> <th colspan="2">Fill Values</th> <th>Legend Entries</th> </tr> <tr> <td>Sun glint indication</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>unsigned 8-bit</td> <td> <table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td></td><td></td></tr> </table> </td> <td> <table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td></td><td></td></tr> </table> </td> </tr> </table>					Datum										Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	Sun glint indication	0			unitless	No		unsigned 8-bit	<table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td></td><td></td></tr> </table>	Name	Value			<table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td></td><td></td></tr> </table>	Name	Value				
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		(scattering angle and surface type thresholds)								char	NA_UINT8_FILL	255	False	0	
											MISS_UINT8_FILL	254	True	1	
											ERR_UINT8_FILL	251			
											VDNE_UINT8_FILL	249			
SolarEclipse	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		Swath	Yes	No	5	5									
		IFOV	No	No	5	5									
		Datum													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			
All or part of the IFOV is affected by a solar eclipse, umbra or penumbra viewing.	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value				
								NA_UINT8_FILL	255	False	0				
								MISS_UINT8_FILL	254	True	1				
								ERR_UINT8_FILL	251						
								VDNE_UINT8_FILL	249						
WaveFlag	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		Swath	Yes	No	5	5									
		IFOV	No	No	5	5									
		Datum													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			
Wavelength limits exceeded	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value				
								NA_UINT8_FILL	255	False	0				
								MISS_UINT8_FILL	254	True	1				
								ERR_UINT8_FILL	251						
								VDNE_UINT8_FILL	249						
RadFlag	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		Swath	Yes	No	5	5									
		IFOV	No	No	5	5									
		Datum													
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			

			Min	Max										
		Ratio of the median radiance per spatial FOV to the maximum	0			unitless	No		32-bit floating point					
										Name	Value	Name	Value	
										NA_FLOAT32_FILL	-999.9			
										MISS_FLOAT32_FILL	-999.8			
										ERR_FLOAT32_FILL	-999.5			
										VDNE_FLOAT32_FILL	-999.3			
NPLinearCorrection	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Swath	Yes	No	5	5								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Linearity Correction performed in flight	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value	
								NA_UINT8_FILL	255	False	0			
								MISS_UINT8_FILL	254	True	1			
								ERR_UINT8_FILL	251					
								VDNE_UINT8_FILL	249					
SAA	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Swath	Yes	No	5	5								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Spacecraft within South Atlantic Anomaly (extent in percent based on Climatological data)	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value	
										0% <= SAA <= 10%	0			
										10% < SAA <= 20%	1			
										20% < SAA <= 30%	2			
										30% < SAA <= 40%	3			
										40% < SAA <= 50%	4			

												50% < SAA <=	5
												60% < SAA <=	6
												70% < SAA <=	7
												80% < SAA	8
QualityEarth	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	5	5							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Earth processing reliability (cumulative relative quality indicator count)	0			unitless	No		16-bit integer	Name	Value	Name	Value
										NA_INT16_FILL	-999		
										MISS_INT16_FILL	-998		
										ERR_INT16_FILL	-995		
										VDNE_INT16_FILL	-993		

2.9.1.3 OMPS NP SDR HDF5 Details

Figure 2.9.1.3-1, OMPS NP SDR UML Diagram, provides the details on the content and data types of the OMPS NP SDR. These UML diagrams provide details at the granule level only. In addition to these UML diagrams, refer to Section 2.1, Sensor Data Records and Temperature Data Records HDF5 Details, Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

The OMPS NP SDR within the HDF5 files can be found within the Data Products group with the group name of OMPS-NP-SDR. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

OMPS-NP-SDR
+SmearDataEarth : H5T_NATIVE_FLOAT
+RadianceEarth : H5T_NATIVE_FLOAT
+Wavelengths : H5T_NATIVE_DOUBLE
+SolarFlux : H5T_NATIVE_FLOAT
+Bias1 : H5T_NATIVE_FLOAT
+DarkCurrentEarth : H5T_NATIVE_FLOAT
+DarkExposeEarth : H5T_NATIVE_DOUBLE
+Cal : H5T_NATIVE_FLOAT
+NumberOfSwaths : H5T_NATIVE_SHORT
+NumberOfFOVs : H5T_NATIVE_SHORT
+NumberOfSpectralPixels : H5T_NATIVE_SHORT
+LinearityTblVersion : H5T_NATIVE_USHORT
+GainTblVersion : H5T_NATIVE_USHORT
+BadCal : H5T_NATIVE_UCHAR
+SunGlint : H5T_NATIVE_UCHAR
+SolarEclipse : H5T_NATIVE_UCHAR
+WaveFlag : H5T_NATIVE_UCHAR
+RadFlag : H5T_NATIVE_FLOAT
+NPLinearCorrection : H5T_NATIVE_UCHAR
+SAA : H5T_NATIVE_UCHAR
+QualityEarth : H5T_NATIVE_SHORT

Figure 2.9.1.3-1, OMPS NP SDR UML Diagram

2.9.1.4 OMPS NP SDR HDF5 Metadata Details

The HDF5 metadata elements associated with the OMPS NP SDR are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The OMPS NP SDR metadata includes all common metadata at the root, product, aggregation, and granule levels. In addition to the common metadata items for this product, Table 2.9.1.4-1, OMPS NP SDR N_Quality_Summary Granule Level Metadata Values, provides the following items as name/value pairs under the granule level metadata attribute

“N_Quality_Summary”.

Table 2.9.1.4-1, OMPS NP SDR N_Quality_Summary Granule Level Metadata Values

N_Quality_Summary		
Name	Value	Description
Pixel	0 – 100 %	Percentage of good pixels

2.9.1.5 OMPS NP SDR Geolocation Content Summary

The OMPS NP SDR geolocation data arrays structures are summarized below in Table 2.9.1.5-1, OMPS NP SDR Geolocation Data Array Summary.

Table 2.9.1.5-1, OMPS NP SDR Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime	Starting Time of Swath in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
MidTime	Mid Time of Swath in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
Latitude	Latitude of each IFOV (positive North)	32-bit floating point	[N*5, 5]	[5, 5]	degree
Longitude	Longitude of each IFOV (positive East)	32-bit floating point	[N*5, 5]	[5, 5]	degree
LatitudeCorners	Latitude of each IFOV Corner – Array starts at upper right and proceeds clockwise	32-bit floating point	[N*5, 5, 4]	[5, 5, 4]	degree
LongitudeCorners	Longitude of each IFOV Corner - Array starts at upper right and proceeds clockwise	32-bit floating point	[N*5, 5, 4]	[5, 5, 4]	degree
SolarZenithAngle	Zenith angle of sun at each IFOV position	32-bit floating point	[N*5, 5]	[5, 5]	degree

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each IFOV position	32-bit floating point	[N*5, 5]	[5, 5]	degree
SatelliteZenithAngle	Zenith angle to satellite at each IFOV position	32-bit floating point	[N*5, 5]	[5, 5]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each IFOV position	32-bit floating point	[N*5, 5]	[5, 5]	degree
RelativeAzimuthAngle	Difference between solar and satellite azimuth angles at each IFOV position (solar – satellite)	32-bit floating point	[N*5, 5]	[5, 5]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*5, 5]	[5, 5]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*5, 5]	[5, 5]	meter
MoonVector	Lunar position in Spacecraft Coordinates at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	meter
SunVector	Solar position in Spacecraft Coordinates at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	m/s
SCAttitude	Spacecraft attitude with respect to the Geodetic Reference Frame (roll, pitch, yaw) at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	arcsecond

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
NumberOfSwaths	Number of actual swaths in granule	16-bit integer	[N]	[1]	unitless
NumberOfIFOVs	Number of actual IFOVs	16-bit integer	[N]	[1]	unitless
QF1_OMPSNPGE0	Attitude/Ephemeris availability status	unsigned 8-bit char	[N*5]	[5]	unitless

2.9.1.6 OMPS NP SDR Geolocation Product Profile

The OMPS NP SDR geolocation data array structures are shown below in Table 2.9.1.6-1, OMPS NP SDR Geolocation Product Profile and Table 2.9.1.6-2, OMPS NP SDR Product Profile – Quality Flags.

Table 2.9.1.6-1, OMPS NP SDR Geolocation Product Profile

Fields																								
Name	Data Size	Dimensions																						
StartTime	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Swath	Yes	No	5	5																		
		Datum																						
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries													
		Starting Time of Swath in IET (1/1/1958)	0			microsecond	No		64-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT64_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT64_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT64_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT64_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT64_FILL	-999	MISS_INT64_FILL	-998	ERR_INT64_FILL	-995	VDNE_INT64_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		Name	Value
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VDNE_INT64_FILL	-993																							
Name	Value																							
Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Swath	Yes	No	5	5																		
		Ifov	No	No	5	5																		
		Datum																						
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries													
Latitude of	0	-90	90	degree	No		32-bit	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value			<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		Name	Value								
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		each IFOV (positive North)							floating point	NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
Longitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Swath	Yes	No	5	5						
		IFOV	No	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Longitude of each IFOV (positive East)	0	-180	180	degree	No		32-bit floating point	Name	Value	Name	Value	
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
LatitudeCorners	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Swath	Yes	No	5	5						
		IFOV	No	No	5	5						
		Corner	No	No	4	4						
		Datum										
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
Latitude of each IFOV corner – Array starts at upper right and proceeds clockwise	0	-90	90	degree	No		32-bit floating point	Name	Value	Name	Value	
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
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LongitudeCorners	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Swath	Yes	No	5	5						
		IFOV	No	No	5	5						
		Corner	No	No	4	4						
		Datum										

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																																																															
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		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Zenith angle to satellite at each IFOV position	0	0	~70	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
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SatelliteAzimuthAngle	4byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size										
		Swath	Yes	No	5	5						
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		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Azimuth angle (measured clockwise positive from North) to Satellite at each IFOV position	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
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										VDNE_FLOAT32_FILL	-999.3	
RelativeAzimuthAngle	4byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size										
		Swath	Yes	No	5	5						
		Ifov	No	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Difference between solar and satellite azimuth angles	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	

		at each IFOV position (solar - satellite)									ERR_FLOAT32_FILL	-999.5	
											VDNE_FLOAT32_FILL	-999.3	
Height	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	5	5							
		IFOV	No	No	5	5							
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		Ellipsoid-Geoid separation	0			meter	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
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SatelliteRange	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	5	5							
		IFOV	No	No	5	5							
		Datum											
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		Line of sight distance from the ellipsoid intersection to the satellite	0			meter	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
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MoonVector	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	5	5							
		SCCoordinate	No	No	3	3							
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		Spacecraft attitude with respect to the Geodetic Reference Frame (roll, pitch, yaw) at MidTime .	0			arcsecond	No		32-bit floating point	<table border="1"> <tr> <th>Name</th> <th>Value</th> </tr> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <tr> <th>Name</th> <th>Value</th> </tr> </table>	Name	Value
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										VDNE_INT16_FILL	-993	
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								MISS_INT16_FILL	-998			
								ERR_INT16_FILL	-995			
								VDNE_INT16_FILL	-993			

Table 2.9.1.6-2, OMPS NP SDR Geolocation Product Profile – Quality Flags

Name	Data Size	Dimensions										
QF1_OMPSNPGE0	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Swath	Yes	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name	Value	Name
										Nominal - E&A data available	0	
										Missing Data <= 1 Small Gap	1	
										Small Gap < Missing Data < Granule Boundary	2	
										Missing Data >= 3 Granule Boundary	3	
Spare	2				unitless	No	6	Name	Value	Name	Value	

									bit(s)		
--	--	--	--	--	--	--	--	--	--------	--	--

2.9.1.7 OMPS NP SDR Geolocation HDF5 Details

The OMPS NP SDR Geolocation is based on a simple spatial average over the geometric cell bounds, regardless of pixel sampling. Geolocation is reported on the ellipsoid. Figure 2.9.1.7-1, OMPS NP SDR Geolocation UML Diagram, provides details on the contents and data types of the OMPS NP SDR geolocation.

OMPS-NP-GEO
+StartTime : H5T_NATIVE_LLONG
+MidTime : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+LatitudeCorners : H5T_NATIVE_FLOAT
+LongitudeCorners : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+RelativeAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_FLOAT
+SatelliteRange : H5T_NATIVE_FLOAT
+MoonVector : H5T_NATIVE_FLOAT
+SunVector : H5T_NATIVE_FLOAT
+SCPosition : H5T_NATIVE_FLOAT
+SCVelocity : H5T_NATIVE_FLOAT
+SCAttitude : H5T_NATIVE_FLOAT
+NumberOfSwaths : H5T_NATIVE_SHORT
+NumberOfFOVs : H5T_NATIVE_SHORT
+QF1_OMPSNPGeo : H5T_NATIVE_UCHAR

Figure 2.9.1.7-1, OMPS NP SDR Geolocation UML Diagram

2.9.1.8 OMPS NP SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the OMPS NP SDR Geolocation are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. There are no additional metadata elements or granule level quality flags for this geolocation.

2.9.2 OMPS NP Calibration SDR

The OMPS NP calibration SDR dataset and metadata formats are described in the following subparagraphs.

2.9.2.1 OMPS NP Calibration SDR Data Content Summary

The OMPS NP Calibration SDR product structure contains the data arrays shown below in Table 2.9.2.1-1, OMPS NP Calibration SDR Data Array Summary.

Table 2.9.2.1-1, OMPS NP Calibration SDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
Bias1	Average electronics bias CCD side 1	32-bit floating point	[N]	[1]	count
DarkData	Dark current corrected coadded counts	32-bit floating point	[N*364, 390]	[364, 390]	count
DarkCurrentExpose	Exposure time of dark current (expose_dark)	64-bit floating point	[N]	[1]	second
LampExpose	Exposure time of lamp counts (expose_lamp)	64-bit floating point	[N]	[1]	second
BadPixelMap	Map of pixels used for solar data (badpix)	32-bit floating point	[N*200, 370]	[200, 370]	unitless
WavelengthMap	Wavelength map (wmap)	64-bit floating point	[N*200, 370]	[200, 370]	unitless
Flat	Local relative normalized radiometric sensitivities	32-bit floating point	[N*200, 370]	[200, 370]	unitless
NumberOfWorkingSolar	Number of solar frames from working diffuser	16-bit integer	[N]	[1]	unitless
NumberOfReferenceSolar	Number of solar frames from reference diffuser	16-bit integer	[N]	[1]	unitless
NumberOfDark	Number of dark frames (images)	16-bit integer	[N]	[1]	unitless
NumberOfLamp	Number of lamp frames (images)	16-bit integer	[N]	[1]	unitless
NumberOfCoaddsSolar	Number of Co-adds during solar calibration	16-bit integer	[N]	[1]	unitless
NumberOfCoaddsDark	Number of coadds during Dark calibration	16-bit integer	[N]	[1]	unitless
NumberOfCoaddsLamp	Number of coadds during Lamp calibration.	16-bit integer	[N]	[1]	unitless

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
CCD	Count rate of sun (ccd)	64-bit floating point	[N*200, 370]	[200, 370]	count/second
TotalSolarExpose	Total Solar Exposure time (total_sol_expose)	64-bit floating point	[N]	[1]	second
RSFCounts	Reference solar counts (rsf_data)	32-bit floating point	[N*200, 370]	[200, 370]	count
RSFExpose	Reference solar exposure time (rsf_expose)	32-bit floating point	[N]	[1]	second
RawSolar	Raw Solar Radiances	32-bit floating point	[N*27, 364, 200]	[27, 364, 200]	count
SmearDataSolar	Smear Data Solar Radiances	32-bit floating point	[N*27, 200, 2]	[27, 200, 2]	count
SolarBeta1	Angle between orbital plane and sun at start of solar observation	32-bit floating point	[N*27]	[27]	degree
SolarBeta2	Angle between orbital plane and sun at end of solar observation	32-bit floating point	[N*27]	[27]	degree
DiffIncinAngle	Angle from normal of incident solar flux	32-bit floating point	[N*27]	[27]	degree
DiffuserPositionSolar	Starting and ending pixel column for each solar measurement	16-bit integer	[N*27, 2]	[27, 2]	unitless
YearSolar	Year of Solar Observation	32-bit integer	[N*27]	[27]	year
DaySolar	Day of Year for Solar Observation	32-bit integer	[N*27]	[27]	day
DiffuserSurfaceSolar	Diffuser Surface used for Solar Calibration	32-bit integer	[N*27]	[27]	unitless
TccdNPSolar	CCD Temperature	16-bit integer	[N*27]	[27]	count
TmotnadSolar	Motor Temperature at Nadir	16-bit integer	[N*27]	[27]	count

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
TlmpnadSolar	Lamp Temperature at Nadir	16-bit integer	[N*27]	[27]	count
TradnadSolar	Radiator Temperature at Nadir	16-bit integer	[N*27]	[27]	count
Tel1nadSolar	Electronics 1 Temperature at Nadir	16-bit integer	[N*27]	[27]	count
Tel2nadSolar	Electronics 2 Temperature at Nadir	16-bit integer	[N*27]	[27]	count
PccdNPSolar	Profile of CCD	16-bit integer	[N*27]	[27]	count
VtecNPSolar	Voltage of Electronics	16-bit integer	[N*27]	[27]	count
CtecNPSolar	Electronics current	16-bit integer	[N*27]	[27]	count
GonPar	Goniometric correction to solar counts	32-bit floating point	[N*27, 200, 200]	[27, 200, 200]	unitless
FluxData	Final corrected solar counts of individual solar observation	32-bit floating point	[N*27, 364, 200]	[27, 364, 200]	W/cm ³
TccdNPDark	CCD Temperature	16-bit integer	[N*5]	[5]	count
TmotnadDark	Motor Temperature at Nadir	16-bit integer	[N*5]	[5]	count
TlmpnadDark	Lamp Temperature at Nadir	16-bit integer	[N*5]	[5]	count
TradnadDark	Radiator Temperature at Nadir	16-bit integer	[N*5]	[5]	count
Tel1nadDark	Electronics 1 Temperature at Nadir	16-bit integer	[N*5]	[5]	count
Tel2nadDark	Electronics 2 Temperature at Nadir	16-bit integer	[N*5]	[5]	count
PccdNPDark	Profile of CCD	16-bit integer	[N*5]	[5]	count
VtecNPDark	Voltage of Electronics	16-bit integer	[N*5]	[5]	count

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
CtecNPDark	Current of Electronics	16-bit integer	[N*5]	[5]	count
DarkArray	Correct counts of an individual dark current image.	32-bit floating point	[N*5, 364, 390]	[5, 364, 390]	count
TccdNPLamp	CCD Temperature	16-bit integer	[N*150]	[150]	count
TmotnadLamp	Motor Temperature at Nadir	16-bit integer	[N*150]	[150]	count
TlmpnadLamp	Lamp Temperature at Nadir	16-bit integer	[N*150]	[150]	count
TradnadLamp	Radiator Temperature at Nadir	16-bit integer	[N*150]	[150]	count
Tel1nadLamp	Electronics 1 Temperature at Nadir	16-bit integer	[N*150]	[150]	count
Tel2nadLamp	Electronics 2 Temperature at Nadir	16-bit integer	[N*150]	[150]	count
PccdNPLamp	Profile of CCD	16-bit integer	[N*150]	[150]	count
VtecNPLamp	Voltage of Electronics	16-bit integer	[N*150]	[150]	count
CtecNPLamp	Current of Electronics	16-bit integer	[N*150]	[150]	count
LampData	Correct counts of an individual lamp image	32-bit floating point	[N*150, 364, 390]	[150, 364, 390]	count
QualityLamp	Reliability of lamp processing	16-bit integer	[N*150]	[150]	unitless
QualitySolar	Reliability of solar processing	16-bit integer	[N*27]	[27]	unitless
QualityDark	Reliability of dark processing	16-bit integer	[N*5]	[5]	unitless
MedianDark	Median dark current	32-bit floating point	[N]	[1]	count
Fitness	Chi-squared goodness of fit for wavelengths	64-bit floating point	[N*5]	[5]	unitless

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
CompleteFlag	Completeness of solar calibration data	16-bit integer	[N]	[1]	unitless
SAALamp	Spacecraft within South Atlantic Anomaly during lamp calibration (extent in percent based on Climatological data)	unsigned 8-bit char	[N*150]	[150]	unitless
SAASolar	Spacecraft within South Atlantic Anomaly during solar calibration (extent in percent based on Climatological data)	unsigned 8-bit char	[N*27]	[27]	unitless
SAADark	Spacecraft within South Atlantic Anomaly during dark calibration (extent in percent based on Climatological data)	unsigned 8-bit char	[N*5]	[5]	unitless
Eclipse	Eclipse - All or part of the S/C is affected by a solar eclipse, umbra or penumbra viewing.	unsigned 8-bit char	[N*27]	[27]	unitless
OccultationFlag	Occultation of the diffuser during solar observation	unsigned 8-bit char	[N*27]	[27]	unitless

2.9.2.2 OMPS NP Calibration SDR Product Profile

The OMPS NP Calibration data array structures are shown below in Table 2.9.2.2-1, OMPS NP Calibration SDR Product Profile and Table 2.9.2.2-2, OMPS NP Calibration SDR Product Profile – Quality Values.

Table 2.9.2.2-1, OMPS NP Calibration SDR Product Profile

Name	Data Size	Dimensions											
Bias1	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Average electronics bias CCD side 1	0			count	No		32-bit floating point	Name	Value	Name	Value
									NA_FLOAT32_FILL	-999.9			
									MISS_FLOAT32_FILL	-999.8			
									ERR_FLOAT32_FILL	-999.5			
									VDNE_FLOAT32_FILL	-999.3			
DarkData	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		SpectralPixel	Yes	No	364	364							
		SpatialPixel	No	No	390	390							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Dark current corrected coadded counts	0			count	No		32-bit floating point	Name	Value	Name	Value		
									NA_FLOAT32_FILL	-999.9			
									MISS_FLOAT32_FILL	-999.8			
									ERR_FLOAT32_FILL	-999.5			
									VDNE_FLOAT32_FILL	-999.3			
DarkCurrentExpose	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1							
		Datum											

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries															
		Exposure time of dark current (expose_dark)	0			second	No		64-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT64_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT64_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT64_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT64_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT64_FILL	-999.9	MISS_FLOAT64_FILL	-999.8	ERR_FLOAT64_FILL	-999.5	VDNE_FLOAT64_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value			
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LampExpose	8byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td>Granule</td> <td>Yes</td> <td>No</td> <td>1</td> <td>1</td> </tr> </tbody> </table>		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Granule	Yes	No	1	1													
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		Map of pixels used for solar data (badpix)	0			unitless	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value			
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		Datum																								

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																			
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Number of solar frames from the working diffuser	0			unitless	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	
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				Range Min	Range Max			Name																	
		Number of solar frames from the reference diffuser	0			unitless	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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Name	Value																								
NumberOfDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Granule	Yes	No	1	1																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
Number of dark frames (images)	0			unitless	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value				
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Name	Value																								
NumberOfLamp	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Granule	Yes	No	1	1																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
Number of lamp frames (images)	0			unitless	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value				
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Name	Value																								
NumberOfCoaddsSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Granule	Yes	No	1	1																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
Number of co-	0			unitless	No		16-bit	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value			<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value										
Name	Value																								
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		adds during solar calibration							integer	NA_INT16_FILL	-999		
										MISS_INT16_FILL	-998		
										ERR_INT16_FILL	-995		
										VDNE_INT16_FILL	-993		
NumberOfCoaddsDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Number of co-adds during dark calibration	0			unitless	No		16-bit integer	Name	Value	Name	Value
								NA_INT16_FILL	-999				
								MISS_INT16_FILL	-998				
								ERR_INT16_FILL	-995				
								VDNE_INT16_FILL	-993				
NumberOfCoaddsLamp	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Number of co-adds during lamp calibration	0			unitless	No		16-bit integer	Name	Value	Name	Value
								NA_INT16_FILL	-999				
								MISS_INT16_FILL	-998				
								ERR_INT16_FILL	-995				
								VDNE_INT16_FILL	-993				
CCD	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		SpectralPixel	Yes	No	200	200							
		SpatialPixel	No	No	370	370							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Count rate of sun (ccd)	0			count/second	No		64-bit floating point	Name	Value	Name	Value		
								NA_FLOAT64_FILL	-999.9				
								MISS_FLOAT64_FILL	-999.8				

												ERR_FLOAT64_FILL	-999.5		
												VDNE_FLOAT64_FILL	-999.3		
TotalSolarExpose	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		FOV	Yes	No	1	1									
		Datum													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			
Total Solar Exposure time (total_sol_expose)	0			second	No		64-bit floating point	Name	Value	Name	Value				
								NA_FLOAT64_FILL	-999.9						
								MISS_FLOAT64_FILL	-999.8						
								ERR_FLOAT64_FILL	-999.5						
								VDNE_FLOAT64_FILL	-999.3						
RSFCounts	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		SpectralPixel	Yes	No	200	200									
		SpatialPixel	No	No	370	370									
		Datum													
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries					
Reference solar counts (rsf_data)	0			count	No		32-bit floating point	Name	Value	Name	Value				
								NA_FLOAT32_FILL	-999.9						
								MISS_FLOAT32_FILL	-999.8						
								ERR_FLOAT32_FILL	-999.5						
								VDNE_FLOAT32_FILL	-999.3						
RSFExpose	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	1	1									
		Datum													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			
Reference solar exposure time (rsf_expose)	0			second	No		32-bit floating point	Name	Value	Name	Value				
								NA_FLOAT32_FILL	-999.9						
								MISS_FLOAT32_FILL	-999.8						
								ERR_FLOAT32_FILL	-999.5						
								VDNE_FLOAT32_FILL	-999.3						

RawSolar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	27	27						
		SpectralPixel	No	No	364	364						
		SpatialPixel	No	No	200	200						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Raw Solar Radiances	0			count	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
VDNE_FLOAT32_FILL	-999.3											

SmearDataSolar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	27	27						
		SpectralPixel	No	No	200	200						
		SpatialPixel	No	No	2	2						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Smear Data Solar Radiances	0			count	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
VDNE_FLOAT32_FILL	-999.3											

SolarBeta1	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	27	27						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Angle between orbital plane and sun at start of solar	0			degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	

		observation								VDNE_FLOAT32_FILL	-999.3	
SolarBeta2	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Solar	Yes	No	27	27						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Angle between orbital plane and sun at end of solar observation	0			degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
DiffIncinAngle	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Solar	Yes	No	27	27						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Angle from normal of incident solar flux	0			degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
DiffuserPositionSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Solar	Yes	No	27	27						
		Time	No	No	2	2						
Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Starting and Ending pixel column for each solar measurement	0			unitless	No		16-bit integer	Name	Value	Name Value
										NA_INT16_FILL	-999	
										MISS_INT16_FILL	-998	
										ERR_INT16_FILL	-995	
										VDNE_INT16_FILL	-993	

YearSolar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		Solar	Yes	No	27	27																	
		Datum																					
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
Year of Solar Observation	0			year	No		32-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT32_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT32_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT32_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT32_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT32_FILL	-999	MISS_INT32_FILL	-998	ERR_INT32_FILL	-995	VDNE_INT32_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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DaySolar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		Solar	Yes	No	27	27																	
		Datum																					
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
Day of Year for Solar Observation	0			day	No		32-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT32_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT32_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT32_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT32_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT32_FILL	-999	MISS_INT32_FILL	-998	ERR_INT32_FILL	-995	VDNE_INT32_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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DiffuserSurfaceSolar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		Solar	Yes	No	27	27																	
		Datum																					
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
Diffuser Surface used for Solar Calibration	0			unitless	No		32-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT32_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT32_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT32_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT32_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT32_FILL	-999	MISS_INT32_FILL	-998	ERR_INT32_FILL	-995	VDNE_INT32_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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TccdNPSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		Solar	Yes	No	27	27																	

		Datum																			
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries										
		CCD Temperature	0			count	No		16-bit integer	<table border="1"> <tr> <th>Name</th> <th>Value</th> </tr> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	
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ERR_INT16_FILL	-995																				
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TmotnadSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size														
		Solar	Yes	No	27	27															
		Datum																			
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries										
		Motor Temperature at Nadir	0			count	No		16-bit integer	<table border="1"> <tr> <th>Name</th> <th>Value</th> </tr> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	
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TimpnadSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size														
		Solar	Yes	No	27	27															
		Datum																			
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries										
		Lamp Temperature at Nadir	0			count	No		16-bit integer	<table border="1"> <tr> <th>Name</th> <th>Value</th> </tr> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	
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TradnadSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size														
		Solar	Yes	No	27	27															
		Datum																			
		Description	Datum	Unscaled	Unscaled	Measurement	Scaled	Scale	Data Type	Fill Values	Legend										

			Offset	Valid Range Min	Valid Range Max	Units		Factor Name			Entries																				
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		Electronics 2 Temperature at Nadir	0			count	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993
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		Solar		Yes	No	27	27																								
		Datum																													
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				

			Min	Max									
		Profile of CCD	0		count	No		16-bit integer	Name	Value	Name	Value	
									NA_INT16_FILL	-999			
									MISS_INT16_FILL	-998			
									ERR_INT16_FILL	-995			
									VDNE_INT16_FILL	-993			
VtecNPSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Solar	Yes	No	27	27							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Voltage of Electronics	0			count	No		16-bit integer	Name	Value	Name	Value
										NA_INT16_FILL	-999		
										MISS_INT16_FILL	-998		
										ERR_INT16_FILL	-995		
										VDNE_INT16_FILL	-993		
CtecNPSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Solar	Yes	No	27	27							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Electronics current	0			count	No		16-bit integer	Name	Value	Name	Value
										NA_INT16_FILL	-999		
										MISS_INT16_FILL	-998		
										ERR_INT16_FILL	-995		
										VDNE_INT16_FILL	-993		
GonPar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Solar	Yes	No	27	27							
		SpectralPixel	No	No	200	200							
		SpatialPixel	No	No	200	200							
		Datum											
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		

			Min	Max									
		Goniometric correction to solar counts	0			unitless	No			32-bit floating point	Name	Value	Name Value
											NA_FLOAT32_FILL	-999.9	
											MISS_FLOAT32_FILL	-999.8	
											ERR_FLOAT32_FILL	-999.5	
											VDNE_FLOAT32_FILL	-999.3	
FluxData	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Solar	Yes	No	27	27							
		SpectralPixel	No	No	364	364							
		SpatialPixel	No	No	200	200							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Final corrected solar counts of individual solar observation	0			W/cm^3	No		32-bit floating point	Name	Value	Name Value	
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
TccdNPDark	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Dark	Yes	No	5	5							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		CCD Temperature	0			count	No		16-bit integer	Name	Value	Name Value	
										NA_INT16_FILL	-999		
										MISS_INT16_FILL	-998		
										ERR_INT16_FILL	-995		
										VDNE_INT16_FILL	-993		
TmotnadDark	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Dark	Yes	No	5	5							
		Datum											
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		

				Min	Max									
		Motor Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value	
										NA_INT16_FILL	-999			
										MISS_INT16_FILL	-998			
										ERR_INT16_FILL	-995			
										VDNE_INT16_FILL	-993			
TlmpnadDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Dark	Yes		No	5	5							
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
Lamp Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value			
									NA_INT16_FILL	-999				
										MISS_INT16_FILL	-998			
										ERR_INT16_FILL	-995			
										VDNE_INT16_FILL	-993			
TradnadDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Dark	Yes		No	5	5							
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
Radiator Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value			
									NA_INT16_FILL	-999				
										MISS_INT16_FILL	-998			
										ERR_INT16_FILL	-995			
										VDNE_INT16_FILL	-993			
Tel1nadDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Dark	Yes		No	5	5							
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
Electronics 1	0			count	No		16-bit integer	Name	Value	Name	Value			

		Temperature at Nadir								NA_INT16_FILL	-999	
										MISS_INT16_FILL	-998	
										ERR_INT16_FILL	-995	
										VDNE_INT16_FILL	-993	
Tel2nadDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Dark	Yes	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Electronics 2 Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value	
								NA_INT16_FILL	-999			
								MISS_INT16_FILL	-998			
								ERR_INT16_FILL	-995			
								VDNE_INT16_FILL	-993			
PccdNPDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Dark	Yes	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Profile of CCD	0			count	No		16-bit integer	Name	Value	Name	Value	
								NA_INT16_FILL	-999			
								MISS_INT16_FILL	-998			
								ERR_INT16_FILL	-995			
								VDNE_INT16_FILL	-993			
VtecNPDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Dark	Yes	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Voltage of Electronics	0			count	No		16-bit integer	Name	Value	Name	Value	
								NA_INT16_FILL	-999			
								MISS_INT16_FILL	-998			

											ERR_INT16_FILL	-995		
											VDNE_INT16_FILL	-993		
CtecNPDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Dark	Yes	No	5	5								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
Current of Electronics	0			count	No		16-bit integer	Name	Value	Name	Value			
								NA_INT16_FILL	-999					
								MISS_INT16_FILL	-998					
								ERR_INT16_FILL	-995					
								VDNE_INT16_FILL	-993					
DarkArray	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Dark	No	No	5	5								
		SpectralPixel	No	No	364	364								
		SpatialPixel	Yes	No	390	390								
Datum														
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries				
Correct counts of an individual dark current image.	0			count	No		32-bit floating point	Name	Value	Name	Value			
								NA_FLOAT32_FILL	-999.9					
								MISS_FLOAT32_FILL	-999.8					
								ERR_FLOAT32_FILL	-999.5					
								VDNE_FLOAT32_FILL	-999.3					
TccdNPLamp	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Lamp	Yes	No	150	150								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
CCD Temperature	0			count	No		16-bit integer	Name	Value	Name	Value			
								NA_INT16_FILL	-999					
								MISS_INT16_FILL	-998					

										ERR_INT16_FILL	-995	
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TmotnadLamp	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Lamp	Yes	No	150	150						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Motor Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value	
								NA_INT16_FILL	-999			
								MISS_INT16_FILL	-998			
								ERR_INT16_FILL	-995			
								VDNE_INT16_FILL	-993			
TimpnadLamp	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Lamp	Yes	No	150	150						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Lamp Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value	
								NA_INT16_FILL	-999			
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TradnadLamp	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Lamp	Yes	No	150	150						
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Radiator Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value	
								NA_INT16_FILL	-999			
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QualitySolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Solar	Yes	No	27	27						
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		Reliability of solar processing	0			unitless	No		16-bit integer	Name	Value	Name Value
										NA_INT16_FILL	-999	
										MISS_INT16_FILL	-998	
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QualityDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Dark	Yes	No	5	5						
		Datum										
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		Reliability of dark processing	0			unitless	No		16-bit integer	Name	Value	Name Value
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Table 2.9.2.2-2, OMPS NP Calibration SDR Product Profile – Quality Values

SAALamp	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size				
		Lamp	Yes	No	150	150					
		Datum									
		Description	Datum	Unscaled	Unscaled	Measurement	Scaled	Scale	Data	Fill Values	Legend Entries

			Offset	Valid Range Min	Valid Range Max	Units		Factor Name	Type																																																							
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		Atlantic Anomaly during dark calibration (extent in percent based on Climatological data)							char		<table border="1"> <tr><td>0% <= SAA <= 10%</td><td>0</td></tr> <tr><td>10% < SAA <= 20%</td><td>1</td></tr> <tr><td>20% < SAA <= 30%</td><td>2</td></tr> <tr><td>30% < SAA <= 40%</td><td>3</td></tr> <tr><td>40% < SAA <= 50%</td><td>4</td></tr> <tr><td>50% < SAA <= 60%</td><td>5</td></tr> <tr><td>60% < SAA <= 70%</td><td>6</td></tr> <tr><td>70% < SAA <= 80%</td><td>7</td></tr> <tr><td>80% < SAA</td><td>8</td></tr> </table>	0% <= SAA <= 10%	0	10% < SAA <= 20%	1	20% < SAA <= 30%	2	30% < SAA <= 40%	3	40% < SAA <= 50%	4	50% < SAA <= 60%	5	60% < SAA <= 70%	6	70% < SAA <= 80%	7	80% < SAA	8																																		
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2.9.2.3 OMPS NP Calibration SDR HDF5 Details

Figure 2.9.2.3-1, OMPS NP Calibration SDR UML Diagram, provides the details on the content and data types of the OMPS NP Calibration SDR. These UML diagrams provide details at the granule level only. In addition to these UML diagrams, refer to Section 2.2, Sensor Data Records and Temperature Data Records HDF5 Details, Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

The OMPS NP Calibration SDR within the HDF5 files can be found within the Data Products group with the group name of OMPS-NP-Cal-SDR. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

OMPS-NP-Cal-SDR	OMPS-NP-Cal-SDR (cont. 1)	OMPS-NP-Cal_SDR (cont. 2)
+Bias1 : H5T_NATIVE_FLOAT +DarkData : H5T_NATIVE_FLOAT +DarkCurrentExpose : H5T_NATIVE_DOUBLE +LampExpose : H5T_NATIVE_DOUBLE +BadPixelMap : H5T_NATIVE_FLOAT +WavelengthMap : H5T_NATIVE_DOUBLE +Flat : H5T_NATIVE_FLOAT +NumberOfWorkingSolar : H5T_NATIVE_SHORT +NumberOfReferenceSolar : H5T_NATIVE_SHORT +NumberOfDark : H5T_NATIVE_SHORT +NumberOfLamp : H5T_NATIVE_SHORT +NumberOfCoaddsSolar : H5T_NATIVE_SHORT +NumberOfCoaddsDark : H5T_NATIVE_SHORT +NumberOfCoaddsLamp : H5T_NATIVE_SHORT +CCD : H5T_NATIVE_DOUBLE +TotalSolarExpose : H5T_NATIVE_DOUBLE +RSFCounts : H5T_NATIVE_FLOAT +RSFExpose : H5T_NATIVE_FLOAT +RawSolar : H5T_NATIVE_FLOAT +SmearDataSolar : H5T_NATIVE_FLOAT +SolarBeta1 : H5T_NATIVE_FLOAT +SolarBeta2 : H5T_NATIVE_FLOAT +DiffIncinAngle : H5T_NATIVE_FLOAT +DiffuserPositionSolar : H5T_NATIVE_SHORT	+YearSolar : H5T_NATIVE_INT +DaySolar : H5T_NATIVE_INT +DiffuserSurfaceSolar : H5T_NATIVE_INT +TccdNPSolar : H5T_NATIVE_SHORT +TmotnadSolar : H5T_NATIVE_SHORT +TImpnadSolar : H5T_NATIVE_SHORT +TradnadSolar : H5T_NATIVE_SHORT +Tel1nadSolar : H5T_NATIVE_SHORT +Tel2nadSolar : H5T_NATIVE_SHORT +PccdNPSolar : H5T_NATIVE_SHORT +VtecNPSolar : H5T_NATIVE_SHORT +CtecNPSolar : H5T_NATIVE_SHORT +GonPar : H5T_NATIVE_FLOAT +FluxData : H5T_NATIVE_FLOAT +TccdNPDark : H5T_NATIVE_SHORT +TmotnadDark : H5T_NATIVE_SHORT +TImpnadDark : H5T_NATIVE_SHORT +TradnadDark : H5T_NATIVE_SHORT +Tel1nadDark : H5T_NATIVE_SHORT +Tel2nadDark : H5T_NATIVE_SHORT +PccdNPDark : H5T_NATIVE_SHORT +VtecNPDark : H5T_NATIVE_SHORT +CtecNPDark : H5T_NATIVE_SHORT	+DarkArray : H5T_NATIVE_FLOAT +TccdNPLamp : H5T_NATIVE_SHORT +TmotnadLamp : H5T_NATIVE_SHORT +TImpnadLamp : H5T_NATIVE_SHORT +TradnadLamp : H5T_NATIVE_SHORT +Tel1nadLamp : H5T_NATIVE_SHORT +Tel2nadLamp : H5T_NATIVE_SHORT +PccdNPLamp : H5T_NATIVE_SHORT +VtecNPLamp : H5T_NATIVE_SHORT +CtecNPLamp : H5T_NATIVE_SHORT +LampData : H5T_NATIVE_FLOAT +QualityLamp : H5T_NATIVE_SHORT +QualitySolar : H5T_NATIVE_SHORT +QualityDark : H5T_NATIVE_SHORT +MedianDark : H5T_NATIVE_FLOAT +Fitness : H5T_NATIVE_DOUBLE +CompleteFlag : H5T_NATIVE_SHORT +SAALamp : H5T_NATIVE_UCHAR +SAASolar : H5T_NATIVE_UCHAR +SAADark : H5T_NATIVE_UCHAR +Eclipse : H5T_NATIVE_UCHAR +OccultationFlag : H5T_NATIVE_UCHAR

Figure 2.9.2.3-1, OMPS NP Calibration SDR UML Diagram

2.9.2.4 OMPS NP Calibration SDR Metadata Details

The HDF5 metadata elements associated with the OMPS NP Calibration SDR are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The OMPS NP Calibration SDR metadata includes all common metadata at the root, product, aggregation, and granule levels. No summary level metadata is produced for OMPS NP Calibration SDRs.

2.9.2.5 OMPS NP Calibration SDR Geolocation Content Summary

The OMPS NP calibration SDR geolocation datasets are summarized below in table 2.9.2.5-1 OMPS NP Calibration SDR Geolocation Content Summary.

Table 2.9.2.5-1, OMPS NP Calibration SDR Geolocation Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime_Solar	Start time of solar frame in IET (1/1/1958)	64-bit integer	[N*27]	[27]	microsecond
MidTime_Solar	Mid-Time of solar frame in IET (1/1/1958)	64-bit integer	[N*27]	[27]	microsecond
EndTime_Solar	End time of solar frame in IET (1/1/1958)	64-bit integer	[N*27]	[27]	microsecond
Latitude_Solar	Sub-Satellite Latitude (positive North) at midTime_Solar	32-bit floating point	[N*27, 1]	[27, 1]	degree
Longitude_Solar	Sub-Satellite Longitude (positive East) at MidTime_Solar	32-bit floating point	[N*27, 1]	[27, 1]	degree
MoonVector_Solar	Lunar Position in Spacecraft Coordinates at MidTime_Solar	32-bit floating point	[N*27, 3]	[27, 3]	meter
SunVector_Solar	Solar position in Spacecraft Coordinate System at MidTime_Solar	32-bit floating point	[N*27, 3]	[27, 3]	meter

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SCPosition_Solar	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime_Solar	32-bit floating point	[N*27, 3]	[27, 3]	meter
SCVelocity_Solar	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime_Solar	32-bit floating point	[N*27, 3]	[27, 3]	m/s
SCAttitude_Solar	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Solar	32-bit floating point	[N*27, 3]	[27, 3]	arcsecond
StartTime_Dark	Start time of dark frame in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
MidTime_Dark	Mid-Time of dark frame in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
EndTime_Dark	End time of dark frame in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
Latitude_Dark	Sub-Satellite Latitude (positive North) at MidTime_Dark	32-bit floating point	[N*5, 1]	[5, 1]	degree
Longitude_Dark	Sub-Satellite Longitude (positive East) at MidTime_Dark	32-bit floating point	[N*5, 1]	[5, 1]	degree
SCPosition_Dark	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime_Dark	32-bit floating point	[N*5, 3]	[5, 3]	meter
SCVelocity_Dark	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime_Dark	32-bit floating point	[N*5, 3]	[5, 3]	m/s
SCAttitude_Dark	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Dark	32-bit floating point	[N*5, 3]	[5, 3]	arcsecond

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime_Lamp	Start time of lamp frame in IET (1/1/1958)	64-bit integer	[N*150]	[150]	microsecond
MidTime_Lamp	Mid-Time of lamp frame in IET (1/1/1958)	64-bit integer	[N*150]	[150]	microsecond
EndTime_Lamp	End time of lamp frame in IET (1/1/1958)	64-bit integer	[N*150]	[150]	microsecond
Latitude_Lamp	Sub-Satellite Latitude (positive North) at MidTime_Lamp	32-bit floating point	[N*150, 1]	[150, 1]	degree
Longitude_Lamp	Sub-Satellite Longitude (positive East) at MidTime_Lamp	32-bit floating point	[N*150, 1]	[150, 1]	degree
SCPosition_Lamp	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime_Lamp	32-bit floating point	[N*150, 3]	[150, 3]	meter
SCVelocity_Lamp	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime_Lamp	32-bit floating point	[N*150, 3]	[150, 3]	m/s
SCAttitude_Lamp	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Lamp	32-bit floating point	[N*150, 3]	[150, 3]	arcsecond
NumberOfSolar	Actual number of solar frames (images)	16-bit integer	[N]	[1]	unitless
NumberOfDark	Actual number of dark frames (images)	16-bit integer	[N]	[1]	unitless
NumberOfLamp	Actual number of lamp frames (images)	16-bit integer	[N]	[1]	unitless
QF1_GEOSOLAR	Attitude/Ephemeris availability status during Solar Calibration	unsigned 8-bit char	[N*27]	[27]	unitless

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
QF2_GEODARK	Attitude/Ephemeris availability status during Dark Calibration	unsigned 8-bit char	[N*5]	[5]	unitless
QF3_GEOLAMP	Attitude/Ephemeris availability status during Lamp Calibration	unsigned 8-bit char	[N*150]	[150]	unitless

2.9.2.6 OMPS NP Calibration SDR Geolocation Product Profile

The OMPS NP Calibration SDR geolocation product profile is shown below in Table 2.9.2.6-1 OMPS NP Calibration SDR Geolocation Product Profile and Table 2.9.2.6-2 OMPS NP Calibration SDR Geolocation Product Profile – Quality Flags.

Table 2.9.2.6-1, OMPS NP Calibration SDR Geolocation Product Profile

Fields													
Name	Data Size	Dimensions											
StartTime_Solar	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	27	27							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Start time of solar frame in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name	Value
								NA_INT64_FILL	-999				
								MISS_INT64_FILL	-998				
								ERR_INT64_FILL	-995				
								VDNE_INT64_FILL	-993				
MidTime_Solar	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	27	27							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Mid-Time of solar frame in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name	Value
								NA_INT64_FILL	-999				
								MISS_INT64_FILL	-998				
								ERR_INT64_FILL	-995				
								VDNE_INT64_FILL	-993				
EndTime_Solar	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	27	27							
		Datum											
		Description	Datum	Unscaled	Unscaled	Measurement	Scaled	Scale	Data	Fill Values		Legend	

		Offset	Valid Range Min	Valid Range Max	Units		Factor Name	Type			Entries																																																																															
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				Min	Max														
		Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Dark	0			arcsecond	No			32-bit floating point				Name	Value	Name	Value		
														NA_FLOAT32_FILL	-999.9				
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														VDNE_FLOAT32_FILL	-999.3				
StartTime_Lamp	8byte(s)													Name	Value	Name	Value		
		Granule Boundary	Dynamic	Min Array Size	Max Array Size														
		Lamp Yes	No	150	150														
		Datum																	
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries								
		Start time of lamp frame in IET (1/1/1958)	0			microsecond	No		64-bit integer					Name	Value	Name	Value		
														NA_INT64_FILL	-999				
														MISS_INT64_FILL	-998				
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MidTime_Lamp	8byte(s)													Name	Value	Name	Value		
		Granule Boundary	Dynamic	Min Array Size	Max Array Size														
		Lamp Yes	No	150	150														
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		Mid-Time of lamp frame in IET (1/1/1958)	0			microsecond	No		64-bit integer					Name	Value	Name	Value		
														NA_INT64_FILL	-999				
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EndTime_Lamp	8byte(s)													Name	Value	Name	Value		
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		Lamp Yes	No	150	150														
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											ERR_INT64_FILL	-995	
											VDNE_INT64_FILL	-993	
Latitude_Lamp	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Lamp	Yes	No	150	150							
		SpatialPixel	No	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
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Longitude_Lamp	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Lamp	Yes	No	150	150							
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		Lamp	Yes	No	150	150							
		ECRCordinate	No	No	3	3							
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Spacecraft position in ECR	0			meter	No		32-bit floating	Name	Value	Name	Value		
								NA_FLOAT32_FILL	-999.9				

		Coordinates (X, Y, Z) at MidTime_Lamp							point	MISS_FLOAT32_FILL	-999.8			
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SCVelocity_Lamp	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
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NumberOfSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	1	1								
		Datum												
		Description	Datum Offset	Unscaled Valid	Unscaled Valid	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		

				Range Min	Range Max																
		Actual number of solar frames (images)	0			unitless	No			16-bit integer	Name	Value	Name	Value							
											NA_INT16_FILL	-999									
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		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries										
		Actual number of lamp frames (images)	0			unitless	No			16-bit integer	Name	Value	Name	Value							
											NA_INT16_FILL	-999									
											MISS_INT16_FILL	-998									
											ERR_INT16_FILL	-995									
											VDNE_INT16_FILL	-993									

Table 2.9.2.6-2, OMPS NP Calibration SDR Geolocation Product Profile – Quality Flags

Fields		
Name	Data Size	Dimensions

QF1_GEOSOLAR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Solar	Yes	No	27	27					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name	Value	Name	Value
										Nominal - E&A data available	0
										Missing Data <= Small Gap	1
										Small Gap < Missing Data < Granule Boundary	2
				Missing Data >= Granule Boundary	3						
Spare	2			unitless	No		6 bit(s)	Name	Value	Name	Value
QF2_GEODARK	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Dark	Yes	No	5	5					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name	Value	Name	Value
										Nominal - E&A data available	0
										Missing Data <= Small Gap	1
										Small Gap < Missing Data < Granule Boundary	2
				Missing Data >= Granule Boundary	3						
Spare	2			unitless	No		6 bit(s)	Name	Value	Name	Value

QF3_GEOLAMP	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Lamp	Yes	No	150	150							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name	Value	Name	Value
												Nominal - E&A data available	0
												Missing Data <= Small Gap	1
												Small Gap < Missing Data < Granule Boundary	2
												Missing Data >= Granule Boundary	3
		Spare	2			unitless	No		6 bit(s)	Name	Value	Name	Value

2.9.2.7 OMPS NP Calibration SDR Geolocation HDF5 Details

The OMPS NP Calibration SDR Geolocation is based on a simple spatial average over the geometric cell bounds, regardless of pixel sampling. Geolocation is reported on the ellipsoid. Figure 2.9.2.7-1, OMPS NP Calibration SDR Geolocation UML Diagram, provides details on the contents and data types of the OMPS NP SDR geolocation.

OMPS-NP-Cal-GEO
+StartTime_Solar : H5T_NATIVE_LLONG
+MidTime_Solar : H5T_NATIVE_LLONG
+EndTime_Solar : H5T_NATIVE_LLONG
+Latitude_Solar : H5T_NATIVE_FLOAT
+Longitude_Solar : H5T_NATIVE_FLOAT
+MoonVector_Solar : H5T_NATIVE_FLOAT
+SunVector_Solar : H5T_NATIVE_FLOAT
+SCPosition_Solar : H5T_NATIVE_FLOAT
+SCVelocity_Solar : H5T_NATIVE_FLOAT
+SCAttitude_Solar : H5T_NATIVE_FLOAT
+StartTime_Dark : H5T_NATIVE_LLONG
+MidTime_Dark : H5T_NATIVE_LLONG
+EndTime_Dark : H5T_NATIVE_LLONG
+Latitude_Dark : H5T_NATIVE_FLOAT
+Longitude_Dark : H5T_NATIVE_FLOAT
+SCPosition_Dark : H5T_NATIVE_FLOAT
+SCVelocity_Dark : H5T_NATIVE_FLOAT
+SCAttitude_Dark : H5T_NATIVE_FLOAT
+StartTime_Lamp : H5T_NATIVE_LLONG
+MidTime_Lamp : H5T_NATIVE_LLONG
+EndTime_Lamp : H5T_NATIVE_LLONG
+Latitude_Lamp : H5T_NATIVE_FLOAT
+Longitude_Lamp : H5T_NATIVE_FLOAT
+SCPosition_Lamp : H5T_NATIVE_FLOAT
+SCVelocity_Lamp : H5T_NATIVE_FLOAT
+SCAttitude_Lamp : H5T_NATIVE_FLOAT
+NumberOfSolar : H5T_NATIVE_SHORT
+NumbrOfDark : H5T_NATIVE_SHORT
+NumberOfLamp : H5T_NATIVE_SHORT
+QF1_GEOSOLAR : H5T_NATIVE_UCHAR
+QF2_GEODARK : H5T_NATIVE_UCHAR
+QF3_GEOLAMP : H5T_NATIVE_UCHAR

Figure 2.9.2.7-1, OMPS NP Calibration SDR Geolocation UML Diagram

2.9.2.8 OMPS NP Calibration SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the OMPS NP Calibration SDR Geolocation are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. There are no additional metadata elements or granule level quality flags for this geolocation.

2.10 OMPS Total Column SDRs

Data Mnemonic SDRE-OMTC-C0030 Total Column (Science)
SDRE-OMTC-C0031 Calibration
GEOE-OMTC-C0030 Geolocation - ellipsoid

**Description/
Purpose** The OMPS raw sensor data is decommutated, corrected, and calibrated by the SDR software and then stored in the Total Column (TC) SDR product. In addition to the data needed to support EDR generation, the TC SDR includes a number of other parameters described in more detail in Section 2.10.1.

In addition to the production of the TC SDR, the generation of special Calibration SDRs supports the on-going, continuous calibration of the TC sensor. The Calibration SDR is described in Section 2.10.2.

The OMPS nadir sensor uses a wide field-of-view push-broom telescope to feed two separate spectrometers. The nadir total column spectrometer measures the scene radiance between approximately 300 and 380 nanometers (nm) with a resolution of 1 nm sampled at 0.42 nm.

In the parameters described below certain array dimensions are sized to a maximum expected value to allow some flexibility in sensor and algorithm configuration. For example, the actual number of Integrated Field of Views (IFOVs), Swaths, and SpectralPixels could change based on the configuration. In the case where actual data does not complete the array, fill values (Does Not Exist) are used. For these three dimensions, parameters available in the product indicate the number of actual values to be interpreted.

Example geospatial coverage: The cross-track pixels are binned into 35 equal angle Integrated Field of Views (IFOV). The IFOV for the nadir cell of the total column measurement is ~46 km cross-track with an along-track reporting interval of 50 km. The 50km along-track interval is a result of the pixel extent combined with the spacecraft motion during the 7.5 second integration time.

The OMPS TC SDR is used in the generation of the Ozone EDR/IPs.

**File-Naming
Construct** See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.

File Size Science: 2176.17. KiB
 Science Geolocation: 105.72 KiB
 Calibration: 216800.47 KiB
 Calibration Geolocation: 1274.78 KiB
 Sizes are for a single granule without HDF5 overhead.

File Format Type HDF5

Data Content and Data Format The TC SDR format is described in Section 2.10.1, OMPS TC SDR Format, and the TC Calibration SDR format is described in Section 2.10.2, OMPS TC Calibration SDR Format.

2.10.1 OMPS TC SDR Format

The OMPS TC SDR format is described in the following subparagraphs.

2.10.1.1 OMPS TC SDR Data Content Summary

The OMPS TC SDR product structure contains the data arrays shown below in Table 2.10.1.1-1, OMPS TC SDR Data Content Summary.

Table 2.10.1.1-1, OMPS TC SDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SmearDataEarth	Raw smear counts of Earth image	32-bit floating point	[N*15, 2, 260]	[15, 2, 260]	count
RadianceEarth	Calibrated Earth View Radiances	32-bit floating point	[N*15, 105, 260]	[15, 105, 260]	W/(cm ³ *sr)
Wavelengths	Wavelengths used in SDR processing (wref)	64-bit floating point	[N*105, 260]	[105, 260]	nanometer
SolarFlux	Reference solar flux from calibration database (rsf_piece)	32-bit floating point	[N*105, 260]	[105, 260]	W/cm ³
Bias1	Average electronics bias CCD side 1	32-bit floating point	[N]	[1]	count
Bias2	Average electronics bias CCD side 2	32-bit floating point	[N]	[1]	count
DarkCurrentEarth	Dark current in earth data (dark_piece)	32-bit floating point	[N*107, 260]	[107, 260]	count

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
DarkExposeEarth	Integration time for dark data (expose_dark)	64-bit floating point	[N]	[1]	second
Cal	Radiometric calibration	32-bit floating point	[N*105, 260]	[105, 260]	W/(cm ³ *sr)
NumberOfSwaths	Number of actual swaths in Granule	16-bit integer	[N]	[1]	unitless
NumberOfFOVs	Number of actual IFOVs	16-bit integer	[N]	[1]	unitless
NumberOfSpectralPixels	Number of actual spectral pixels	16-bit integer	[N]	[1]	unitless
LinearityTblVersion	Version and Profile ID of on-board Linearity Table from RDR	unsigned 16-bit integer	[N*2]	[2]	unitless
GainTblVersion	Version and Profile ID of on-board Gain Table from RDR	unsigned 16-bit integer	[N*2]	[2]	unitless
BadCal	Cal factor is out of date (greater than 28 days old)	unsigned 8-bit char	[N]	[1]	unitless
SunGlint	Sun glint indication (scattering angle and surface type thresholds)	unsigned 8-bit char	[N*15, 105]	[15, 105]	unitless
SolarEclipse	All or part of the IFOV is affected by a solar eclipse, umbra or penumbra viewing.	unsigned 8-bit char	[N*15, 105]	[15, 105]	unitless
WaveFlag	Wavelength limits exceeded	unsigned 8-bit char	[N*15, 105]	[15, 105]	unitless
RadFlag	Ratio of the median radiance per spatial FOV to the maximum	32-bit floating point	[N*15, 105]	[15, 105]	unitless
TCLinearCorrection	Indicates Linearity Correction performed inflight	unsigned 8-bit char	[N*15]	[15]	unitless
SAA	Spacecraft within South Atlantic Anomaly (extent in percent based on Climatological data)	unsigned 8-bit char	[N*15]	[15]	unitless

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
QualityEarth	Earth processing reliability (cumulative relative quality indicator count)	16-bit integer	[N*15]	[15]	unitless

2.10.1.2 OMPS TC SDR – Product Profile Data

The OMPS TC SDR data array structures are shown below in Table 2.10.1.2-1 OMPS TC SDR Product Profile.

Table 2.10.1.2-1, OMPS TC SDR Product Profile

Name	Data Size	Dimensions											
SmearDataEarth	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		CCD	No	No	2	2							
		SpectralPixel	No	No	260	260							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Raw smear counts of Earth image	0			count	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3				
RadianceEarth	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		IFOV	No	No	105	105							
		SpectralPixel	No	No	260	260							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Calibrated Earth View Radiances	0			W/(cm ³ •sr)	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3				
Wavelengths	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		IFOV	Yes	No	105	105							
		SpectralPixel	No	No	260	260							
		Datum											
		Description	Datum Offset	Unscaled Valid	Unscaled Valid	Measurement Units	Scaled	Scale Factor	Data Type	Fill Values	Legend Entries		

				Range Min	Range Max			Name					
		Wavelengths used in SDR processing (wref)	0			nanometer	No		64-bit floating point	Name	Value	Name	Value
										NA_FLOAT64_FILL	-999.9		
										MISS_FLOAT64_FILL	-999.8		
										ERR_FLOAT64_FILL	-999.5		
										VDNE_FLOAT64_FILL	-999.3		
SolarFlux	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		IFOV	Yes	No	105	105							
		SpectralPixel	No	No	260	260							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values			Legend Entries
		Reference solar flux (rsf_piece)	0			W/cm^3	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
Bias1	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values			Legend Entries
		Average electronics bias CCD side 1	0			count	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
Bias2	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values			Legend Entries

			Min	Max	count	No			32-bit floating point	Name	Value	Name	Value
		Average electronics bias CCD side 2	0							NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
DarkCurrentEarth	4byte(s)		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		IFOV	Yes	No		107	107						
		SpectralPixel	No	No		260	260						
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Dark current in earth data (dark_piece)	0			count	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
DarkExposeEarth	8byte(s)		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No		1	1						
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Integration time for dark data (expose_dark)	0			second	No		64-bit floating point	Name	Value	Name	Value
										NA_FLOAT64_FILL	-999.9		
										MISS_FLOAT64_FILL	-999.8		
										ERR_FLOAT64_FILL	-999.5		
										VDNE_FLOAT64_FILL	-999.3		
Cal	4byte(s)		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		IFOV	Yes	No		105	105						
		SpectralPixel	No	No		260	260						
		Datum											
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		

			Min	Max									
		Radiometric calibration	0		W/(cm ³ ·sr)	No			32-bit floating point		Name	Value	Name Value
											NA_FLOAT32_FILL	-999.9	
											MISS_FLOAT32_FILL	-999.8	
											ERR_FLOAT32_FILL	-999.5	
											VDNE_FLOAT32_FILL	-999.3	
NumberOfSwaths	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Number of actual swaths in granule	0			unitless	No		16-bit integer		Name	Value	Name Value
											NA_INT16_FILL	-999	
											MISS_INT16_FILL	-998	
											ERR_INT16_FILL	-995	
											VDNE_INT16_FILL	-993	
NumberOfIFOVs	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Number of actual IFOVs	0			unitless	No		16-bit integer		Name	Value	Name Value
											NA_INT16_FILL	-999	
											MISS_INT16_FILL	-998	
											ERR_INT16_FILL	-995	
											VDNE_INT16_FILL	-993	
NumberOfSpectralPixels	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Number of actual spectral	0			unitless	No		16-bit integer		Name	Value	Name Value
											NA_INT16_FILL	-999	

		pixels									MISS_INT16_FILL	-998	
											ERR_INT16_FILL	-995	
											VDNE_INT16_FILL	-993	
LinearityTblVersion	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Version and Profile ID of on-board Linearity Table from RDR	0			unitless	No		unsigned 16-bit integer	Name	Value	Name	Value		
								NA_INT16_FILL	-999				
								MISS_INT16_FILL	-998				
								ERR_INT16_FILL	-995				
								VDNE_INT16_FILL	-993				
GainTblVersion	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Version and Profile ID of on-board Gain Table from RDR	0			unitless	No		unsigned 16-bit integer	Name	Value	Name	Value		
								NA_INT16_FILL	-999				
								MISS_INT16_FILL	-998				
								ERR_INT16_FILL	-995				
								VDNE_INT16_FILL	-993				
BadCal	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Cal factor is out of date (greater than 28 days old)	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value		
								NA_UINT8_FILL	255	False	0		
								MISS_UINT8_FILL	254	True	1		
								ERR_UINT8_FILL	251				
								VDNE_UINT8_FILL	249				
SunGlint	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							

		Swath	Yes	No	15	15							
		Ifov	No	No	105	105							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Sun glint indication (scattering angle and surface type thresholds)	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value
										NA_UINT8_FILL	255	False	0
										MISS_UINT8_FILL	254	True	1
										ERR_UINT8_FILL	251		
										VDNE_UINT8_FILL	249		
SolarEclipse	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		Ifov	No	No	105	105							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		All or part of the Ifov is affected by a solar eclipse, umbra or penumbra viewing.	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value
										NA_UINT8_FILL	255	False	0
										MISS_UINT8_FILL	254	True	1
										ERR_UINT8_FILL	251		
										VDNE_UINT8_FILL	249		
WaveFlag	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		Ifov	No	No	105	105							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Wavelength limits exceeded	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value
										NA_UINT8_FILL	255	False	0
										MISS_UINT8_FILL	254	True	1
										ERR_UINT8_FILL	251		
										VDNE_UINT8_FILL	249		

RadFlag	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		Swath	Yes	No	15	15																									
		Ifov	No	No	105	105																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Ratio of the median radiance per spatial FOV to the maximum	0			unitless	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3			
Name	Value	Name	Value																												
NA_FLOAT32_FILL	-999.9																														
MISS_FLOAT32_FILL	-999.8																														
ERR_FLOAT32_FILL	-999.5																														
VDNE_FLOAT32_FILL	-999.3																														
TCLinearCorrection	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		Swath	Yes	No	15	15																									
		Datum																													
				Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																		
		Linearity Correction performed inflight	0			unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_UINT8_FILL</td> <td>255</td> <td>False</td> <td>0</td> </tr> <tr> <td>MISS_UINT8_FILL</td> <td>254</td> <td>True</td> <td>1</td> </tr> <tr> <td>ERR_UINT8_FILL</td> <td>251</td> <td></td> <td></td> </tr> <tr> <td>VDNE_UINT8_FILL</td> <td>249</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_UINT8_FILL	255	False	0	MISS_UINT8_FILL	254	True	1	ERR_UINT8_FILL	251			VDNE_UINT8_FILL	249			
Name	Value	Name	Value																												
NA_UINT8_FILL	255	False	0																												
MISS_UINT8_FILL	254	True	1																												
ERR_UINT8_FILL	251																														
VDNE_UINT8_FILL	249																														
SAA	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		Swath	Yes	No	15	15																									
		Datum																													
				Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																		
		Spacecraft within South Atlantic Anomaly (extent in percent based on Climatological	0			unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>0% <= SAA <= 10%</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>10% < SAA <= 20%</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>20% < SAA <= 30%</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>30% < SAA <=</td> <td>3</td> </tr> </tbody> </table>	Name	Value	Name	Value			0% <= SAA <= 10%	0			10% < SAA <= 20%	1			20% < SAA <= 30%	2			30% < SAA <=	3	
Name	Value	Name	Value																												
		0% <= SAA <= 10%	0																												
		10% < SAA <= 20%	1																												
		20% < SAA <= 30%	2																												
		30% < SAA <=	3																												

		data)																		40%	
																				40% < SAA <=	4
																				50%	
																				50% < SAA <=	5
																				60%	
																				60% < SAA <=	6
																				70%	
																				70% < SAA <=	7
																				80%	
																				80% < SAA	8
QualityEarth	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size															
		Swath	Yes	No	15	15															
		Datum																			
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries									
		Earth processing reliability (cumulative relative quality indicator count)	0			unitless	No		16-bit integer	Name	Value	Name	Value								
										NA_INT16_FILL	-999										
										MISS_INT16_FILL	-998										
										ERR_INT16_FILL	-995										

2.10.1.3 OMPS TC SDR HDF5 Details

Figure 2.10.1.3-1, OMPS TC SDR UML Diagram, provides the details on the content and data types of the OMPS TC SDR. These UML diagrams provide details at the granule level only. In addition to these UML diagrams, refer to Section 2.1, Sensor Data Records and Temperature Data Records HDF5 Details, Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

The OMPS TC SDR within the HDF5 files can be found within the Data Products group with the group name of OMPS-TC-SDR. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

OMPS-TC-SDR
+SmearDataEarth : H5T_NATIVE_FLOAT
+RadianceEarth : H5T_NATIVE_FLOAT
+Wavelengths : H5T_NATIVE_DOUBLE
+SolarFlux : H5T_NATIVE_FLOAT
+Bias1 : H5T_NATIVE_FLOAT
+Bias2 : H5T_NATIVE_FLOAT
+DarkCurrentEarth : H5T_NATIVE_FLOAT
+DarkExposeEarth : H5T_NATIVE_DOUBLE
+Cal : H5T_NATIVE_FLOAT
+NumberOfSwaths : H5T_NATIVE_SHORT
+NumberOfFOVs : H5T_NATIVE_SHORT
+NumberOfSpectralPixels : H5T_NATIVE_SHORT
+LinearityTblVersion : H5T_NATIVE_USHORT
+GainTblVersion : H5T_NATIVE_USHORT
+BadCal : H5T_NATIVE_UCHAR
+SunGlint : H5T_NATIVE_UCHAR
+SolarEclipse : H5T_NATIVE_UCHAR
+WaveFlag : H5T_NATIVE_UCHAR
+RadFlag : H5T_NATIVE_FLOAT
+TCLinearCorrection : H5T_NATIVE_UCHAR
+SAA : H5T_NATIVE_UCHAR
+QualityEarth : H5T_NATIVE_SHORT

Figure 2.10.1.3-1, OMPS TC SDR UML Diagram

2.10.1.4 OMPS TC SDR HDF5 Metadata Details

The HDF5 metadata elements associated with the OMPS TC SDR are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The OMPS TC SDR metadata includes all common metadata at the root, product, aggregation, and granule levels. In addition to the common metadata items for this product, Table 2.10.1.4-1, OMPS TC SDR N_Quality_Summary Granule Level Metadata Values, provides the

following items as name/value pairs under the granule level metadata attribute “N_Quality_Summary”.

Table 2.10.1.4-1, OMPS TC SDR N_Quality_Summary Granule Level Metadata Values

N_Quality_Summary		
Name	Value	Description
Pixel	0 – 100 %	Percentage of good pixels

2.10.1.5 OMPS TC SDR Geolocation Content Summary

The OMPS TC SDR geolocation data arrays structures are summarized below in Table 2.10.1.5-1, OMPS TC SDR Geolocation Data Array Summary.

Table 2.10.1.5-1, OMPS TC SDR Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime	Starting Time of Swath in IET (1/1/1958)	64-bit integer	[N*15]	[15]	microsecond
MidTime	Mid Time of Swath in IET(1/1/1958)	64-bit integer	[N*15]	[15]	microsecond
Latitude	Latitude of each IFOV (positive North)	32-bit floating point	[N*15, 105]	[15, 105]	degree
Longitude	Longitude of each IFOV (positive East)	32-bit floating point	[N*15, 105]	[15, 105]	degree
LatitudeCorners	Latitude of each IFOV Corner – Array starts at upper right and proceeds clockwise	32-bit floating point	[N*15, 105, 4]	[15, 105, 4]	degree
LongitudeCorners	Longitude of each IFOV Corner - Array starts at upper right and proceeds clockwise	32-bit floating point	[N*15, 105, 4]	[15, 105, 4]	degree
SolarZenithAngle	Zenith angle of sun at each IFOV position	32-bit floating point	[N*15, 105]	[15, 105]	degree

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each IFOV position	32-bit floating point	[N*15, 105]	[15, 105]	degree
SatelliteZenithAngle	Zenith angle to satellite at each IFOV position	32-bit floating point	[N*15, 105]	[15, 105]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each IFOV position	32-bit floating point	[N*15, 105]	[15, 105]	degree
RelativeAzimuthAngle	Difference between solar and satellite azimuth angles at each IFOV position (solar – satellite)	32-bit floating point	[N*15, 105]	[15, 105]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*15, 105]	[15, 105]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*15, 105]	[15, 105]	meter
MoonVector	Lunar position in Spacecraft Coordinates at MidTime	32-bit floating point	[N*15, 3]	[15, 3]	meter
SunVector	Solar position in Spacecraft Coordinates at MidTime	32-bit floating point	[N*15, 3]	[15, 3]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime	32-bit floating point	[N*15, 3]	[15, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime	32-bit floating point	[N*15, 3]	[15, 3]	m/s
SCAttitude	Spacecraft attitude with respect to the Geodetic Reference Frame (roll, pitch, yaw) at MidTime	32-bit floating point	[N*15, 3]	[15, 3]	arcsecond

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
NumberOfSwaths	Number of actual swaths in granule	16-bit integer	[N]	[1]	unitless
NumberOfIFOVs	Number of actual IFOVs	16-bit integer	[N]	[1]	unitless
QF1_OMPSTCGEO	Attitude/Ephemeris availability status	unsigned 8-bit char	[N*15]	[15]	unitless

2.10.1.6 OMPS TC SDR Geolocation Product Profile

The OMPS TC SDR geolocation data array structures are shown below in Table 2.10.1.6-1, OMPS TC SDR Geolocation Product Profile and Table 2.10.1.6-2, OMPS TC SDR Geolocation Product Profile – Quality Flags.

Table 2.10.1.6-1, OMPS TC SDR Geolocation Product Profile

Fields													
Name	Data Size	Dimensions											
StartTime	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Starting Time of Swath in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name	Value
									NA_INT64_FILL	-999			
									MISS_INT64_FILL	-998			
									ERR_INT64_FILL	-995			
									VDNE_INT64_FILL	-993			
MidTime	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Mid Time of Swath in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name	Value
									NA_INT64_FILL	-999			
									MISS_INT64_FILL	-998			
									ERR_INT64_FILL	-995			
									VDNE_INT64_FILL	-993			
Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		Ifov	No	No	105	105							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Latitude of	0	-90	90	degree	No		32-bit	Name	Value	Name	Value		

		each IFOV (positive North)							floating point	NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										VDNE_FLOAT32_FILL	-999.3		
Longitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		IFOV	No	No	105	105							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Longitude of each IFOV (positive East)	0	-180	180	degree	No		32-bit floating point	Name	Value	Name	Value		
								NA_FLOAT32_FILL	-999.9				
								MISS_FLOAT32_FILL	-999.8				
								ERR_FLOAT32_FILL	-999.5				
								VDNE_FLOAT32_FILL	-999.3				
LatitudeCorners	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		IFOV	No	No	105	105							
		Corner	No	No	4	4							
		Datum											
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			
Latitude of each IFOV corner – Array starts at upper right and proceeds clockwise	0	-90	90	degree	No		32-bit floating point	Name	Value	Name	Value		
								NA_FLOAT32_FILL	-999.9				
								MISS_FLOAT32_FILL	-999.8				
								ERR_FLOAT32_FILL	-999.5				
								VDNE_FLOAT32_FILL	-999.3				
LongitudeCorners	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		IFOV	No	No	105	105							
		Corner	No	No	4	4							
		Datum											

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																																																															
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SatelliteZenithAngle	4byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																																															
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																																																						

	Swath	Yes	No	15	15						
	Ifov	No	No	105	105						
	Datum										
	Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Zenith angle to satellite at each Ifov position	0	0	~70	degree	No		32-bit floating point	Name	Value	Name Value	
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		
SatelliteAzimuthAngle 4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
	Swath	Yes	No	15	15						
	Ifov	No	No	105	105						
	Datum										
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Azimuth angle (measured clockwise positive from North) to Satellite at each Ifov position	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value	
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		
RelativeAzimuthAngle 4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
	Swath	Yes	No	15	15						
	Ifov	No	No	105	105						
	Datum										
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Difference between solar and satellite azimuth angles at each Ifov	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value	
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		

		position (solar – satellite)																												
Height	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																								
		Swath	Yes	No	15	15																								
		Ifov	No	No	105	105																								
		Datum																												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																			
Ellipsoid-Geoid separation	0			meter	No		32-bit floating point	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3				
Name	Value	Name	Value																											
NA_FLOAT32_FILL	-999.9																													
MISS_FLOAT32_FILL	-999.8																													
ERR_FLOAT32_FILL	-999.5																													
VDNE_FLOAT32_FILL	-999.3																													
SatelliteRange	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																								
		Swath	Yes	No	15	15																								
		Ifov	No	No	105	105																								
		Datum																												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																			
Line of sight distance from the ellipsoid intersection to the satellite	0			meter	No		32-bit floating point	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3				
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NA_FLOAT32_FILL	-999.9																													
MISS_FLOAT32_FILL	-999.8																													
ERR_FLOAT32_FILL	-999.5																													
VDNE_FLOAT32_FILL	-999.3																													
MoonVector	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																								
		Swath	Yes	No	15	15																								
		SCCoordinate	No	No	3	3																								
		Datum																												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																			
Lunar Position in Spacecraft Coordinates at	0			meter	No		32-bit floating point	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8												
Name	Value	Name	Value																											
NA_FLOAT32_FILL	-999.9																													
MISS_FLOAT32_FILL	-999.8																													

		MidTime								ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
SunVector	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Swath	Yes	No	15	15						
		SCCoordinate	No	No	3	3						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
Solar position in Spacecraft Coordinates at MidTime	0			meter	No		32-bit floating point	Name	Value	Name	Value	
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
SCPosition	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Swath	Yes	No	15	15						
		ECRCoordinate	No	No	3	3						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime	0			meter	No		32-bit floating point	Name	Value	Name	Value	
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
SCVelocity	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Swath	Yes	No	15	15						
		ECRCoordinate	No	No	3	3						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
Spacecraft velocity in ECR Coordinates	0			m/s	No		32-bit floating point	Name	Value	Name	Value	
								NA_FLOAT32_FILL	-999.9			

		(dx/dt, dy/dt, dz/dt) at MidTime									MISS_FLOAT32_FILL	-999.8	
											ERR_FLOAT32_FILL	-999.5	
											VDNE_FLOAT32_FILL	-999.3	
SCAttitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
		GRFCoordinate	No	No	3	3							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Spacecraft attitude with respect to the Geodetic Reference Frame (roll, pitch, yaw) at MidTime	0			arcsecond	No		32-bit floating point	Name	Value	Name	Value		
								NA_FLOAT32_FILL	-999.9				
								MISS_FLOAT32_FILL	-999.8				
								ERR_FLOAT32_FILL	-999.5				
								VDNE_FLOAT32_FILL	-999.3				
NumberOfSwaths	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Number of actual swaths in granule		0		unitless	No		16-bit integer	Name	Value	Name	Value
								NA_INT16_FILL	-999				
								MISS_INT16_FILL	-998				
								ERR_INT16_FILL	-995				
								VDNE_INT16_FILL	-993				
NumberOfIFOVs	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Number of actual IFOVs		0		unitless	No		16-bit integer	Name	Value	Name	Value
								NA_INT16_FILL	-999				

Table 2.10.1.6-2, OMPS TC SDR Geolocation Product Profile – Quality Flags

Name	Data Size	Dimensions											
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Swath	Yes	No	15	15							
QF1_OMPSTCGEO	1byte(s)	Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Attitude and Ephemeris Availability Status	0			unitless	No		2 bit(s)	Name	Value	Name Value	
												Nominal - E&A data available	0
Missing Data <= 1 Small Gap	1												
Missing Data < Granule Boundary	2												
		Missing Data >= 3 Granule Boundary	3										
Spare	2			unitless	No		6 bit(s)	Name	Value	Name	Value		

2.10.1.7 OMPS TC SDR Geolocation HDF5 Details

The OMPS TC SDR Geolocation is based on a simple spatial average over the geometric cell bounds, regardless of pixel sampling. Geolocation is reported on the ellipsoid. Figure 2.10.1.7-1, OMPS TC SDR Geolocation UML Diagram, provides details on the contents and data types of the OMPS TC SDR geolocation.

OMPS-TC-GEO
+StartTime : H5T_NATIVE_LLONG
+MidTime : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+LatitudeCorners : H5T_NATIVE_FLOAT
+LongitudeCorners : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+RelativeAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_FLOAT
+SatelliteRange : H5T_NATIVE_FLOAT
+MoonVector : H5T_NATIVE_FLOAT
+SunVector : H5T_NATIVE_FLOAT
+SCPosition : H5T_NATIVE_FLOAT
+SCVelocity : H5T_NATIVE_FLOAT
+SCAttitude : H5T_NATIVE_FLOAT
+NumberOfSwaths : H5T_NATIVE_SHORT
+NumberOfFOVs : H5T_NATIVE_SHORT
+QF1_OMPSTCGEO : H5T_NATIVE_UCHAR

Figure 2.10.1.7-1, OMPS TC SDR Geolocation UML Diagram

2.10.1.8 OMPS TC SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the OMPS TC SDR Geolocation are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. There are no additional metadata elements or granule level quality flags for this geolocation.

2.10.2 OMPS TC Calibration SDR

The OMPS TC calibration SDR dataset and metadata formats are described in the following subparagraphs.

2.10.2.1 OMPS TC Calibration SDR Data Content Summary

The OMPS TC Calibration SDR product structure contains the data arrays shown below in Table 2.10.2.1-1, OMPS TC Calibration SDR Data Array Summary.

Table 2.10.2.1-1, OMPS TC Calibration SDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
Bias1	Average electronics bias CCD side 1	32-bit floating point	[N]	[1]	count
Bias2	Average electronics bias CCD side 2	32-bit floating point	[N]	[1]	count
DarkData	Dark current corrected coadded counts	32-bit floating point	[N*364, 780]	[364, 780]	count
DarkCurrentExpose	Exposure time of dark current (expose_dark)	64-bit floating point	[N]	[1]	second
LampExpose	Exposure time of lamp counts (expose_lamp)	64-bit floating point	[N]	[1]	second
BadPixelMap	Map of pixels used for solar data (badpix)	32-bit floating point	[N*260, 740]	[260, 740]	unitless
WavelengthMap	Wavelength map (wmap)	64-bit floating point	[N*260, 740]	[260, 740]	unitless
Flat	Local relative normalized radiometric sensitivities	32-bit floating point	[N*260, 740]	[260, 740]	unitless
NumberOfWorkingSolar	Number of solar frames from working diffuser	16-bit integer	[N]	[1]	unitless
NumberOfReferenceSolar	Number of solar frames from reference diffuser	16-bit integer	[N]	[1]	unitless

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
NumberOfDark	Number of dark frames (images)	16-bit integer	[N]	[1]	unitless
NumberOfLamp	Number of lamp frames (images)	16-bit integer	[N]	[1]	unitless
NumberOfCoaddsSolar	Number of Co-adds during solar calibration	16-bit integer	[N]	[1]	unitless
NumberOfCoaddsDark	Number of coadds during Dark calibration	16-bit integer	[N]	[1]	unitless
NumberOfCoaddsLamp	Number of coadds during Lamp calibration.	16-bit integer	[N]	[1]	unitless
CCD	Count rate of sun (ccd)	64-bit floating point	[N*260, 740]	[260, 740]	count/second
TotalSolarExpose	Total Solar Exposure time (total_sol_expose)	64-bit floating point	[N]	[1]	second
RSFCounts	Reference solar counts (rsf_data)	32-bit floating point	[N*260, 740]	[260, 740]	count
RSFExpose	Reference solar exposure time (rsf_expose)	32-bit floating point	[N]	[1]	second
RawSolar	Raw Solar Radiances	32-bit floating point	[N*63, 260, 200]	[63, 260, 200]	count
SmearDataSolar	Smear Data Solar Radiances	32-bit floating point	[N*63,260, 2]	[63, 260, 2]	count
SolarBeta1	Angle between orbital plane and sun at start of solar observation	32-bit floating point	[N*63]	[63]	degree
SolarBeta2	Angle between orbital plane and sun at end of solar observation	32-bit floating point	[N*63]	[63]	degree
DiffIncinAngle	Angle from normal of incident solar flux	32-bit floating point	[N*63]	[63]	degree

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
DiffuserPositionSolar	Starting and ending pixel column for each solar measurement	16-bit integer	[N*63, 2]	[63, 2]	unitless
YearSolar	Year of Solar Observation	32-bit integer	[N*63]	[63]	year
DaySolar	Day of Year for Solar Observation	32-bit integer	[N*63]	[63]	day
DiffuserSurfaceSolar	Diffuser Surface used for Solar Calibration	32-bit integer	[N*63]	[63]	unitless
TccdTCSolar	CCD Temperature	16-bit integer	[N*63]	[63]	count
TmotnadSolar	Motor Temperature at Nadir	16-bit integer	[N*63]	[63]	count
TlmpnadSolar	Lamp Temperature at Nadir	16-bit integer	[N*63]	[63]	count
TradnadSolar	Radiator Temperature at Nadir	16-bit integer	[N*63]	[63]	count
Tel1nadSolar	Electronics 1 Temperature at Nadir	16-bit integer	[N*63]	[63]	count
Tel2nadSolar	Electronics 2 Temperature at Nadir	16-bit integer	[N*63]	[63]	count
PccdTCSolar	Profile of CCD	16-bit integer	[N*63]	[63]	count
VtecTCSolar	Voltage of Electronics	16-bit integer	[N*63]	[63]	count
CtecTCSolar	Electronics current	16-bit integer	[N*63]	[63]	count
GonPar	Goniometric correction to solar counts	32-bit floating point	[N*63, 260, 200]	[63, 260, 200]	unitless
FluxData	Final corrected solar counts of individual solar observation	32-bit floating point	[N*63, 260, 200]	[63, 260, 200]	W/cm^3
TccdTCDark	CCD Temperature	16-bit integer	[N*5]	[5]	count
TmotnadDark	Motor Temperature at Nadir	16-bit integer	[N*5]	[5]	count

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
TlmpnadDark	Lamp Temperature at Nadir	16-bit integer	[N*5]	[5]	count
TradnadDark	Radiator Temperature at Nadir	16-bit integer	[N*5]	[5]	count
Tel1nadDark	Electronics 1 Temperature at Nadir	16-bit integer	[N*5]	[5]	count
Tel2nadDark	Electronics 2 Temperature at Nadir	16-bit integer	[N*5]	[5]	count
PccdTCDark	Profile of CCD	16-bit integer	[N*5]	[5]	count
VtecTCDark	Voltage of Electronics	16-bit integer	[N*5]	[5]	count
CtecTCDark	Current of Electronics	16-bit integer	[N*5]	[5]	count
DarkArray	Correct counts of an individual dark current image	32-bit floating point	[N*5, 364, 780]	[5, 364, 780]	count
TccdTCLamp	CCD Temperature	16-bit integer	[N*150]	[150]	count
TmotnadLamp	Motor Temperature at Nadir	16-bit integer	[N*150]	[150]	count
TlmpnadLamp	Lamp Temperature at Nadir	16-bit integer	[N*150]	[150]	count
TradnadLamp	Radiator Temperature at Nadir	16-bit integer	[N*150]	[150]	count
Tel1nadLamp	Electronics 1 Temperature at Nadir	16-bit integer	[N*150]	[150]	count
Tel2nadLamp	Electronics 2 Temperature at Nadir	16-bit integer	[N*150]	[150]	count
PccdTCLamp	Profile of CCD	16-bit integer	[N*150]	[150]	count
VtecTCLamp	Voltage of Electronics	16-bit integer	[N*150]	[150]	count
CtecTCLamp	Current of Electronics	16-bit integer	[N*150]	[150]	count

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
LampData	Correct counts of an individual lamp image	32-bit floating point	[N*150, 364, 780]	[150, 364, 780]	count
QualityLamp	Reliability of lamp processing	16-bit integer	[N*150]	[150]	unitless
QualitySolar	Reliability of solar processing	16-bit integer	[N*63]	[63]	unitless
QualityDark	Reliability of dark processing	16-bit integer	[N*5]	[5]	unitless
MedianDark	Median dark current	32-bit floating point	[N]	[1]	count
Fitness	Chi-squared goodness of fit for wavelengths	64-bit floating point	[N*105]	[105]	unitless
CompleteFlag	Completeness of solar calibration data	16-bit integer	[N]	[1]	unitless
SAALamp	Spacecraft within South Atlantic Anomaly during Lamp calibration (extent in percent based on Climatological data)	unsigned 8-bit char	[N*150]	[150]	unitless
SAASolar	Spacecraft within South Atlantic Anomaly during Solar calibration (extent in percent based on Climatological data)	unsigned 8-bit char	[N*63]	[63]	unitless
SAADark	Spacecraft within South Atlantic Anomaly during Dark calibration (extent in percent based on Climatological data)	unsigned 8-bit char	[N*5]	[5]	unitless
Eclipse	Eclipse - All or part of the S/C is affected by a solar eclipse, umbra or penumbra viewing.	unsigned 8-bit char	[N*63]	[63]	unitless

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
OccultationFlag	Occultation of the diffuser during solar observation	unsigned 8-bit char	[N*63]	[63]	unitless

2.10.2.2 OMPS TC Calibration SDR Product Profile

The OMPS TC Calibration data array structures are shown below in Table 2.10.2.2-1, OMPS TC Calibration SDR Product Profile and Table 2.10.2.2-2, OMPS TC Calibration SDR Product Profile – Quality Values.

Table 2.10.2.2-1, OMPS TC Calibration SDR Product Profile

Name	Data Size	Dimensions										
Bias1	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Average electronics bias CCD side 1	0			count	No		32-bit floating point	Name	Value	Name
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
Bias2	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Average electronics bias CCD side 2	0			count	No		32-bit floating point	Name	Value	Name
								NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
DarkData	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		SpectralPixel	Yes	No	364	364						
		SpatialPixel	No	No	780	780						
Datum												

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
								Name	Value	Name	Value	
Dark current corrected coadded counts	0			count	No		32-bit floating point	NA_FLOAT32_FILL	-999.9			
								MISS_FLOAT32_FILL	-999.8			
								ERR_FLOAT32_FILL	-999.5			
								VDNE_FLOAT32_FILL	-999.3			
DarkCurrentExpose	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Granule		Yes	No	1	1					
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Exposure time of dark current (expose_dark)	0			second	No		64-bit floating point	NA_FLOAT64_FILL	-999.9			
								MISS_FLOAT64_FILL	-999.8			
								ERR_FLOAT64_FILL	-999.5			
								VDNE_FLOAT64_FILL	-999.3			
LampExpose	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Granule		Yes	No	1	1					
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Exposure time of lamp counts (expose_lamp)	0			second	No		64-bit floating point	NA_FLOAT64_FILL	-999.9			
								MISS_FLOAT64_FILL	-999.8			
								ERR_FLOAT64_FILL	-999.5			
								VDNE_FLOAT64_FILL	-999.3			
BadPixelMap	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		SpectralPixel		Yes	No	260	260					
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		Granule	Yes	No	1	1																			
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		Granule	Yes	No	1	1																			
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		Granule	Yes	No	1	1																			
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												NA_INT16_FILL	-999		
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CCD	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		SpectralPixel	Yes	No	260	260									
		SpatialPixel	No	No	740	740									
		Datum													
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		Count rate of sun (ccd)	0			count/second	No		64-bit floating point	Name	Value	Name	Value		
										NA_FLOAT64_FILL	-999.9				
										MISS_FLOAT64_FILL	-999.8				
										ERR_FLOAT64_FILL	-999.5				
										VDNE_FLOAT64_FILL	-999.3				
TotalSolarExposure	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		FOV	Yes	No	1	1									
		Datum													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			
		Total Solar Exposure time (total_sol_exposure)	0			second	No		64-bit floating point	Name	Value	Name	Value		
										NA_FLOAT64_FILL	-999.9				
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RSFCOUNTS	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		SpectralPixel	Yes	No	260	260									
		SpatialPixel	No	No	740	740									
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				Range Min	Range Max			Name						
		Reference solar counts (rsf_data)	0			count	No		32-bit floating point	Name	Value	Name	Value	
										NA_FLOAT32_FILL	-999.9			
										MISS_FLOAT32_FILL	-999.8			
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		Granule	Yes	No	1	1								
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										NA_FLOAT32_FILL	-999.9			
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RawSolar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Solar	Yes	No	63	63								
		SpectralPixel	No	No	260	260								
		SpatialPixel	No	No	200	200								
Datum														
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Raw Solar Radiances	0			count	No		32-bit floating point	Name	Value	Name	Value			
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										VDNE_FLOAT32_FILL	-999.3			
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		Solar	Yes	No	63	63								
		SpectralPixel	No	No	260	260								
		SpatialPixel	No	No	2	2								
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		Smear Data Solar Radiances	0		count	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3				
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		Angle between orbital plane and sun at start of solar observation	0			degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3			
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		Angle between orbital plane and sun at end of solar observation	0			degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3			
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			Min	Max																												
		Angle from normal of incident solar flux	0			degree	No			32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3			
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DiffuserPositionSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																										
		Solar	Yes	No	63	63																										
		Time	No	No	2	2																										
Datum																																
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		Starting and Ending pixel column for each solar measurement	0			unitless	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> <td></td> <td></td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> <td></td> <td></td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> <td></td> <td></td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_INT16_FILL	-999			MISS_INT16_FILL	-998			ERR_INT16_FILL	-995			VDNE_INT16_FILL	-993				
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YearSolar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																										
		Solar	Yes	No	63	63																										
									Datum																							
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DaySolar	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																										
		Solar	Yes	No	63	63																										
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		Day of Year for Solar Observation	0			day	No		32-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT32_FILL</td> <td>-999</td> <td></td> <td></td> </tr> <tr> <td>MISS_INT32_FILL</td> <td>-998</td> <td></td> <td></td> </tr> <tr> <td>ERR_INT32_FILL</td> <td>-995</td> <td></td> <td></td> </tr> <tr> <td>VDNE_INT32_FILL</td> <td>-993</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_INT32_FILL	-999			MISS_INT32_FILL	-998			ERR_INT32_FILL	-995			VDNE_INT32_FILL	-993			
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DiffuserSurfaceSolar	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																								
		Solar	Yes	No	63	63																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Diffuser Surface used for Solar Calibration	0			unitless	No		32-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT32_FILL</td> <td>-999</td> <td></td> <td></td> </tr> <tr> <td>MISS_INT32_FILL</td> <td>-998</td> <td></td> <td></td> </tr> <tr> <td>ERR_INT32_FILL</td> <td>-995</td> <td></td> <td></td> </tr> <tr> <td>VDNE_INT32_FILL</td> <td>-993</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_INT32_FILL	-999			MISS_INT32_FILL	-998			ERR_INT32_FILL	-995			VDNE_INT32_FILL	-993			
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TccdTCSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																								
		Solar	Yes	No	63	63																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		CCD Temperature	0			count	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> <td></td> <td></td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> <td></td> <td></td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> <td></td> <td></td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_INT16_FILL	-999			MISS_INT16_FILL	-998			ERR_INT16_FILL	-995			VDNE_INT16_FILL	-993			
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		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Motor Temperature	0			count	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_INT16_FILL	-999															
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		at Nadir								MISS_INT16_FILL	-998		
										ERR_INT16_FILL	-995		
										VDNE_INT16_FILL	-993		
TlmpnadSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Lamp Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value		
								NA_INT16_FILL	-999				
								MISS_INT16_FILL	-998				
								ERR_INT16_FILL	-995				
								VDNE_INT16_FILL	-993				
TradnadSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Radiator Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value		
								NA_INT16_FILL	-999				
								MISS_INT16_FILL	-998				
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								VDNE_INT16_FILL	-993				
Tel1nadSolar	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Electronics 1 Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value		
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		VDNE_INT16_FILL -993										
Tel2nadSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Electronics 2 Temperature at Nadir	0			count	No		16-bit integer	Name	Value	Name	Value	
								NA_INT16_FILL	-999			
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								ERR_INT16_FILL	-995			
								VDNE_INT16_FILL	-993			
PccdTCSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Profile of CCD	0			count	No		16-bit integer	Name	Value	Name	Value	
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VtecTCSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Voltage of Electronics	0			count	No		16-bit integer	Name	Value	Name	Value	
								NA_INT16_FILL	-999			
								MISS_INT16_FILL	-998			
								ERR_INT16_FILL	-995			
								VDNE_INT16_FILL	-993			
CtecTCSolar	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						

	s)	Solar		Yes	No	63	63																						
		Datum																											
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		Electronics current	0			count	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> <td></td> <td></td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> <td></td> <td></td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> <td></td> <td></td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_INT16_FILL	-999			MISS_INT16_FILL	-998			ERR_INT16_FILL	-995			VDNE_INT16_FILL	-993	
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		Solar	Yes	No	63	63																							
		SpectralPixel	No	No	260	260																							
		SpatialPixel	No	No	200	200																							
Datum																													
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
Goniometric correction to solar counts	0			unitless	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3			
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FluxData	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size				
		Solar	Yes	No	63	63				
		SpectralPixel	No	No	260	260				
		SpatialPixel	No	No	200	200				
Datum										
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	

		Final corrected solar counts of individual solar observation	0			W/cm^3	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			VDNE_FLOAT32_FILL	-999.3																																														
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QualityDark	2byte(s)	<table border="1"> <tr> <td>Name</td> <td>Granule Boundary</td> <td>Dynamic</td> <td>Min Array Size</td> <td>Max Array Size</td> <td colspan="8"></td> </tr> <tr> <td>Dark</td> <td>Yes</td> <td>No</td> <td>5</td> <td>5</td> <td colspan="8"></td> </tr> <tr> <td colspan="13">Datum</td> </tr> <tr> <td>Description</td> <td>Datum Offset</td> <td>Unscaled Valid Range Min</td> <td>Unscaled Valid Range Max</td> <td>Measurement Units</td> <td>Scaled</td> <td>Scale Factor Name</td> <td>Data Type</td> <td colspan="2">Fill Values</td> <td colspan="3">Legend Entries</td> </tr> <tr> <td>Reliability of dark processing</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>16-bit integer</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>NA_INT16_FILL</td> <td>-999</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>MISS_INT16_FILL</td> <td>-998</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ERR_INT16_FILL</td> <td>-995</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>VDNE_INT16_FILL</td> <td>-993</td> <td></td> <td></td> <td></td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									Dark	Yes	No	5	5									Datum													Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			Reliability of dark processing	0			unitless	No		16-bit integer	Name	Value	Name	Value										NA_INT16_FILL	-999												MISS_INT16_FILL	-998												ERR_INT16_FILL	-995												VDNE_INT16_FILL	-993			
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																																																																																																													
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Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																																																																																																													
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								VDNE_FLOAT32_FILL	-999.3																																																																																																																								
Fitness	8byte(s)	<table border="1"> <tr> <td>Name</td> <td>Granule Boundary</td> <td>Dynamic</td> <td>Min Array Size</td> <td>Max Array Size</td> <td colspan="8"></td> </tr> <tr> <td>Ifov</td> <td>Yes</td> <td>No</td> <td>105</td> <td>105</td> <td colspan="8"></td> </tr> <tr> <td colspan="13">Datum</td> </tr> <tr> <td>Description</td> <td>Datum Offset</td> <td>Unscaled Valid Range Min</td> <td>Unscaled Valid Range Max</td> <td>Measurement Units</td> <td>Scaled</td> <td>Scale Factor Name</td> <td>Data Type</td> <td colspan="2">Fill Values</td> <td colspan="3">Legend Entries</td> </tr> <tr> <td>Chi-</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>64-bit</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td></td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									Ifov	Yes	No	105	105									Datum													Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries			Chi-	0			unitless	No		64-bit	Name	Value	Name	Value																																																					
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		squared goodness of fit for wavelengths							floating point	<table border="1"> <tr><td>NA_FLOAT64_FILL</td><td>-999.9</td></tr> <tr><td>MISS_FLOAT64_FILL</td><td>-999.8</td></tr> <tr><td>ERR_FLOAT64_FILL</td><td>-999.5</td></tr> <tr><td>VDNE_FLOAT64_FILL</td><td>-999.3</td></tr> </table>	NA_FLOAT64_FILL	-999.9	MISS_FLOAT64_FILL	-999.8	ERR_FLOAT64_FILL	-999.5	VDNE_FLOAT64_FILL	-999.3			
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VDNE_FLOAT64_FILL	-999.3																				
CompleteFlag	2byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Lamp</td> <td>Yes</td> <td>No</td> <td>1</td> <td>1</td> </tr> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Lamp	Yes	No	1	1					
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size															
		Lamp	Yes	No	1	1															
		Datum																			
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
Completeness of solar calibration data	0			unitless	No		16-bit integer	<table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td>NA_INT16_FILL</td><td>-999</td></tr> <tr><td>MISS_INT16_FILL</td><td>-998</td></tr> <tr><td>ERR_INT16_FILL</td><td>-995</td></tr> <tr><td>VDNE_INT16_FILL</td><td>-993</td></tr> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <tr><th>Name</th><th>Value</th></tr> </table>	Name	Value
Name	Value																				
NA_INT16_FILL	-999																				
MISS_INT16_FILL	-998																				
ERR_INT16_FILL	-995																				
VDNE_INT16_FILL	-993																				
Name	Value																				

Table 2.10.2.2-2, OMPS TC Calibration SDR Product Profile – Quality Values

Name	Data Size	Dimensions																					
SAALamp	1byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Lamp</td> <td>Yes</td> <td>No</td> <td>150</td> <td>150</td> </tr> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Lamp	Yes	No	150	150							
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		Lamp	Yes	No	150	150																	
		Datum																					
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
Spacecraft within South Atlantic Anomaly during Lamp calibration (extent in percent)	0			unitless	No		unsigned 8-bit char	<table border="1"> <tr><th>Name</th><th>Value</th></tr> <tr><td>0% <= SAA <= 10%</td><td>0</td></tr> <tr><td>10% < SAA <= 20%</td><td>1</td></tr> <tr><td>20% < SAA <= 30%</td><td>2</td></tr> <tr><td>30% < SAA <= 40%</td><td>3</td></tr> <tr><td>40% < SAA <= 50%</td><td>4</td></tr> </table>	Name	Value	0% <= SAA <= 10%	0	10% < SAA <= 20%	1	20% < SAA <= 30%	2	30% < SAA <= 40%	3	40% < SAA <= 50%	4	<table border="1"> <tr><th>Name</th><th>Value</th></tr> </table>	Name	Value
Name	Value																						
0% <= SAA <= 10%	0																						
10% < SAA <= 20%	1																						
20% < SAA <= 30%	2																						
30% < SAA <= 40%	3																						
40% < SAA <= 50%	4																						
Name	Value																						

		based on Climatological data)										50% < SAA <= 60%	5
												60% < SAA <= 70%	6
												70% < SAA <= 80%	7
												80% < SAA	8
SAASolar	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Spacecraft within South Atlantic Anomaly during Solar calibration (extent in percent based on Climatological data)	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value	0% <= SAA <= 10%	0
										10% < SAA <= 20%	1		
										20% < SAA <= 30%	2		
										30% < SAA <= 40%	3		
										40% < SAA <= 50%	4		
										50% < SAA <= 60%	5		
										60% < SAA <= 70%	6		
										70% < SAA <= 80%	7		
										80% < SAA	8		
SAADark	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Dark	Yes	No	5	5							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Spacecraft within South Atlantic Anomaly during Dark calibration (extent in percent based on Climatological data)	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value	0% <= SAA <= 10%	0
										10% < SAA <= 20%	1		
										20% < SAA <= 30%	2		
										30% < SAA <= 40%	3		
										40% < SAA <= 50%	4		
										50% < SAA <= 60%	5		
										60% < SAA <= 70%	6		
										70% < SAA <= 80%	7		
										80% < SAA	8		

Eclipse	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Solar	Yes	No	63	63					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Eclipse - All or part of the S/C is affected by a solar eclipse, umbra or penumbra viewing.	0			unitless	No		unsigned 8-bit char	Name Value	Name Value		
									False 0		
									True 1		
OccultationFlag	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Solar	Yes	No	63	63					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Occultation of the diffuser has occurred during solar observation	0			unitless	No		unsigned 8-bit char	Name Value	Name Value		
									False 0		
									True 1		

2.10.2.3 OMPS TC Calibration SDR HDF5 Details

Figure 2.10.2.3-1, OMPS TC Calibration SDR UML Diagram, provides the details on the content and data types of the OMPS TC Calibration SDR. These UML diagrams provide details at the granule level only. In addition to these UML diagrams, refer to Section 2.2, Sensor Data Records and Temperature Data Records HDF5 Details, Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

The OMPS TC Calibration SDR within the HDF5 files can be found within the Data Products group with the group name of OMPS-TC-Cal-SDR. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

OMPS-TC-Cal-SDR	OMPS-TC-Cal-SDR (cont. 1)	OMPS-TC-Cal_SDR (cont. 2)
+Bias1 : H5T_NATIVE_FLOAT +Bias2 : H5T_NATIVE_FLOAT +DarkData : H5T_NATIVE_FLOAT +DarkCurrentExpose : H5T_NATIVE_DOUBLE +LampExpose : H5T_NATIVE_DOUBLE +BadPixelMap : H5T_NATIVE_FLOAT +WavelengthMap : H5T_NATIVE_DOUBLE +Flat : H5T_NATIVE_FLOAT +NumberOfWorkingSolar : H5T_NATIVE_SHORT +NumberOfReferenceSolar : H5T_NATIVE_SHORT +NumberOfDark : H5T_NATIVE_SHORT +NumberOfLamp : H5T_NATIVE_SHORT +NumberOfCoaddsSolar : H5T_NATIVE_SHORT +NumberOfCoaddsDark : H5T_NATIVE_SHORT +NumberOfCoaddsLamp : H5T_NATIVE_SHORT +CCD : H5T_NATIVE_DOUBLE +TotalSolarExpose : H5T_NATIVE_DOUBLE +RSFCounts : H5T_NATIVE_FLOAT +RSFExpose : H5T_NATIVE_FLOAT +RawSolar : H5T_NATIVE_FLOAT +SmearDataSolar : H5T_NATIVE_FLOAT +SolarBeta1 : H5T_NATIVE_FLOAT +SolarBeta2 : H5T_NATIVE_FLOAT +DiffIncinAngle : H5T_NATIVE_FLOAT +DiffuserPositionSolar : H5T_NATIVE_SHORT	+YearSolar : H5T_NATIVE_INT +DaySolar : H5T_NATIVE_INT +DiffuserSurfaceSolar : H5T_NATIVE_INT +TccdTCSolar : H5T_NATIVE_SHORT +TmotnadSolar : H5T_NATIVE_SHORT +TImpnadSolar : H5T_NATIVE_SHORT +TradnadSolar : H5T_NATIVE_SHORT +Tel1nadSolar : H5T_NATIVE_SHORT +Tel2nadSolar : H5T_NATIVE_SHORT +PccdTCSolar : H5T_NATIVE_SHORT +VtecTCSolar : H5T_NATIVE_SHORT +CtecTCSolar : H5T_NATIVE_SHORT +GonPar : H5T_NATIVE_FLOAT +FluxData : H5T_NATIVE_FLOAT +TccdTCDark : H5T_NATIVE_SHORT +TmotnadDark : H5T_NATIVE_SHORT +TImpnadDark : H5T_NATIVE_SHORT +TradnadDark : H5T_NATIVE_SHORT +Tel1nadDark : H5T_NATIVE_SHORT +Tel2nadDark : H5T_NATIVE_SHORT +PccdTCDark : H5T_NATIVE_SHORT +VtecTCDark : H5T_NATIVE_SHORT +CtecTCDark : H5T_NATIVE_SHORT	+DarkArray : H5T_NATIVE_FLOAT +TccdTCLamp : H5T_NATIVE_SHORT +TmotnadLamp : H5T_NATIVE_SHORT +TImpnadLamp : H5T_NATIVE_SHORT +TradnadLamp : H5T_NATIVE_SHORT +Tel1nadLamp : H5T_NATIVE_SHORT +Tel2nadLamp : H5T_NATIVE_SHORT +PccdTCLamp : H5T_NATIVE_SHORT +VtecTCLamp : H5T_NATIVE_SHORT +CtecTCLamp : H5T_NATIVE_SHORT +LampData : H5T_NATIVE_FLOAT +QualityLamp : H5T_NATIVE_SHORT +QualitySolar : H5T_NATIVE_SHORT +QualityDark : H5T_NATIVE_SHORT +MedianDark : H5T_NATIVE_FLOAT +Fitness : H5T_NATIVE_DOUBLE +CompleteFlag : H5T_NATIVE_SHORT +SAALamp : H5T_NATIVE_UCHAR +SAASolar : H5T_NATIVE_UCHAR +SAADark : H5T_NATIVE_UCHAR +Eclipse : H5T_NATIVE_UCHAR +OccultationFlag : H5T_NATIVE_UCHAR

Figure 2.10.2.3-1, OMPS TC Calibration SDR UML Diagram

2.10.2.4 OMPS TC Calibration SDR Metadata Details

The HDF5 metadata elements associated with the OMPS TC Calibration SDR are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The OMPS TC Calibration SDR metadata includes all common metadata at the root, product, aggregation, and granule levels. No summary level metadata is produced for OMPS TC Calibration SDRs.

2.10.2.5 OMPS TC Calibration SDR Geolocation Content Summary

The OMPS TC calibration SDR geolocation datasets are summarized below in Table 2.10.2.5-1 OMPS TC Calibration SDR Geolocation Content Summary.

Table 2.10.2.5-1, OMPS TC Calibration SDR Geolocation Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime_Solar	Start time of solar frame in IET (1/1/1958)	64-bit integer	[N*63]	[63]	microsecond
MidTime_Solar	Mid-Time of solar frame in IET (1/1/1958)	64-bit integer	[N*63]	[63]	microsecond
EndTime_Solar	End time of solar frame in IET (1/1/1958)	64-bit integer	[N*63]	[63]	microsecond
Latitude_Solar	Latitude of each FOV (positive North) at MidTime_Solar	32-bit floating point	[N*63, 740]	[63, 740]	degree
Longitude_Solar	Longitude of each FOV (positive East) at MidTime_Solar	32-bit floating point	[N*63, 740]	[63, 740]	degree
MoonVector_Solar	Lunar Position in Spacecraft Coordinates at MidTime_Solar	32-bit floating point	[N*63, 3]	[63, 3]	meter
SunVector_Solar	Solar position in Spacecraft Coordinate System at MidTime_Solar	32-bit floating point	[N*63, 3]	[63, 3]	meter
SCPosition_Solar	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime_Solar	32-bit floating point	[N*63, 3]	[63, 3]	meter

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SCVelocity_Solar	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime_Solar	32-bit floating point	[N*63, 3]	[63, 3]	m/s
SCAttitude_Solar	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Solar	32-bit floating point	[N*63, 3]	[63, 3]	arcsecond
StartTime_Dark	Start time of dark frame in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
MidTime_Dark	Mid-Time of dark frame in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
EndTime_Dark	End time of dark frame in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
Latitude_Dark	Sub-Satellite Latitude (positive North) at MidTime_Dark	32-bit floating point	[N*5, 740]	[5, 740]	degree
Longitude_Dark	Sub-Satellite Longitude (positive East) at MidTime_Dark	32-bit floating point	[N*5, 740]	[5, 740]	degree
SCPosition_Dark	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime_Dark	32-bit floating point	[N*5, 3]	[5, 3]	meter
SCVelocity_Dark	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime_Dark	32-bit floating point	[N*5, 3]	[5, 3]	m/s
SCAttitude_Dark	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Dark	32-bit floating point	[N*5, 3]	[5, 3]	arcsecond
StartTime_Lamp	Start time of lamp frame in IET (1/1/1958)	64-bit integer	[N*150]	[150]	microsecond

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
MidTime_Lamp	Mid-Time of lamp frame in IET (1/1/1958)	64-bit integer	[N*150]	[150]	microsecond
EndTime_Lamp	End time of lamp frame in IET (1/1/1958)	64-bit integer	[N*150]	[150]	microsecond
Latitude_Lamp	Sub-Satellite Latitude (positive North) at MidTime_Lamp	32-bit floating point	[N*150, 740]	[150, 740]	degree
Longitude_Lamp	Sub-Satellite Longitude (positive East) at MidTime_Lamp	32-bit floating point	[N*150, 740]	[150, 740]	degree
SCPosition_Lamp	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime_Lamp	32-bit floating point	[N*150, 3]	[150, 3]	meter
SCVelocity_Lamp	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime_Lamp	32-bit floating point	[N*150, 3]	[150, 3]	m/s
SCAttitude_Lamp	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Lamp	32-bit floating point	[N*150, 3]	[150, 3]	arcsecond
NumberOfSolar	Actual number of solar frames (images)	16-bit integer	[N]	[1]	unitless
NumberOfDark	Actual number of dark frames (images)	16-bit integer	[N]	[1]	unitless
NumberOfLamp	Actual number of lamp frames (images)	16-bit integer	[N]	[1]	unitless
QF1_GEOSOLAR	Attitude/Ephemeris availability status during Solar Calibration	unsigned 8-bit char	[N*63]	[63]	unitless
QF2_GEODARK	Attitude/Ephemeris availability status during Dark Calibration	unsigned 8-bit char	[N*5]	[5]	unitless

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
QF3_GEOLAMP	Attitude/Ephemeris availability status during Lamp Calibration	unsigned 8-bit char	[N*150]	[150]	unitless

2.10.2.6 OMPS TC Calibration SDR Geolocation Product Profile

The OMPS TC Calibration SDR geolocation product profile is shown below in Table 2.10.2.6-1 OMPS TC Calibration SDR Geolocation Product Profile and in Table 2.10.2.6-2, OMPS TC Calibration SDR Geolocation Quality Flags Product Profile.

Table 2.10.2.6-1, OMPS TC Calibration SDR - Geolocation Product Profile

Fields												
Name	Data Size	Dimensions										
StartTime_Solar	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Start time of solar frame in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name Value
								NA_INT64_FILL	-999			
								MISS_INT64_FILL	-998			
								ERR_INT64_FILL	-995			
								VDNE_INT64_FILL	-993			
MidTime_Solar	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Mid-Time of S solar frame in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name Value
								NA_INT64_FILL	-999			
								MISS_INT64_FILL	-998			
								ERR_INT64_FILL	-995			
								VDNE_INT64_FILL	-993			
EndTime_Solar	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63						
		Datum										

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		End time of solar frame in IET (1/1/1958)	0			microsecond	No		64-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT64_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT64_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT64_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT64_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT64_FILL	-999	MISS_INT64_FILL	-998	ERR_INT64_FILL	-995	VDNE_INT64_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT64_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT64_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT64_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT64_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT64_FILL	-999	MISS_INT64_FILL	-998	ERR_INT64_FILL	-995	VDNE_INT64_FILL	-993
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Latitude_Solar	4byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td>Solar</td> <td>Yes</td> <td>No</td> <td>63</td> <td>63</td> </tr> <tr> <td>SpatialPixel</td> <td>No</td> <td>No</td> <td>740</td> <td>740</td> </tr> </tbody> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Solar	Yes	No	63	63	SpatialPixel	No	No	740	740										
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Datum																															
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Latitude of each FOV (positive North) at MidTime_Solar	0	-90	90	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3
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		Longitude of each FOV (positive East) at MidTime_Solar	0	-180	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3
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		Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime_Solar	0			m/s	No		32-bit floating point	Name	Value	Name Value
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SCAttitude_Solar	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Solar		Yes	No	63	63					
		GRFCoordinate		No	No	3	3					
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Solar	0			arcsecond	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
StartTime_Dark	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Dark		Yes	No	5	5					
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Start time of dark frame in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name Value
										NA_INT64_FILL	-999	
										MISS_INT64_FILL	-998	
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										VDNE_INT64_FILL	-993	
MidTime_Dark	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					

		Dark	Yes	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Mid-Time of dark frame in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name Value
										NA_INT64_FILL	-999	
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		Dark	Yes	No	5	5						
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		Dark	Yes	No	5	5						
		SpatialPixel	No	No	740	740						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Sub-Satellite Latitude (positive North) at MidTime_Dark	0	-90	90	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
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		Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Dark	0			arcsecond	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3											
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		Latitude (positive North)	0	-90	90	degree	No		32-bit floating point	Name	Value
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SCAttitude_Lamp	4byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Lamp</td> <td>Yes</td> <td>No</td> <td>150</td> <td>150</td> </tr> <tr> <td>GRFCoordinate</td> <td>No</td> <td>No</td> <td>3</td> <td>3</td> </tr> </table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Lamp	Yes	No	150	150	GRFCoordinate	No	No	3	3								
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																					
Lamp	Yes	No	150	150																					
GRFCoordinate	No	No	3	3																					
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
		Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at MidTime_Lamp	0			arcsecond	No		32-bit floating point	<table border="1"> <tr> <th>Name</th> <th>Value</th> </tr> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <tr> <th>Name</th> <th>Value</th> </tr> </table>	Name	Value		
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VDNE_FLOAT32_FILL	-999.3																								
Name	Value																								
NumberOfSolar	2byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Granule</td> <td>Yes</td> <td>No</td> <td>1</td> <td>1</td> </tr> </table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Granule	Yes	No	1	1													
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																					
Granule	Yes	No	1	1																					
		Datum																							

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
		Actual number of solar frames (images)	0			unitless	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value
Name	Value																						
NA_INT16_FILL	-999																						
MISS_INT16_FILL	-998																						
ERR_INT16_FILL	-995																						
VDNE_INT16_FILL	-993																						
Name	Value																						
NumberOfDark	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																
		Granule	Yes	No	1	1																	
		Datum																					
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
Actual number of dark frames (images)	0			unitless	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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MISS_INT16_FILL	-998																						
ERR_INT16_FILL	-995																						
VDNE_INT16_FILL	-993																						
Name	Value																						
NumberOfLamp	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																
		Granule	Yes	No	1	1																	
		Datum																					
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
Actual number of lamp frames (images)	0			unitless	No		16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT16_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT16_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT16_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT16_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT16_FILL	-999	MISS_INT16_FILL	-998	ERR_INT16_FILL	-995	VDNE_INT16_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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NA_INT16_FILL	-999																						
MISS_INT16_FILL	-998																						
ERR_INT16_FILL	-995																						
VDNE_INT16_FILL	-993																						
Name	Value																						

Table 2.10.2.6-2, OMPS TC Calibration SDR Geolocation Quality Flags Product Profile

Fields												
Name	Data Size	Dimensions										
QF1_GEOSOLAR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Solar	Yes	No	63	63						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name Value	Name	Value
									Nominal - E&A data available	0		
									Missing Data <= Small Gap	1		
									Small Gap < Missing Data < Granule Boundary	2		
									Missing Data >= Granule Boundary	3		
		Spare	2			unitless	No	6 bit(s)	Name Value	Name Value		
QF2_GEODARK	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Dark	Yes	No	5	5						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name Value	Name	Value
									Nominal - E&A data available	0		
									Missing Data <= Small Gap	1		
									Small Gap < Missing Data < Granule Boundary	2		

											Missing Data >= 3 Granule Boundary	
		Spare	2			unitless	No		6 bit(s)	Name Value	Name Value	
QF3_GEOLAMP	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Lamp	Yes	No	150	150						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name Value	Name	Value
									Nominal - E&A data available	0		
									Missing Data <= 1 Small Gap	1		
									Small Gap < Missing Data < Granule Boundary	2		
									Missing Data >= 3 Granule Boundary	3		
		Spare	2			unitless	No		6 bit(s)	Name Value	Name Value	

2.10.2.7 OMPS TC Calibration SDR Geolocation HDF5 Details

The OMPS TC Calibration SDR Geolocation is based on a simple spatial average over the geometric cell bounds, regardless of pixel sampling. Geolocation is reported on the ellipsoid. Figure 2.10.2.7-1, OMPS TC Calibration SDR Geolocation UML Diagram, provides details on the contents and data types of the OMPS TC SDR geolocation.

OMPS-TC-Cal-GEO
+StartTime_Solar : H5T_NATIVE_LLONG
+MidTime_Solar : H5T_NATIVE_LLONG
+EndTime_Solar : H5T_NATIVE_LLONG
+Latitude_Solar : H5T_NATIVE_FLOAT
+Longitude_Solar : H5T_NATIVE_FLOAT
+MoonVector_Solar : H5T_NATIVE_FLOAT
+SunVector_Solar : H5T_NATIVE_FLOAT
+SCPosition_Solar : H5T_NATIVE_FLOAT
+SCVelocity_Solar : H5T_NATIVE_FLOAT
+SCAttitude_Solar : H5T_NATIVE_FLOAT
+StartTime_Dark : H5T_NATIVE_LLONG
+MidTime_Dark : H5T_NATIVE_LLONG
+EndTime_Dark : H5T_NATIVE_LLONG
+Latitude_Dark : H5T_NATIVE_FLOAT
+Longitude_Dark : H5T_NATIVE_FLOAT
+SCPosition_Dark : H5T_NATIVE_FLOAT
+SCVelocity_Dark : H5T_NATIVE_FLOAT
+SCAttitude_Dark : H5T_NATIVE_FLOAT
+StartTime_Lamp : H5T_NATIVE_LLONG
+MidTime_Lamp : H5T_NATIVE_LLONG
+EndTime_Lamp : H5T_NATIVE_LLONG
+Latitude_Lamp : H5T_NATIVE_FLOAT
+Longitude_Lamp : H5T_NATIVE_FLOAT
+SCPosition_Lamp : H5T_NATIVE_FLOAT
+SCVelocity_Lamp : H5T_NATIVE_FLOAT
+SCAttitude_Lamp : H5T_NATIVE_FLOAT
+NumberOfSolar : H5T_NATIVE_SHORT
+NumbrOfDark : H5T_NATIVE_SHORT
+NumberOfLamp : H5T_NATIVE_SHORT
+QF1_GEOSOLAR : H5T_NATIVE_UCHAR
+QF2_GEODARK : H5T_NATIVE_UCHAR
+QF3_GEOLAMP : H5T_NATIVE_UCHAR

Figure 2.10.2.7-1, OMPS TC Calibration SDR Geolocation UML Diagram

2.10.2.8 OMPS TC Calibration SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the OMPS TC Calibration SDR Geolocation are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. There are no additional metadata elements or granule level quality flags for this geolocation.

2.11 DELETED

2.12 DELETED

2.13 Search and Rescue Satellite Aided Tracking SDRs

2.13.1 Search and Rescue – Repeater SDR

Data Mnemonic SDRE-SARR-C0030

(NPOESS Only)

**Description/
Purpose** **EDFCB3-TBR-8816** Search and Rescue Repeater (SARR)
telemetry converted into engineering units.

**File-Naming
Construct** See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.

File Size **EDFCB3-TBD-8817**

File Format Type HDF5

**Data Content
and Data Format** **EDFCB3-TBD-8819**

2.13.1.1 SARR SDR Product Profile

EDFCB3-TBD-8820

2.13.1.2 SARR SDR HDF5 Details

EDFCB3-TBD-8821

2.13.2 Search and Rescue – Processor SDR

Data Mnemonic SDRS-SARP-C0030

(NPOESS Only)

**Description/
Purpose** **EDFCB3-TBR-8816** Search and Rescue (SARP) Processor
telemetry converted into engineering units.

**File-Naming
Construct** See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.

File Size **EDFCB3-TBD-9994**

File Format Type HDF5

**Data Content
and Data Format** **EDFCB3-TBD-9993**

2.13.2.1 SARP SDR Product Profile

EDFCB3-TBD-9992

2.13.2.2 SARP SDR HDF5 Details

EDFCB3-TBD-9995

2.14 DELETED

2.15 DELETED

2.16 Visible/Infrared Imaging Radiometer Suite Moderate Resolution Band Sensor Data Records

Table 2.16-1, VIIRS Moderate Resolution Band (M-Band) summarizes the M-Band channels and their respective data mnemonics. The SDRs are available separately, but they are presented in this section grouped together in order to minimize the repeated information.

Table 2.16-1, VIIRS M-Band SDRs

Data Mnemonic	Description/Purpose
SDRE-VM01-C0030	Band M1 - radiance & reflectance at nominal center wavelength 412 nm.
SDRE-VM02-C0030	Band M2 – radiance & reflectance at nominal center wavelength 445 nm.
SDRE-VM03-C0030	Band M3 – radiance & reflectance at nominal center wavelength 488 nm.
SDRE-VM04-C0030	Band M4 – radiance & reflectance at nominal center wavelength 555 nm.
SDRE-VM05-C0030	Band M5 – radiance & reflectance at nominal center wavelength 672 nm.
SDRE-VM06-C0030	Band M6 – radiance & reflectance at nominal center wavelength 746 nm.
SDRE-VM07-C0030	Band M7 – radiance & reflectance at nominal center wavelength 865 nm.
SDRE-VM08-C0030	Band M8 – radiance & reflectance at nominal center wavelength 1240 nm.
SDRE-VM09-C0030	Band M9 – radiance & reflectance at nominal center wavelength 1378 nm.
SDRE-VM10-C0030	Band M10 – radiance & reflectance at nominal center wavelength 1610 nm.
SDRE-VM11-C0030	Band M11 – radiance & reflectance at nominal center wavelength 2250 nm.
SDRE-VM12-C0030	Band M12 – radiance & emittance at nominal center wavelength 3700 nm.
SDRE-VM13-C0030	Band M13 – radiance & emittance at nominal center wavelength 4050 nm.
SDRE-VM14-C0030	Band M14 – radiance & emittance at nominal center wavelength 8550 nm.
SDRE-VM15-C0030	Band M15 – radiance & emittance at nominal center wavelength 10763 nm.
SDRE-VM16-C0030	Band M16 – radiance & emittance at nominal center wavelength 12013 nm.

Data Mnemonic See Table 2.16-1, VIIRS M-Band SDRs

**Description/
Purpose** See Table 2.16-1, VIIRS M-Band SDRs

The Visible/Infrared Imaging/Radiometer Suite (VIIRS) collects visible/infrared imagery and radiometric data.

There are 16 detectors along-track in the M-Bands and 32 detectors along-track in the Imagery Resolution Bands (I-Band).

General Information on VIIRS SDRs

As the VIIRS telescope rotates across-track, every 1.7872 seconds, arrays of pixels are captured, creating a ~3000 km x ~12 km (across-track x along-track) image of the earth. Since VIIRS does not capture an entire earth image instantaneously, there is an inherent time delay in collecting a full set of pixels for each scan, and from scan to scan. From scan to scan, the delay is set such that the next scan is exactly one full field-of-regard, the detectors' horizontal along-track coverage, away from the previous scan. For instance the first row of detectors will be adjacent to the last row of detectors on the next scan. Although the output seen in the SDR is an array of data, for a number of reasons described below, the actual measurements from VIIRS are not perfectly contiguous within the array. Each geolocation data point should be used to accurately georeference the data, especially when viewing data from multiple scans.

Since the rotation period is a specification which has a tolerance of +/- .45%, the actual rotation rate can vary. The actual value should be calculated from the scan times provided in the geolocation. The processing system of NPOESS is designed to allow for this specification tolerance. The processing software uses time rather than data size to define granules, and in order to never "overflow" the processing buffer size of one granule, the size of the internal granule is slightly smaller than the expected 85.7856 seconds (1.7872 seconds * 48 scans/second). This has the advantage of never allowing more scans than can fit in a granule, but has the disadvantage of generating scenarios where fewer than the nominal number of scans per granule can occur. Although this can happen for a number of other reasons, for a nominal granule containing 48 scans, on occasion there can be 47 scans due to the design to allow for tolerance in scan rates. The number of actual scans in the granule is stored in the granule metadata item N_Number_Of_Scans. Since granule array dimensions are fixed in size, the last scan in this 47 of 48 scan case will be filled with a "does not exist" type of fill value. The corresponding geolocation will also be filled since the values in the array are simply artifacts of the processing system. More information on fill values can be found in Volume I of the CDFCB-X, D34862-01, Section 3.5.

For all nominal NPOESS orbits (afternoon Local Time of Ascending Node) the first detector produces the 16th scan line (or pixel row). When referring to the "bad detector" flag array, the first array element represents detector 1 (which for the M-Band is pixel row 16). Note: VIIRS auxiliary data, such as relative spectral response curves, reference the detector number and not scan line.

Moderate and Imagery Resolution Aggregation and Bow-tie Deletion

VIIRS fundamental spatial measurement unit is a *sample*, however *pixels* are reported in the SDR product. The projected size on the ground of samples get larger at larger scan angles off nadir due to the increased distance from the sensor and the observed angle of incidence. Samples are created from pixels by averaging (aggregating) across-track which creates more horizontally uniform pixels. The samples with a scan angle within 32 degrees of nadir, have a smaller size when projected on the ground, and so are aggregated 3:1 in the scan (across-track) dimension. Those occurring at scan angles between ~32 degrees and ~45 degrees off nadir are aggregated 2:1 in the scan dimension. The samples at scan angles greater than ~45 degrees off nadir are not aggregated.

The aggregation of samples across the scan reduces the total number of samples; however, there is still a factor of two increase in the projected ground size of each pixel from nadir to maximum scan angle. This is referred to as the bow-tie effect (See Figure 2.16.1-1, VIIRS Bow-Tie Effect), as the projected scan track for all the pixels in one scan generally resembles a bow-tie. The additional pixel rows, in the two outside aggregation zones mentioned above, duplicate coverage from scan to scan, and are deleted. The deletion process impact for M-Band pixels is shown in Figure 2.16.1-2, VIIRS Bow-tie Deletion. This results in about half of the bow-tie overlapping pixels not being transmitted to ground. The values in the resulting product arrays are filled with the on-board pixel trim fill values during ground processing.

File-Naming Construct

See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.

File Size

Bands	Size per data granule
M1,M2,M6,M8-12,M14-16	Approximately 12,000 KiB
M3-M5, M7	Approximately 16,800 KiB
M13	Approximately 21,600 KiB

Approximately: 79,200 KiB per geolocation granule

Sizes do not include HDF5 overhead or metadata.

File Format Type

HDF5

**Data Content
and Data
Format**

See Section 2.16.1 VIIRS M-Band SDR Data Content Summary.
See Section 2.16.5 VIIRS M-Band SDR Geolocation Content Summary.

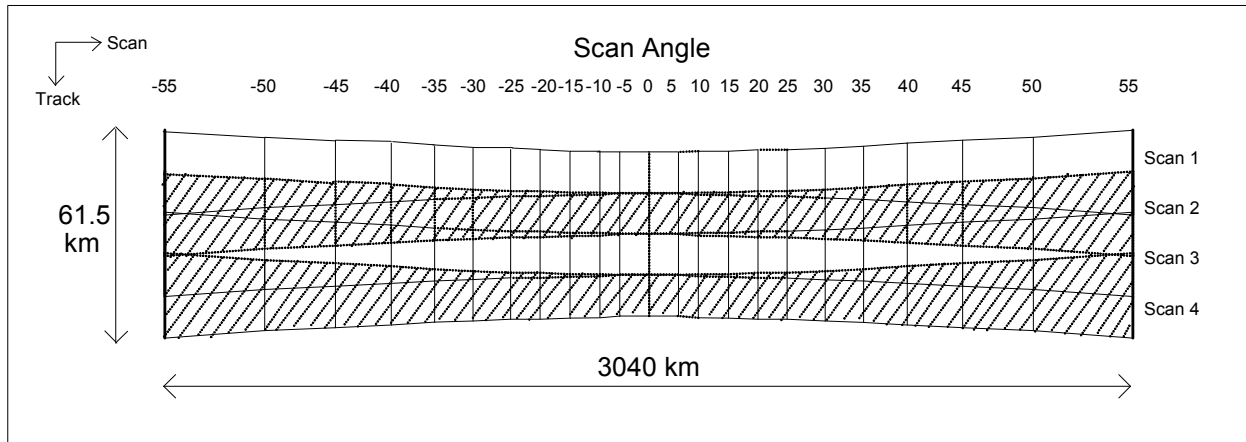


Figure 2.16.1-1, VIIRS Panoramic Bow-tie Effect (Afternoon Local Time of Ascending Node)

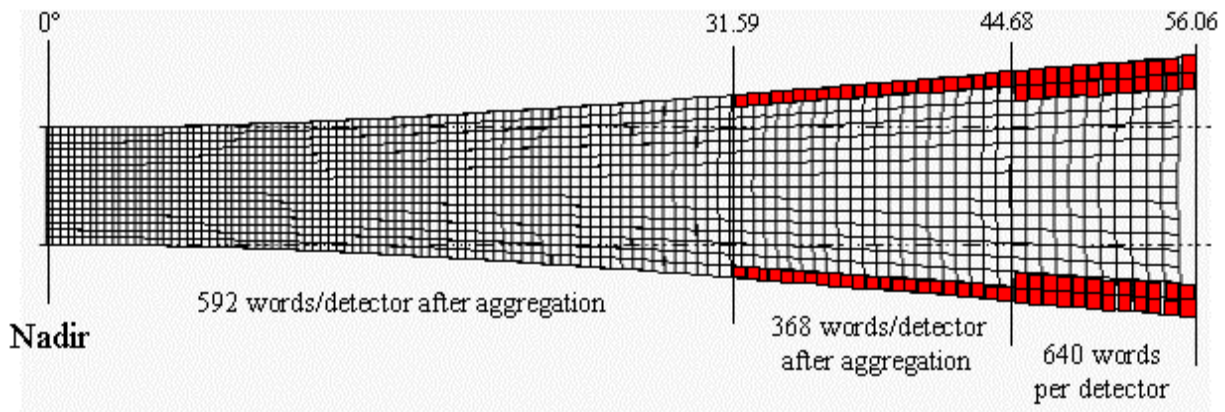


Figure 2.16.1-2, VIIRS Bow-tie Deletion

2.16.1 VIIRS M-Band SDR Data Content Summary

The VIIRS M-Band SDR data arrays structures are summarized below in Table 2.16.1-1, VIIRS M-Band SDR Data Content Summary.

Table 2.16.1-1, VIIRS M-Band SDRs Data Content Summary

Name	Description	Data Type	Bands	Aggregate Dimensions	Granule Dimensions	Units
Radiance	Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS pixel	32-bit floating point	M3-M5, M7, M13	[N*768, 3200]	[768,3200]	W/(m ² sr μm)
		unsigned 16-bit integer	M1, M2, M6, M8-M12, M14-M16			
Reflectance	Calibrated TOA Reflectance for each VIIRS pixel	unsigned 16-bit integer	M1 – M11	[N*768, 3200]	[768,3200]	unitless
BrightnessTemperature	Calibrated TOA Brightness Temperature for each VIIRS pixel	32-bit floating point	M13	[N*768, 3200]	[768,3200]	kelvin
		unsigned 16-bit integer	M12, M14 – M16			
ModeScan	The VIIRS operational mode, reported at the scan level.	unsigned 8-bit char	M1 – M16	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level.	unsigned 8-bit char	M1 – M16	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	M1 – M16	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule.	32-bit integer	M1 – M16	[N]	[1]	unitless
NumberOfMissingPkts	Number of missing packets in scan	32-bit integer	M1 – M16	[N*48]	[48]	unitless
NumberOfBadChecksums	Number of packets with bad checksum in scan	32-bit integer	M1 – M16	[N*48]	[48]	unitless
NumberOfDiscardedPkts	Number of discarded packets in scan	32-bit integer	M1 – M16	[N*48]	[48]	unitless
QF1_VIIRSMBAN DSDR	Quality Flag for each pixel	unsigned 8-bit char	M1 – M16	[N*768, 3200]	[768,3200]	unitless

Name	Description	Data Type	Bands	Aggregate Dimensions	Granule Dimensions	Units
QF2_SCAN_SDR	Quality Flag for each Scan (indicates general SDR information)	unsigned 8-bit char	M1 – M16	[N*48]	[48]	unitless
QF3_SCAN_RDR	Quality Flag for each Scan (indicates general RDR information)	unsigned 8-bit char	M1 – M16	[N*48]	[48]	unitless
QF4_SCAN_SDR	Reduced Quality Indication	unsigned 8-bit char	M1 – M16	[N*768]	[768]	unitless
QF5_GRAN_BAD DETECTOR	Quality Flag – Bad detector	unsigned 8-bit char	M1 – M16	[N*16]	[16]	unitless
RadianceFactors	Radiance scale and offset: first array element = scale second array element = offset	32-bit floating point	M1, M2, M6, M8- M12, M14- M16	[N]	[2]	unitless , W/(m ² sr μm)
ReflectanceFactors	Reflectance scale and offset: first array element = scale second array element = offset	32-bit floating point	M1-M11	[N]	[2]	unitless , unitless
BrightnessTemperatureFactors	Brightness Temperature scale and offset: first array element = scale second array element = offset	32-bit floating point	M12, M14 – M16	[N]	[2]	unitless , kelvin

2.16.2 VIIRS M-Band SDR Data Product Profile

Table 2.16.2-1, VIIRS M-Band Radiances, Bands 1, 2, 6, 8-12, 14-16

Fields												
Name	Data Size	Dimensions										
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	3200	3200						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS pixel	0			W/(m ² μm sr)	Yes	RadianceFactors	unsigned 16-bit integer	Name	Value	Name	Value	
								NA_UINT16_FILL	65535			
								MISS_UINT16_FILL	65534			
								ONBOARD_PT_UINT16_FILL	65533			
								ONGROUND_PT_UINT16_FILL	65532			
								ERR_UINT16_FILL	65531			
								Soub_UINT16_FILL	65528			
								VDNE_UINT16_FILL	65529			

Table 2.16.2-2, VIIRS M-Band Radiances, Bands 3-5, 7, 13

Fields												
Name	Data Size	Dimensions										
Radiance	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	3200	3200						
		Datum										
		Description	Datum Offset	Unscaled Valid	Unscaled Valid	Measurement Units	Scaled	Scale Factor	Data Type	Fill Values		Legend Entries

		Range Min	Range Max			Name				
Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS pixel	0			W/(m ² μm sr)	Yes		32-bit floating point	Name	Value	Name Value
								NA_FLOAT32_FILL	-999.9	
								MISS_FLOAT32_FILL	-999.8	
								ONBOARD_PT_FLOAT32_FILL	-999.7	
								ONGROUND_PT_FLOAT32_FILL	-999.6	
								ERR_FLOAT32_FILL	-999.5	
								VDNE_FLOAT32_FILL	-999.3	

Table 2.16.2-3, VIIRS M-Band Reflectance, Bands 1-11

Fields											
Name	Data Size	Dimensions									
Reflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		AlongTrack	Yes	No	768	768					
		CrossTrack	No	No	3200	3200					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Calibrated Top of Atmosphere (TOA) Reflectance for each VIIRS pixel	0			unitless	Yes	ReflectanceFactors	unsigned 16-bit integer	Name	Value	Name Value	
								NA_UINT16_FILL	65535		
								MISS_UINT16_FILL	65534		
								ONBOARD_PT_UINT16_FILL	65533		
								ONGROUND_PT_UINT16_FILL	65532		
								ERR_UINT16_FILL	65531		
								VDNE_UINT16_FILL	65529		
SOUB_UINT16_FILL	65528										

Table 2.16.2-4, VIIRS M-Band Brightness Temperature, Bands 12, 14 – 16

Fields																																											
Name	Data Size	Dimensions																																									
BrightnessTemperature	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																					
		AlongTrack	Yes	No	768	768																																					
		CrossTrack	No	No	3200	3200																																					
		Datum																																									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																																
		Calibrated Top of Atmosphere (TOA) Brightness Temperature for each VIIRS pixel	0			K	Yes	BrightnessTemperatureFactors	unsigned 16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_UINT16_FILL</td> <td>65535</td> <td></td> <td></td> </tr> <tr> <td>MISS_UINT16_FILL</td> <td>65534</td> <td></td> <td></td> </tr> <tr> <td>ONBOARD_PT_UINT16_FILL</td> <td>65533</td> <td></td> <td></td> </tr> <tr> <td>ONGROUND_PT_UINT16_FILL</td> <td>65532</td> <td></td> <td></td> </tr> <tr> <td>ERR_UINT16_FILL</td> <td>65531</td> <td></td> <td></td> </tr> <tr> <td>VDNE_UINT16_FILL</td> <td>65529</td> <td></td> <td></td> </tr> <tr> <td>SOUB_UINT16_FILL</td> <td>65528</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_UINT16_FILL	65535			MISS_UINT16_FILL	65534			ONBOARD_PT_UINT16_FILL	65533			ONGROUND_PT_UINT16_FILL	65532			ERR_UINT16_FILL	65531			VDNE_UINT16_FILL	65529			SOUB_UINT16_FILL	65528			
		Name	Value	Name	Value																																						
		NA_UINT16_FILL	65535																																								
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		ONBOARD_PT_UINT16_FILL	65533																																								
ONGROUND_PT_UINT16_FILL	65532																																										
ERR_UINT16_FILL	65531																																										
VDNE_UINT16_FILL	65529																																										
SOUB_UINT16_FILL	65528																																										

Table 2.16.2-5, VIIRS M-Band Brightness Temperature, Bands 13

Fields																											
Name	Data Size	Dimensions																									
BrightnessTemperature	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																					
		AlongTrack	Yes	No	768	768																					
		CrossTrack	No	No	3200	3200																					
		Datum																									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																
		Calibrated Top of Atmosphere (TOA) Brightness Temperature for each VIIRS pixel	0			kelvin	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ONBOARD_PT_FLOAT32_FILL</td> <td>-999.7</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ONBOARD_PT_FLOAT32_FILL	-999.7			
		Name	Value	Name	Value																						
		NA_FLOAT32_FILL	-999.9																								
		MISS_FLOAT32_FILL	-999.8																								
		ONBOARD_PT_FLOAT32_FILL	-999.7																								

										ONGROUND_PT_FLOAT32_FILL	-999.6
										ERR_FLOAT32_FILL	-999.5
										VDNE_FLOAT32_FILL	-999.3

Table 2.16.2-6, VIIRS M-Band Product Profile, Bands 1 - 16

Name	Data Size	Dimensions																							
ModeScan	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																			
		Scan	Yes	No	48	48																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
The VIIRS operational mode, reported at the scan level	0			unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>MISS_UINT8_FILL</td> <td>254</td> <td>Night</td> <td>0</td> </tr> <tr> <td>ERR_UINT8_FILL</td> <td>251</td> <td>Day</td> <td>1</td> </tr> <tr> <td>VDNE_UINT8_FILL</td> <td>249</td> <td>Mixed</td> <td>2</td> </tr> </tbody> </table>	Name	Value	Name	Value	MISS_UINT8_FILL	254	Night	0	ERR_UINT8_FILL	251	Day	1	VDNE_UINT8_FILL	249	Mixed	2	
Name	Value	Name	Value																						
MISS_UINT8_FILL	254	Night	0																						
ERR_UINT8_FILL	251	Day	1																						
VDNE_UINT8_FILL	249	Mixed	2																						
ModeGran	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																			
		Granule	Yes	No	1	1																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
The VIIRS operational mode, reported at the granule level				unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>MISS_UINT8_FILL</td> <td>254</td> <td>Night</td> <td>0</td> </tr> <tr> <td>ERR_UINT8_FILL</td> <td>251</td> <td>Day</td> <td>1</td> </tr> <tr> <td>VDNE_UINT8_FILL</td> <td>249</td> <td>Mixed</td> <td>2</td> </tr> </tbody> </table>	Name	Value	Name	Value	MISS_UINT8_FILL	254	Night	0	ERR_UINT8_FILL	251	Day	1	VDNE_UINT8_FILL	249	Mixed	2	
Name	Value	Name	Value																						
MISS_UINT8_FILL	254	Night	0																						
ERR_UINT8_FILL	251	Day	1																						
VDNE_UINT8_FILL	249	Mixed	2																						

PadByte1	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	3	3						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Pad byte	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value	
NumberOfScans	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Actual number of VIIRS scans that were used to create this granule	0			unitless	No		32-bit integer	Name	Value	Name	Value	
NumberOfMissingPkts	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Number of missing packets in scan	0			unitless	No		32-bit integer	Name	Value	Name	Value	
								MISS_INT32_FILL	-998			
								VDNE_INT32_FILL	-993			

NumberOfBad Checksums	4byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size																			
		Scan	Yes	No	48	48															
		Datum																			
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries										
Number of packets with bad checksums in scan	0			unitless	No		32-bit integer	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td>MISS_INT32_FILL</td> <td>-998</td> <td></td> <td></td> </tr> <tr> <td>VDNE_INT32_FILL</td> <td>-993</td> <td></td> <td></td> </tr> </table>	Name	Value	Name	Value	MISS_INT32_FILL	-998			VDNE_INT32_FILL	-993			
Name	Value	Name	Value																		
MISS_INT32_FILL	-998																				
VDNE_INT32_FILL	-993																				
NumberOfDiscardedPkts	4byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size																			
		Scan	Yes	No	48	48															
		Datum																			
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries										
Number of discarded packets in scan	0			unitless	No		32-bit integer	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td>MISS_INT32_FILL</td> <td>-998</td> <td></td> <td></td> </tr> <tr> <td>VDNE_INT32_FILL</td> <td>-993</td> <td></td> <td></td> </tr> </table>	Name	Value	Name	Value	MISS_INT32_FILL	-998			VDNE_INT32_FILL	-993			
Name	Value	Name	Value																		
MISS_INT32_FILL	-998																				
VDNE_INT32_FILL	-993																				

Table 2.16.2-7, VIIRS M-Band SDR Product Profile - Quality Flags

Name	Data Size	Dimensions															
QF1_VIIRSMBANDSDR	1byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size															
		AlongTrack	Yes	No	768	768											
		CrossTrack	No	No	3200	3200											
		Datum															
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries								
Quality - Indicates	0			unitless	No		2 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td></td> <td></td> <td>Good</td> <td>0</td> </tr> </table>	Name	Value	Name	Value			Good	0	
Name	Value	Name	Value														
		Good	0														

		calibration quality due to bad space view offsets, OBC view offsets, etc or use of a previous calibration view										Poor	1
												No Calibration	2
		Saturated Pixel - Indicates the level of pixel saturation	2			unitless	No		2 bit(s)	Name	Value	Name	Value
												None Saturated	0
												Some Saturated	1
												All Saturated	2
		Missing Data - Data required for calibration processing is not available for processing	4			unitless	No		2 bit(s)	Name	Value	Name	Value
												All data present	0
												EV RDR data missing	1
												Cal data (SV, CV, SD, etc.) missing	2
												Thermistor data missing	3
		Out of Range - Calibrated pixel value outside of LUT threshold limits	6			unitless	No		2 bit(s)	Name	Value	Name	Value
												All data within range	0
												Radiance out of range	1
												Reflectance or EBBT out of range	2
												Both Radiance and Reflectance or EBBT out of range	3
QF2_SCAN_SDR	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Half Angle Mirror Side	0			unitless	No		1 bit(s)	Name	Value	Name	Value
												A-Side	0
												B-	1

QF4_SCAN_SDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		AlongTrack	Yes	No	768	768					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Quality for this scan-line is reduced. The value is determined by the combined number of steps required to find a replacement for thermistor or calibration source data.	0			unitless	No		unsigned 8-bit char	Name Value	Name Value		
									False 0		
									True >1		
QF5_GRAN_BADDETECT OR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Detector	Yes	No	16	16					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Bad Detector - M-Band	0			unitless	No		1 bit(s)	Name Value	Name Value		
									False 0		
									True 1		
Spare	1				No		7 bit(s)	Name Value	Name Value		

Table 2.16.2-8, VIIRS M-Band SDR Product Profile – Factors (as applicable)

Name	Data Size	Dimensions									
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Factors	Yes	No	2	2					
		Datum									
		Description	Datum	Unscaled	Unscaled	Measurement	Scaled	Scale	Data	Fill Values	Legend

			Offset	Valid Range Min	Valid Range Max	Units		Factor Name	Type		Entries	
		Scale = first array element; offset = second array element	0			Scale = unitless; Offset = $W/(m^2 sr \mu m)$	No		32-bit floating point	Name Value	Name Value	
ReflectanceFactors	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Factors	Yes	No	2	2						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
	Scale = first array element; offset = second array element	0			unitless	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureFactors	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Factors	Yes	No	2	2						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
	Scale = first array element; offset = second array element	0			Scale = unitless, Offset = kelvin	No		32-bit floating point	Name Value	Name Value		

2.16.3 VIIRS M-Band SDR HDF5 Details

VIIRS-M[1,2,6,8,9,10,11]-SDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+NumberOfMissingPkts : H5T_NATIVE_INT
+NumberOfBadChecksums : H5T_NATIVE_INT
+NumberOfDiscardedPkts : H5T_NATIVE_INT
+QF1_VIIRSMBANDSDR : H5T_NATIVE_UCHAR
+QF2_SCAN_SDR : H5T_NATIVE_UCHAR
+QF3_SCAN_RDR : H5T_NATIVE_UCHAR
+QF4_SCAN_SDR : H5T_NATIVE_UCHAR
+QF5_GRAN_BADDETECTOR : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure 2.16.3-1, VIIRS M-Band SDR UML Diagram for Bands 1, 2, 6, 8, 9, 10, 11

VIIRS-M[3,4,5,7]-SDR
+Radiance : H5T_NATIVE_FLOAT
+Reflectance : H5T_NATIVE_USHORT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfMissingPkts : H5T_NATIVE_INT
+NumberOfBadChecksums : H5T_NATIVE_INT
+NumberOfDiscardedPkts : H5T_NATIVE_INT
+QF1_VIIRSMBANDSDR : H5T_NATIVE_UCHAR
+QF2_SCAN_SDR : H5T_NATIVE_UCHAR
+QF3_SCAN_RDR : H5T_NATIVE_UCHAR
+QF4_SCAN_SDR : H5T_NATIVE_UCHAR
+QF5_GRAN_BADDETECTOR : H5T_NATIVE_UCHAR
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure 2.16.3-2, VIIRS M-Band SDR UML Diagram for Bands 3, 4, 5, 7

VIIRS-M[12,14,15,16]-SDR
+Radiance : H5T_NATIVE_USHORT
+BrightnessTemperature : H5T_NATIVE_USHORT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+NumberOfMissingPkts : H5T_NATIVE_INT
+NumberOfBadChecksums : H5T_NATIVE_INT
+NumberOfDiscardedPkts : H5T_NATIVE_INT
+QF1_VIIRSMBANDSDR : H5T_NATIVE_UCHAR
+QF2_SCAN_SDR : H5T_NATIVE_UCHAR
+QF3_SCAN_RDR : H5T_NATIVE_UCHAR
+QF4_SCAN_SDR : H5T_NATIVE_UCHAR
+QF5_GRAN_BADDETECTOR : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+BrightnessTemperatureFactors : H5T_NATIVE_FLOAT

Figure 2.16.3-3, VIIRS M-Band SDR UML Diagram for Bands 12, 14, 15, 16

VIIRS-M13-SDR
+Radiance : H5T_NATIVE_FLOAT
+BrightnessTemperature : H5T_NATIVE_FLOAT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+NumberOfMissingPkts : H5T_NATIVE_INT
+NumberOfBadChecksums : H5T_NATIVE_INT
+NumberOfDiscardedPkts : H5T_NATIVE_INT
+QF1_VIIRSMBANDSDR : H5T_NATIVE_UCHAR
+QF2_SCAN_SDR : H5T_NATIVE_UCHAR
+QF3_SCAN_RDR : H5T_NATIVE_UCHAR
+QF4_SCAN_SDR : H5T_NATIVE_UCHAR
+QF5_GRAN_BADDETECTOR : H5T_NATIVE_UCHAR

Figure 2.16.3-4, VIIRS M-Band SDR UML Diagram for Band 13

2.16.4 VIIRS M-Band SDR Metadata Details

The HDF5 metadata elements associated with the M-Band SDR are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The M-Band SDR metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the VIIRS Moderate Resolution SDR, the items listed in Table 2.16.4-1, VIIRS Moderate Resolution SDR Quality Summary

Metadata are included as name/value pair items under the granule level metadata attribute "N_Quality_Summary". The listed name/value pair items in the table are the granule level quality summary flags for the VIIRS M-Band SDRs.

Note that there is a standard granule level metadata item that identifies the M-Band. This metadata item is the "Band_ID" and is set to "M1", "M2", "M3", ... "M16".

Table 2.16.4-1, VIIRS Moderate Resolution SDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary VIIRS SDR Quality	0 – 100 %	Percentage of good quality pixels in granule	
Scan Quality Exclusion	0 – 48	Number of scans in granule excluded from processing (including partial scans)	

2.16.5 VIIRS M-Band SDR Geolocation Content Summary

The VIIRS M-Band SDR geolocation data arrays structures are summarized below in Table 2.16.5-1, VIIRS M-Band SDR Geolocation Content Summary.

Table 2.16.5-1 VIIRS M-Band SDR Geolocation Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime	Starting Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
MidTime	Mid-Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
SolarZenithAngle	Zenith angle of sun at each pixel position	32-bit floating point	[N*768, 3200]	[768, 3200]	degree

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*768, 3200]	[768, 3200]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*768, 3200]	[768, 3200]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	32-bit floating point	[N*48, 3]	[48, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid- time of scan	32-bit floating point	[N*48, 3]	[48, 3]	m/s
SCAttitude	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the midtime of scan	32-bit floating point	[N*48, 3]	[48, 3]	arcsecond
SCSolarZenithAngle	The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector	32-bit floating point	[N*48]	[48]	degree
SCSolarAzimuthAngle	The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface)	32-bit floating point	[N*48]	[48]	degree

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
ModeScan	The VIIRS operational mode, reported at the scan level.	unsigned 8-bit char	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level.	unsigned 8-bit char	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule.	32-bit integer	[N]	[1]	unitless
QF1_SCAN_VIIRSS DRGEO	Scan-level quality flag	unsigned 8-bit char	[N*48]	[48]	unitless
QF2_VIIRSSDRGEO	Pixel-level quality flag	unsigned 8-bit char	[N*768, 3200]	[768,3200]	unitless

2.16.6 VIIRS M-Band SDR Geolocation Product Profile

Table 2.16.6-1, VIIRS M-Band SDR Geolocation Product Profile

Name	Data Size	Dimensions																						
StartTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		Scan	Yes	No	48	48																		
		Datum																						
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries													
		Starting Time of each scan in IET (1/1/1958)	0			microsecond	No		64-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_INT64_FILL</td> <td>-999</td> </tr> <tr> <td>MISS_INT64_FILL</td> <td>-998</td> </tr> <tr> <td>ERR_INT64_FILL</td> <td>-995</td> </tr> <tr> <td>VDNE_INT64_FILL</td> <td>-993</td> </tr> </tbody> </table>	Name	Value	NA_INT64_FILL	-999	MISS_INT64_FILL	-998	ERR_INT64_FILL	-995	VDNE_INT64_FILL	-993	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		Name	Value
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MidTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		Scan	Yes	No	48	48																		
		Datum																						
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		AlongTrack	Yes	No	768	768																		
		CrossTrack	No	No	3200	3200																		
		Datum																						
		Description	Datum	Unscaled	Unscaled	Measurement	Scaled	Scale	Data	Fill Values	Legend													

		Offset	Valid Range Min	Valid Range Max	Units		Factor Name	Type		Entries																								
		Latitude of each pixel (positive North)	0	-90	90	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>ELINT_FLOAT32_FILL</td> <td>-999.4</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			ELINT_FLOAT32_FILL	-999.4			VDNE_FLOAT32_FILL	-999.3		
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		AlongTrack	Yes		No	768	768																											
		CrossTrack	No		No	3200	3200																											
		Datum																																
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																							
		Longitude of each pixel (positive East)	0	-180	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>ELINT_FLOAT32_FILL</td> <td>-999.4</td> <td></td> <td></td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			ELINT_FLOAT32_FILL	-999.4			VDNE_FLOAT32_FILL	-999.3		
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SolarZenithAngle	4byte(s)	Name	Granule Boundary		Dynamic	Min Array Size	Max Array Size																											
		AlongTrack	Yes		No	768	768																											
		CrossTrack	No		No	3200	3200																											
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		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																							
		Zenith angle of sun at each pixel position	0	0	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> <td></td> <td></td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> <td></td> <td></td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> <td></td> <td></td> </tr> <tr> <td>ELINT_FLOAT32_FILL</td> <td>-999.4</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_FLOAT32_FILL	-999.9			MISS_FLOAT32_FILL	-999.8			ERR_FLOAT32_FILL	-999.5			ELINT_FLOAT32_FILL	-999.4						
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										VDNE_FLOAT32_FILL	-999.3		
SolarAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	768	768							
		CrossTrack	No	No	3200	3200							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Azimuth angle of sun (measured clockwise positive from North) at each pixel position	0	-180	180	degree	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										ELINT_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3				
SatelliteZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	768	768							
		CrossTrack	No	No	3200	3200							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Zenith angle to Satellite at each pixel position	0	0	~70	degree	No		32-bit floating point	Name	Value	Name	Value
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										ELINT_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3				
SatelliteAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	768	768							
		CrossTrack	No	No	3200	3200							
		Datum											
		Description	Datum Offset	Unscaled Valid	Unscaled Valid	Measurement Units	Scaled	Scale Factor	Data Type	Fill Values		Legend Entries	

				Range Min	Range Max			Name				
		Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
										VDNE_FLOAT32_FILL	-999.3	
Height	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	3200	3200						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Ellipsoid-Geoid separation	0			meter	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
										VDNE_FLOAT32_FILL	-999.3	
SatelliteRange	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	3200	3200						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Line of sight distance from the ellipsoid intersection to the	0			meter	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	

		satellite										VDNE_FLOAT32_FILL	-999.3	
SCPosition	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	48	48								
		ECRCoordinate	No	No	3	3								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	0			meter	No		32-bit floating point	Name	Value	Name	Value			
								NA_FLOAT32_FILL	-999.9					
								MISS_FLOAT32_FILL	-999.8					
								ERR_FLOAT32_FILL	-999.5					
								VDNE_FLOAT32_FILL	-999.3					
SCVelocity	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	48	48								
		ECRCoordinate	No	No	3	3								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	0			m/s	No		32-bit floating point	Name	Value	Name	Value			
								NA_FLOAT32_FILL	-999.9					
								MISS_FLOAT32_FILL	-999.8					
								ERR_FLOAT32_FILL	-999.5					
								VDNE_FLOAT32_FILL	-999.3					
SCAttitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	48	48								
		GRFCoordinate	No	No	3	3								
		Datum												
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		

			Min	Max																		
	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the midtime of scan	0			arcsecond	No			32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	Name	Value
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	The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector	0	0	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	Name	Value	
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Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
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	Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries											
	The angle from the Solar Diffuser reference frame x-axis to the projection of the	0	-180	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	Name	Value	
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		solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface)										
ModeScan	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
The VIIRS operational mode, reported at the scan level	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value	
								MISS_UINT8_FILL	254	Night	0	
								ERR_UINT8_FILL	251	Day	1	
								VDNE_UINT8_FILL	249	Mixed	2	
ModeGran	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
The VIIRS operational mode, reported at the granule level	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value	
								MISS_UINT8_FILL	254	Night	0	
								ERR_UINT8_FILL	251	Day	1	
								VDNE_UINT8_FILL	249	Mixed	2	
PadByte1	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	3	3						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries

		Pad byte				unitless	No		unsigned 8-bit char	Name	Value	Name	Value	
NumberOfScans	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	1	1								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
	0			unitless	No		32-bit integer	Name	Value	Name	Value			
		Actual number of VIIRS scans that were used to create this granule												

Table 2.16.6-2, VIIRS M-Band Geolocation Product Profile - Quality Flags

Name	Data Size	Dimensions												
QF1_SCAN_VIIRSSDRGEO	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	48	48								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
	0			unitless	No		2 bit(s)	Name	Value	Name	Value			
		Attitude and Ephemeris availability status								Nominal - E&A data available	0			
										Missing Data <= Small Gap	1			
										Small Gap < Missing Data < Granule Boundary	2			
										Missing Data >= Granule Boundary	3			

		HAM Impulse Flag (Indicates whether the number of encoder pulse values per delta time is as expected (Good Data) or not (Bad Data))	2			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td></td> <td></td> <td>Good Data</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>Bad Data</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			Good Data	0			Bad Data	1				
Name	Value	Name	Value																							
		Good Data	0																							
		Bad Data	1																							
		Within South Atlantic Anomaly	3			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td></td> <td></td> <td>False</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			False	0			True	1				
Name	Value	Name	Value																							
		False	0																							
		True	1																							
		Solar Eclipse during Earth view scan	4			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td></td> <td></td> <td>False</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			False	0			True	1				
Name	Value	Name	Value																							
		False	0																							
		True	1																							
		Spare	5			unitless	No		3 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </table>	Name	Value	Name	Value												
Name	Value	Name	Value																							
QF2_VIIRSSDRGEO	1byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td>AlongTrack</td> <td>Yes</td> <td>No</td> <td>768</td> <td>768</td> </tr> <tr> <td>CrossTrack</td> <td>No</td> <td>No</td> <td>3200</td> <td>3200</td> </tr> </tbody> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	768	768	CrossTrack	No	No	3200	3200					
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		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries															
		Invalid Input Data (Indicates that any of the Spacecraft Ephemeris or Attitude Data is Invalid)	0			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td></td> <td></td> <td>False</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			False	0			True	1				
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		False	0																							
		True	1																							
		Bad Pointing (Indicates that the sensor LOS does not intersect the geoid, is near the limb, has invalid sensor angles or other similar condition)	1			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td></td> <td></td> <td>False</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			False	0			True	1				
Name	Value	Name	Value																							
		False	0																							
		True	1																							
		Bad Terrain (Indicates that the algorithm could not obtain a valid terrain value)	2			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> <tr> <td></td> <td></td> <td>False</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td>True</td> <td>1</td> </tr> </table>	Name	Value	Name	Value			False	0			True	1				
Name	Value	Name	Value																							
		False	0																							
		True	1																							
		Invalid Solar Angles	3			unitless	No		1 bit(s)	<table border="1"> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </table>	Name	Value	Name	Value												
Name	Value	Name	Value																							

											False	0	
											True	1	
		Spare	4			unitless	No		4 bit(s)	Name	Value	Name	Value

2.16.7 VIIRS M-Band SDR Geolocation HDF5 Details

VIIRS-MOD-GEO
+StartTime : H5T_NATIVE_LLONG
+MidTime : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_FLOAT
+SatelliteRange : H5T_NATIVE_FLOAT
+SCPosition : H5T_NATIVE_FLOAT
+SCVelocity : H5T_NATIVE_FLOAT
+SCAttitude : H5T_NATIVE_FLOAT
+SCSolarZenithAngle : H5T_NATIVE_FLOAT
+SCSolarAzimuthAngle : H5T_NATIVE_FLOAT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+QF1_SCAN_VIIRSSDRGEO : H5T_NATIVE_UCHAR
+QF2_VIIRSSDRGEO : H5T_NATIVE_UCHAR

Figure 2.16.7-1, VIIRS M-Band SDR Geolocation UML Diagram

2.16.8 VIIRS M-Band SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the M-Band SDR Geolocation are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The M-Band SDR geolocation metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the VIIRS Moderate Resolution SDR Geolocation, the items listed in Table 2.16.8-1, VIIRS Moderate Resolution SDR Geolocation Quality Summary Metadata are included as name/value pair items under the granule level metadata attribute “N_Quality_Summary”. The listed name/value pair items in the table are the granule level quality summary flags for the VIIRS M-Band SDR Geolocation.

Table 2.16.8-1, VIIRS M-Band SDR Geolocation Quality Summary Metadata

N_Quality_Summary			
Name	Value	Description	Comments
Percent Missing Data	0 – 100 %	Percentage of missing pixels (e.g., insufficient data for geolocation).	

N_Quality_Summary			
Name	Value	Description	Comments
Percent Out of Bounds	0 – 100 %	Percentage of out of bounds pixels. For example, pixels could not be geolocated.	
Automatic Quality Flag	0 – 1	Indicates if processing error has occurred.	0 = Passed 1 = Failed

2.17 VIIRS Imagery Resolution Band SDR

Table 2.17-1, VIIRS Imagery Resolution Band SDRs summarizes the image band channels and their respective data mnemonics. The SDRs are available separately, but they are presented in this section grouped together in order to minimize the repeated information.

Table 2.17-1, VIIRS Imagery Resolution Band SDRs

Data Mnemonic	Description/Purpose
SDRE-VI01-C0030	Band I1 – radiance & reflectance at nominal center wavelength 640 nm.
SDRE-VI02-C0030	Band I2 – radiance & reflectance at nominal center wavelength 865 nm.
SDRE-VI03-C0030	Band I3 – radiance & reflectance at nominal center wavelength 1610 nm.
SDRE-VI04-C0030	Band I4 – radiance & emittance at nominal center wavelength 3740 nm.
SDRE-VI05-C0030	Band I5 – radiance & emittance at nominal center wavelength 11450 nm.

Data Mnemonic	See Table 2.17-1, VIIRS Imagery Resolution Band SDRs
Description/ Purpose	<p>See Table 2.17-1, VIIRS Imagery Resolution Band SDRs</p> <p>The Visible/Infrared Imager/Radiometer Suite (VIIRS) collects visible/infrared imagery and radiometric data. The five image bands are described in this section.</p> <p>The Imagery Resolution Bands (I-Band) are composed of five separate bands with 32 along-track detectors per band.</p> <p>See Section 2.16, VIIRS M-Band SDRs for general information about VIIRS Moderate and Imagery Resolution Band SDRs.</p>
File-Naming Construct	See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.
File Size	<p>Approximately 48,000 KiB per data granule.</p> <p>Approximately 316,800 KiB per geolocation granule.</p> <p>Sizes do not include HDF5 overhead or metadata.</p>
File Format Type	HDF5
Data Content and Data Format	<p>See Section 2.17.1, VIIRS I-Band SDR Data</p> <p>See Section 2.17.5, VIIRS I-Band SDR Geolocation</p>

2.17.1 VIIRS I-Band SDR Data Content Summary

The VIIRS I-Band SDR data arrays structures are summarized below in Table 2.17.1-1, VIIRS I-Band SDR Data Content Summary.

Table 2.17.1-1, VIIRS I-Band SDR Data Content Summary

Name	Description	Data Type	Bands	Aggregate Dimensions	Granule Dimensions	Units
Radiance	Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS pixel	unsigned 16-bit integer	11-15	[N*1536, 6400]	[1536, 6400]	W/(m ² sr μm)
Reflectance	Calibrated Top of Atmosphere (TOA) Reflectance for each VIIRS pixel	unsigned 16-bit integer	11-13	[N*1536, 6400]	[1536, 6400]	unitless
BrightnessTemperature	Calibrated Top of Atmosphere (TOA) Brightness Temperature for each VIIRS pixel	unsigned 16-bit integer	14, 15	[N*1536, 6400]	[1536, 6400]	K
ModeScan	The VIIRS operational mode, reported at the scan level	unsigned 8-bit char	11-15	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level	unsigned 8-bit char	11-15	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	11-15	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule	32-bit integer	11-15	[N]	[1]	unitless
NumberOfMissingPkts	Number of missing packets in scan	32-bit integer	11-15	[N*48]	[48]	unitless
NumberOfBadChecksums	Number of packets with bad checksum in scan	32-bit integer	11-15	[N*48]	[48]	unitless
NumberOfDiscardedPkts	Number of discarded packets in scan	32-bit integer	11-15	[N*48]	[48]	unitless
QF1_VIIRSIBANDSDR	Quality Flag for each pixel	unsigned 8-bit char	11-15	[N*1536, 6400]	[1536, 6400]	unitless

QF2_SCAN_SDR	Quality Flag for each Scan (indicates general SDR information)	unsigned 8-bit char	11-15	[N*48]	[48]	unitless
QF3_SCAN_RDR	Quality Flag for each Scan (indicates general RDR information)	unsigned 8-bit char	11-15	[N*48]	[48]	unitless
QF4_SCAN_SDR	Reduced Quality Indicator	unsigned 8-bit char	11-15	[N*1536]	[1536]	unitless
QF5_GRAN_BADDETECTOR	Quality Flag – Bad detector	unsigned 8-bit char	11-15	[N*32]	[32]	unitless
RadianceFactors	Radiance scale and offset: 1st array element = scale 2nd array element = offset	32-bit floating point	11-15	[N*2]	[2]	unitless, W/(m ² sr μm)
ReflectanceFactors	Reflectance scale and offset: 1st array element = scale 2nd array element = offset	32-bit floating point	11-13	[N*2]	[2]	unitless, unitless
BrightnessTemperatureFactors	Brightness Temperature scale and offset: 1st array element = scale 2nd array element = offset	32-bit floating point	14, 15	[N*2]	[2]	unitless, kelvin

2.17.2 VIIRS I-Band SDR Data Product Profile

Table 2.17.2-1, VIIRS I-Band SDR Product Profile - Radiance

Name	Data Size	Dimensions										
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	1536	1536						
		CrossTrack	No	No	6400	6400						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS pixel	0			W/(m ² sr μm)	Yes	RadianceFactors	unsigned 16-bit integer	Name	Value	Name Value
										NA_UINT16_FILL	65535	
										MISS_UINT16_FILL	65534	
										ONBOARD_PT_UINT16_FILL	65533	
										ONGROUND_PT_UINT16_FILL	65532	
								ERR_UINT16_FILL	65531			
								VDNE_UINT16_FILL	65529			
								SOUB_UINT16_FILL	65528			

Table 2.17.2.1- 2, VIIRS I-Band SDR Product Profile - Reflectance, Bands 1, 2, 3

Name	Data Size	Dimensions										
Reflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	1536	1536						
		CrossTrack	No	No	6400	6400						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Calibrated	0			unitless	Yes	ReflectanceFactors	unsigned	Name	Value	Name Value

		Top of Atmosphere (TOA) Reflectance for each VIIRS pixel							16-bit integer	NA_UINT16_FILL	65535
										MISS_UINT16_FILL	65534
										ONBOARD_PT_UINT16_FILL	65533
										ONGROUND_PT_UINT16_FILL	65532
										ERR_UINT16_FILL	65531
										VDNE_UINT16_FILL	65529
										SOUB_UINT16_FILL	65528

Table 2.17.2-3,VIIRS I-Band SDR Product Profile - Brightness Temperature, Bands 4, 5

Name	Data Size	Dimensions																																							
Brightness Temperature	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																																			
		AlongTrack	Yes	No	1536	1536																																			
		CrossTrack	No	No	6400	6400																																			
		Datum																																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																														
Calibrated Top of Atmosphere (TOA) Brightness Temperature for each VIIRS pixel	0			kelvin	Yes	BrightnessTemperatureFactors	unsigned 16-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_UINT16_FILL</td> <td>65535</td> <td></td> <td></td> </tr> <tr> <td>MISS_UINT16_FILL</td> <td>65534</td> <td></td> <td></td> </tr> <tr> <td>ONBOARD_PT_UINT16_FILL</td> <td>65533</td> <td></td> <td></td> </tr> <tr> <td>ONGROUND_PT_UINT16_FILL</td> <td>65532</td> <td></td> <td></td> </tr> <tr> <td>ERR_UINT16_FILL</td> <td>65531</td> <td></td> <td></td> </tr> <tr> <td>VDNE_UINT16_FILL</td> <td>65529</td> <td></td> <td></td> </tr> <tr> <td>SOUB_UINT16_FILL</td> <td>65528</td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value	NA_UINT16_FILL	65535			MISS_UINT16_FILL	65534			ONBOARD_PT_UINT16_FILL	65533			ONGROUND_PT_UINT16_FILL	65532			ERR_UINT16_FILL	65531			VDNE_UINT16_FILL	65529			SOUB_UINT16_FILL	65528			
Name	Value	Name	Value																																						
NA_UINT16_FILL	65535																																								
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ONBOARD_PT_UINT16_FILL	65533																																								
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ERR_UINT16_FILL	65531																																								
VDNE_UINT16_FILL	65529																																								
SOUB_UINT16_FILL	65528																																								

Table 2.17.2- 4,VIIRS I-Band SDR Product Profile, Bands 1 - 5

Name	Data Size	Dimensions				
ModeScan	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
		Scan	Yes	No	48	48
		Datum				

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																
		The VIIRS operational mode, reported at the scan level	0			unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>MISS_UINT8_FILL</td> <td>254</td> <td>Night</td> <td>0</td> </tr> <tr> <td>ERR_UINT8_FILL</td> <td>251</td> <td>Day</td> <td>1</td> </tr> <tr> <td>VDNE_UINT8_FILL</td> <td>249</td> <td>Mixed</td> <td>2</td> </tr> </tbody> </table>	Name	Value	Name	Value	MISS_UINT8_FILL	254	Night	0	ERR_UINT8_FILL	251	Day	1	VDNE_UINT8_FILL	249	Mixed	2	
Name	Value	Name	Value																								
MISS_UINT8_FILL	254	Night	0																								
ERR_UINT8_FILL	251	Day	1																								
VDNE_UINT8_FILL	249	Mixed	2																								
ModeGran	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																				
		Granule		Yes	No	1	1																				
		Datum																									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																
		The VIIRS operational mode, reported at the granule level	0			unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>MISS_UINT8_FILL</td> <td>254</td> <td>Night</td> <td>0</td> </tr> <tr> <td>ERR_UINT8_FILL</td> <td>251</td> <td>Day</td> <td>1</td> </tr> <tr> <td>VDNE_UINT8_FILL</td> <td>249</td> <td>Mixed</td> <td>2</td> </tr> </tbody> </table>	Name	Value	Name	Value	MISS_UINT8_FILL	254	Night	0	ERR_UINT8_FILL	251	Day	1	VDNE_UINT8_FILL	249	Mixed	2	
Name	Value	Name	Value																								
MISS_UINT8_FILL	254	Night	0																								
ERR_UINT8_FILL	251	Day	1																								
VDNE_UINT8_FILL	249	Mixed	2																								
PadByte1	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																				
		Granule		Yes	No	3	3																				
		Datum																									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																
		Pad byte	0			unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> </tbody> </table>	Name	Value	Name	Value													
Name	Value	Name	Value																								
NumberOfScans	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																				
		Granule		Yes	No	1	1																				
		Datum																									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																
		Actual number of VIIRS scans that were used to create this granule	0			unitless	No		32-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> </tbody> </table>	Name	Value	Name	Value													
Name	Value	Name	Value																								

NumberOfMissingPkts	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Number of missing packets in scan	0			unitless	No		32-bit integer	Name	Value	Name	Value	
								MISS_INT32_FILL	-998			
								VDNE_INT32_FILL	-993			
NumberOfBadChecksums	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Number of packets with bad checksums in scan	0			unitless	No		32-bit integer	Name	Value	Name	Value	
								MISS_INT32_FILL	-998			
								VDNE_INT32_FILL	-993			
NumberOfDiscardedPkts	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Number of discarded packets in scan	0			unitless	No		32-bit integer	Name	Value	Name	Value	
								MISS_INT32_FILL	-998			
								VDNE_INT32_FILL	-993			

Table 2.17.2-5,VIIRS I-Band SDR Product Profile - Quality Flags

Name	Data Size	Dimensions											
QF1_VIIRSIBANDSDR	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	1536	1536							
		CrossTrack	No	No	6400	6400							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		SDR Quality - Indicates calibration quality due to bad space view offsets, OBC view offsets, etc or use of a previous calibration view	0			unitless	No		2 bit(s)	Name	Value	Name	Value
												Good	0
												Poor	1
											No Calibration	2	
		Saturated Pixel - Indicates the level of pixel saturation	2			unitless	No		2 bit(s)	Name	Value	Name	Value
										None	0		
										Saturated			
									Some Saturated	1			
									All Saturated	2			
Missing Data - Data required for calibration processing is not available for processing	4			unitless	No		2 bit(s)	Name	Value	Name	Value		
										All data present	0		
										EV RDR data missing	1		
									Cal data (SV, CV, SD, etc.) missing	2			
									Thermistor data missing	3			
Out of Range - Calibrated pixel	6			unitless	No		2 bit(s)	Name	Value	Name	Value		

		value outside of LUT threshold limits																			All data within range	0	
																					Radiance out of range	1	
																					Reflectance or EBBT out of range	2	
																					Both Radiance and Reflectance or EBBT out of range	3	
QF2_SCAN_SDR	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																
		Scan	Yes	No	48	48																	
		Datum																					
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
		Half Angle Mirror Side	0			unitless	No		1 bit(s)	Name Value	Name A-Side	Value 0											
											B-Bide	1											
		The Moon has corrupted the space view	1			unitless	No		1 bit(s)	Name Value	Name False	Value 0											
											True	1											
		Spare	2			unitless	No		6 bit(s)	Name Value	Name Value												
QF3_SCAN_RDR	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																
		Scan	Yes	No	48	48																	
		Datum																					
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
		Checksum failed for zone 1	0			unitless	No		1 bit(s)	Name Value	Name False	Value 0											
											True	1											
		Checksum failed for zone 2	1			unitless	No		1 bit(s)	Name Value	Name False	Value 0											

											True	1																																																																																											
	Checksum failed for zone 3	2			unitless	No		1 bit(s)	Name	Value	Name	Value																																																																																											
											False	0																																																																																											
											True	1																																																																																											
	Checksum failed for zone 4	3			unitless	No		1 bit(s)	Name	Value	Name	Value																																																																																											
											False	0																																																																																											
											True	1																																																																																											
	Checksum failed for zone 5	4			unitless	No		1 bit(s)	Name	Value	Name	Value																																																																																											
											False	0																																																																																											
											True	1																																																																																											
	Checksum failed for zone 6	5			unitless	No		1 bit(s)	Name	Value	Name	Value																																																																																											
											False	0																																																																																											
											True	1																																																																																											
	Scan data is not Present (No valid data)	6			unitless	No		1 bit(s)	Name	Value	Name	Value																																																																																											
											False	0																																																																																											
											True	1																																																																																											
	Spare	7			unitless	No		1 bit(s)	Name	Value	Name	Value																																																																																											
QF4_SCAN_SDR	1byte(s)	<table border="1"> <tr> <td>Name</td> <td>Granule Boundary</td> <td>Dynamic</td> <td>Min Array Size</td> <td>Max Array Size</td> <td colspan="8"></td> </tr> <tr> <td>AlongTrack</td> <td>Yes</td> <td>No</td> <td>1536</td> <td>1536</td> <td colspan="8"></td> </tr> <tr> <td colspan="13">Datum</td> </tr> <tr> <td>Description</td> <td>Datum Offset</td> <td>Unscaled Valid Range Min</td> <td>Unscaled Valid Range Max</td> <td>Measurement Units</td> <td>Scaled</td> <td>Scale Factor Name</td> <td>Data Type</td> <td>Fill Values</td> <td>Legend Entries</td> <td colspan="3"></td> </tr> <tr> <td>Quality for this scan-line is reduced. The value is determined by the combined number of steps required to find a replacement for thermistor or calibration source data</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>unsigned 8-bit char</td> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>False</td> <td>0</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>True</td> <td>>1</td> <td></td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									AlongTrack	Yes	No	1536	1536									Datum													Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries				Quality for this scan-line is reduced. The value is determined by the combined number of steps required to find a replacement for thermistor or calibration source data	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value												False	0												True	>1	
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QF5_GRAN_BADDETECTOR	1byte(s)	<table border="1"> <tr> <td>Name</td> <td>Granule Boundary</td> <td>Dynamic</td> <td>Min Array Size</td> <td>Max Array Size</td> <td colspan="8"></td> </tr> <tr> <td>Detector</td> <td>Yes</td> <td>No</td> <td>32</td> <td>32</td> <td colspan="8"></td> </tr> <tr> <td colspan="13">Datum</td> </tr> <tr> <td>Description</td> <td>Datum Offset</td> <td>Unscaled Valid Range Min</td> <td>Unscaled Valid Range Max</td> <td>Measurement Units</td> <td>Scaled</td> <td>Scale Factor Name</td> <td>Data Type</td> <td>Fill Values</td> <td>Legend Entries</td> <td colspan="3"></td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									Detector	Yes	No	32	32									Datum													Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																																										
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Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																																																																																														

	Bad Detector	0			unitless	No		1 bit(s)	Name Value	Name Value
										False 0 True 1
	Spare	1			unitless	No		7 bit(s)	Name Value	Name Value

Table 2.17.2- 6, VIIRS I-Band SDR Product Profile - Factors, as applicable

Name	Data Size	Dimensions									
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Factors	Yes	No	2	2					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Scale = first array element; offset = second array element	0			Scale = unitless; Offset = W/(m ² sr μm)	No		32-bit floating point	Name Value	Name Value		
ReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Factors	Yes	No	2	2					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Scale = first array element; offset = second array element	0			unitless	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Factors	Yes	No	2	2					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Scale = first array	0			Scale =	No		32-bit	Name Value	Name Value		

		element; offset = second array element				unitless; Offset = K			floating point		
--	--	--	--	--	--	-------------------------	--	--	-------------------	--	--

2.17.3 VIIRS I-Band SDR HDF5 Details

VIIRS-I[1,2,3]-SDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+NumberOfMissingPkts : H5T_NATIVE_INT
+NumberOfBadChecksums : H5T_NATIVE_INT
+NumberOfDiscardedPkts : H5T_NATIVE_INT
+QF1_VIIRSI BANDSDR : H5T_NATIVE_UCHAR
+QF2_SCAN_SDR : H5T_NATIVE_UCHAR
+QF3_SCAN_RDR : H5T_NATIVE_UCHAR
+QF4_SCAN_SDR : H5T_NATIVE_UCHAR
+QF5_GRAN_BADDETECTOR : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure 2.17.3-1, VIIRS I-Band SDR UML Diagram for Bands 1, 2, 3

VIIRS-I[4,5]-SDR
+Radiance : H5T_NATIVE_USHORT
+BrightnessTemperature : H5T_NATIVE_USHORT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+NumberOfMissingPkts : H5T_NATIVE_INT
+NumberOfBadChecksums : H5T_NATIVE_INT
+NumberOfDiscardedPkts : H5T_NATIVE_INT
+QF1_VIIRSI BANDSDR : H5T_NATIVE_UCHAR
+QF2_SCAN_SDR : H5T_NATIVE_UCHAR
+QF3_SCAN_RDR : H5T_NATIVE_UCHAR
+QF4_SCAN_SDR : H5T_NATIVE_UCHAR
+QF5_GRAN_BADDETECTOR : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+BrightnessTemperatureFactors : H5T_NATIVE_FLOAT

Figure 2.17.3-2, VIIRS I-Band SDR UML Diagram for Bands 4, 5

2.17.4 VIIRS I-Band SDR Metadata Details

The HDF5 metadata elements associated with the I-Band SDRs are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The I-Band SDR metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the VIIRS Imagery Resolution SDR, the items listed in Table 2.16.4-1, VIIRS Imagery Resolution SDR Quality Summary Metadata are included as name/value pair items under the granule level metadata attribute “N_Quality_Summary”. The listed name/value pair items in the table are the granule level quality summary flags for the VIIRS I-Band SDRs.

Note that there is a standard granule level metadata item that identifies the Imagery Band. This metadata item is the “Band_ID” and is set to “I1”, “I2”, “I3”, ...”I5”.

Table 2.17.4-1, VIIRS Imagery Resolution SDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary VIIRS SDR Quality	0 – 100 %	Percentage of good quality pixels in granule	
Scan Quality Exclusion	0 – 48	Number of scans in granule excluded from processing (including partial scans)	

2.17.5 VIIRS I-Band SDR Geolocation Content Summary

The VIIRS I-Band SDR Geolocation arrays structures are summarized below in Table 2.17.5-1, VIIRS I-Band SDR Geolocation Content Summary.

Table 2.17.5-1, VIIRS I-Band SDR Geolocation Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime	Starting Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
MidTime	Mid-Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
SolarZenithAngle	Zenith angle of sun at each pixel	32-bit floating	[N*1536,	[1536, 6400]	degree

	position	point	6400]		
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*1536, 6400]	[1536, 6400]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*1536, 6400]	[1536, 6400]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	32-bit floating point	[N*48, 3]	[48, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	32-bit floating point	[N*48, 3]	[48, 3]	m/s
SCAttitude	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the mid-time of scan	32-bit floating point	[N*48, 3]	[48, 3]	arcsecond
SCSolarZenithAngle	The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser	32-bit floating point	[N*48]	[48]	degree

	frame) to the solar vector				
SCSolarAzimuthAngle	The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface)	32-bit floating point	[N*48]	[48]	degree
ModeScan	The VIIRS operational mode, reported at the scan level	unsigned 8-bit char	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level	unsigned 8-bit char	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule	32-bit Integer	[N]	[1]	unitless
QF1_SCAN_VIIRSSDRGEO	Scan-level quality flag	unsigned 8-bit char	[N*48]	[48]	unitless
QF2_VIIRSSDRGEO	Pixel-level quality flag	unsigned 8-bit char	[N*1536, 6400]	[1536,6400]	unitless

2.17.6 VIIRS I-Band SDR Geolocation Product Profile

Table 2.17.6-1, VIIRS I-Band SDR Geolocation Product Profile

Name	Data Size	Dimensions										
StartTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Starting Time of each scan in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name Value
								NA_INT64_FILL	-999			
								MISS_INT64_FILL	-998			
								ERR_INT64_FILL	-995			
								VDNE_INT64_FILL	-993			
MidTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Mid-Time of each scan in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name Value
								NA_INT64_FILL	-999			
								MISS_INT64_FILL	-998			
								ERR_INT64_FILL	-995			
								VDNE_INT64_FILL	-993			
Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	1536	1536						
		CrossTrack	No	No	6400	6400						
		Datum										
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries

			Min	Max									
		Latitude of each pixel (positive North)	0	-90	90	degree	No			32-bit floating point	Name	Value	Name Value
											NA_FLOAT32_FILL	-999.9	
											MISS_FLOAT32_FILL	-999.8	
											ERR_FLOAT32_FILL	-999.5	
											ELINT_FLOAT32_FILL	-999.4	
											VDNE_FLOAT32_FILL	-999.3	
Longitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	1536	1536							
		CrossTrack	No	No	6400	6400							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Longitude of each pixel (positive East)	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value	
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										ELINT_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3				
SolarZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	1536	1536							
		CrossTrack	No	No	6400	6400							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Zenith angle of sun at each pixel position	0	0	180	degree	No		32-bit floating point	Name	Value	Name Value	
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		
										ERR_FLOAT32_FILL	-999.5		
										ELINT_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3				

SolarAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	1536	1536						
		CrossTrack	No	No	6400	6400						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Azimuth angle of sun (measured clockwise positive from North) at each pixel position	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
								VDNE_FLOAT32_FILL	-999.3			
Datum												
Description												
Datum Offset												
Unscaled Valid Range Min												
Unscaled Valid Range Max												
Measurement Units												
Scaled												
Scale Factor Name												
Data Type												
Fill Values												
Legend Entries												

SatelliteZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	1536	1536						
		CrossTrack	No	No	6400	6400						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Zenith angle to Satellite at each pixel position	0	0	~70	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
								VDNE_FLOAT32_FILL	-999.3			
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Data Type												
Fill Values												
Legend Entries												

SatelliteAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	1536	1536						
		CrossTrack	No	No	6400	6400						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Datum										
		Description										
		Datum Offset										
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		Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	0	-180	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>ELINT_FLOAT32_FILL</td> <td>-999.4</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	ELINT_FLOAT32_FILL	-999.4	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value																																														
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		Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	0			meter	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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SCVelocity	4byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size																							
		Scan	Yes	No	48	48																			
		ECRCoordinate	No	No	3	3																			
		Datum																							
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		Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	0			m/s	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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SCAttitude	4byte(s)	Name Granule Boundary Dynamic Min Array Size Max Array Size																							
		Scan	Yes	No	48	48																			
		GRFCoordinate	No	No	3	3																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
		Spacecraft attitude with respect to	0			arcsecond	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value								
Name	Value																								
NA_FLOAT32_FILL	-999.9																								
Name	Value																								

		Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the mid-time of scan									MISS_FLOAT32_FILL -999.8											
											ERR_FLOAT32_FILL -999.5											
											VDNE_FLOAT32_FILL -999.3											
SCSolarZenithAngle	4byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Scan</td> <td>Yes</td> <td>No</td> <td>48</td> <td>48</td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Scan	Yes	No	48	48
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																
		Scan	Yes	No	48	48																
		Datum																				
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries												
The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector	0	0	180	degree	No		32-bit floating point	Name	Value	Name Value												
								NA_FLOAT32_FILL	-999.9													
								MISS_FLOAT32_FILL	-999.8													
								ERR_FLOAT32_FILL	-999.5													
								VDNE_FLOAT32_FILL	-999.3													
SCSolarAzimuthAngle	4byte(s)	<table border="1"> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> <tr> <td>Scan</td> <td>Yes</td> <td>No</td> <td>48</td> <td>48</td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Scan	Yes	No	48	48
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		Scan	Yes	No	48	48																
		Datum																				
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries												
The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value												
								NA_FLOAT32_FILL	-999.9													
								MISS_FLOAT32_FILL	-999.8													
								ERR_FLOAT32_FILL	-999.5													
								VDNE_FLOAT32_FILL	-999.3													

		counterclockwise (observer looking toward the SD surface)																							
ModeScan	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Scan	Yes	No	48	48																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
The VIIRS operational mode, reported at the scan level.	0			unitless	No		unsigned 8-bit char	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td>MISS_UINT8_FILL</td> <td>254</td> <td>Night</td> <td>0</td> </tr> <tr> <td>ERR_UINT8_FILL</td> <td>251</td> <td>Day</td> <td>1</td> </tr> <tr> <td>VDNE_UINT8_FILL</td> <td>249</td> <td>Mixed</td> <td>2</td> </tr> </table>	Name	Value	Name	Value	MISS_UINT8_FILL	254	Night	0	ERR_UINT8_FILL	251	Day	1	VDNE_UINT8_FILL	249	Mixed	2	
Name	Value	Name	Value																						
MISS_UINT8_FILL	254	Night	0																						
ERR_UINT8_FILL	251	Day	1																						
VDNE_UINT8_FILL	249	Mixed	2																						
ModeGran	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Granule	Yes	No	1	1																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
The VIIRS operational mode, reported at the granule level.	0			unitless	No		unsigned 8-bit char	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> <tr> <td>MISS_UINT8_FILL</td> <td>254</td> <td>Night</td> <td>0</td> </tr> <tr> <td>ERR_UINT8_FILL</td> <td>251</td> <td>Day</td> <td>1</td> </tr> <tr> <td>VDNE_UINT8_FILL</td> <td>249</td> <td>Mixed</td> <td>2</td> </tr> </table>	Name	Value	Name	Value	MISS_UINT8_FILL	254	Night	0	ERR_UINT8_FILL	251	Day	1	VDNE_UINT8_FILL	249	Mixed	2	
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VDNE_UINT8_FILL	249	Mixed	2																						
PadByte1	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Granule	Yes	No	3	3																			
		Datum																							
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
Pad byte	0			unitless	No		unsigned 8-bit char	<table border="1"> <tr> <td>Name</td> <td>Value</td> <td>Name</td> <td>Value</td> </tr> </table>	Name	Value	Name	Value													
Name	Value	Name	Value																						
NumberOfScans	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																		
		Granule	Yes	No	1	1																			
		Datum																							
Description	Datum	Unscaled	Unscaled	Measurement	Scaled	Scale	Data	Fill Values	Legend																

			Offset	Valid Range Min	Valid Range Max	Units		Factor Name	Type		Entries
		Actual number of VIIRS scans that were used to create this granule.	0			unitless	No		32-bit integer	Name Value	Name Value

Table 2.17.6- 2, VIIRS I-Band Geolocation Product Profile - Quality Flags

Name	Data Size	Dimensions																			
QF1_SCAN_VIIRSSDRGEO	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size														
		Scan	Yes	No	48	48															
		Datum																			
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries										
		Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name Value	<table border="1"> <tr> <td>Name</td> <td>Value</td> </tr> <tr> <td>Nominal - E&A data available</td> <td>0</td> </tr> <tr> <td>Missing Data <= Small Gap</td> <td>1</td> </tr> <tr> <td>Small Gap <2</td> <td></td> </tr> <tr> <td>Missing Data <= Granule Boundary</td> <td>2</td> </tr> <tr> <td>Missing Data > Granule Boundary</td> <td>3</td> </tr> </table>	Name	Value	Nominal - E&A data available	0	Missing Data <= Small Gap	1	Small Gap <2		Missing Data <= Granule Boundary	2
Name	Value																				
Nominal - E&A data available	0																				
Missing Data <= Small Gap	1																				
Small Gap <2																					
Missing Data <= Granule Boundary	2																				
Missing Data > Granule Boundary	3																				
HAM Impulse Flag (Indicates whether the number of encoder pulse values per delta time is as expected (Good Data) or not (Bad	2				unitless	No		1 bit(s)	Name Value	<table border="1"> <tr> <td>Name</td> <td>Value</td> </tr> <tr> <td>Good Data</td> <td>0</td> </tr> <tr> <td>Bad Data</td> <td>1</td> </tr> </table>	Name	Value	Good Data	0	Bad Data	1					
Name	Value																				
Good Data	0																				
Bad Data	1																				

		Data))											
		Within South Atlantic Anomaly	3			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1
		Solar Eclipse during Earth view scan	4			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1
		Spare	5			unitless	No		3 bit(s)	Name Value	Name Value		
QF2_VIIRSSDRGEO	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	1536	1536							
		CrossTrack	No	No	6400	6400							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Invalid Input Data (Indicates that any of the Spacecraft Ephemeris or Attitude Data is Invalid)	0			unitless	No		1 bit(s)	Name Value	Name Value	False 0	True 1
		Bad Pointing (Indicates that the sensor LOS does not intersect the geoid, is near the limb, has invalid sensor angles or other similar condition)	1			unitless	No		1 bit(s)	Name Value	Name	Value	False 0 True 1
		Bad Terrain (Indicates that the algorithm could not obtain a valid terrain value)	2			unitless	No		1 bit(s)	Name Value	Name	Value	False 0 True 1
		Invalid Solar Angles	3			unitless	No		1 bit(s)	Name Value	Name	Value	False 0 True 1
		Spare	4			unitless	No		4 bit(s)	Name Value	Name Value		

2.17.7 VIIRS I-Band SDR Geolocation HDF5 Details

VIIRS-IMG-GEO
+StartTime : H5T_NATIVE_LLONG
+MidTime : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_FLOAT
+SatelliteRange : H5T_NATIVE_FLOAT
+SCPosition : H5T_NATIVE_FLOAT
+SCVelocity : H5T_NATIVE_FLOAT
+SCAttitude : H5T_NATIVE_FLOAT
+SCSolarZenithAngle : H5T_NATIVE_FLOAT
+SCSolarAzimuthAngle : H5T_NATIVE_FLOAT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+QF1_SCAN_VIIRSSDRGEO : H5T_NATIVE_UCHAR
+QF2_VIIRSSDRGEO : H5T_NATIVE_UCHAR

Figure 2.17.7-1, VIIRS I-Band SDR Geolocation UML Diagram

2.17.8 VIIRS I-Band SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the I-Band SDR Geolocation are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The I-Band SDR geolocation metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the VIIRS Imagery Resolution SDR Geolocation, the items listed in Table 2.17.8-1, VIIRS Imagery Resolution SDR Geolocation Quality Summary Metadata are included as name/value pair items under the granule level metadata attribute “N_Quality_Summary”. The listed name/value pair items in the table are the granule level quality summary flags for the VIIRS I-Band SDR Geolocation.

Table 2.17.8-1, VIIRS Imagery Resolution SDR Geolocation Quality Summary Metadata

N_Quality_Summary			
Name	Value	Description	Comments
Percent Missing Data	0 – 100 %	Percentage of missing pixels (e.g., insufficient data for geolocation).	
Percent Out of Bounds	0 – 100 %	Percentage of out of bounds pixels. For example, pixels could not be geolocated.	
Automatic Quality Flag	0 – 1	Indicates if processing error has occurred.	0 = Passed 1 = Failed

2.18 VIIRS Day/Night Band (DNB) SDR

Data Mnemonic	SDRE-VDNB-C0030
Description/ Purpose	<p>The Visible/Infrared Imaging/Radiometer Suite (VIIRS) collects visible/infrared imagery and radiometric data. The Day/Night Band (DNB) is described in this section.</p> <p>VIIRS DNB measures radiance over a panachromatic band at wavelengths between 500 nm and 900 nm.</p> <p>For more information on the VIIRS SDR data see Section 2.16, VIIRS M-Band SDRs, sub-section Description/Purpose, <i>General Information on VIIRS SDRs</i>.</p> <p>Day/Night Band (DNB) sub-pixels are aggregated on-board and are not subject to pixel trim effects. The DNB pixels maintain a near constant projected spatial size with scan angle.</p> <p>The Bad Detector Quality Flag (QF4_BAD_DETECTOR) array is composed of two dimensions which represent the “equivalent detector space” of the DNB pixel array. There are 16 equivalent detectors along-track, the first element in the array corresponds to the positive X-axis of the Spacecraft. There are 32 aggregation zones cross-track, the first element in the array is oriented toward Spacecraft positive Y-Axis.</p>
File-Naming Construct	See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.
File Size	<p>Approximately 15,240 KiB per data granule.</p> <p>Approximately 124,970 KiB per geolocation granule.</p> <p>Sizes do not include HDF5 overhead or metadata.</p>
File Format Type	HDF5
Data Content and Data Format	<p>See Section 2.18.1, VIIRS DNB SDR Data</p> <p>See Section 2.18.5, VIIRS DNB SDR Geolocation</p>

2.18.1 VIIRS DNB SDR Data Content Summary

The VIIRS DNB SDR data arrays structures are summarized below in Table 2.18.1-1, VIIRS DNB SDR Data Content Summary.

Table 2.18.1-1, VIIRS DNB SDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
------	-------------	-----------	----------------------	--------------------	-------

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
Radiance	Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS DNB pixel	32-bit floating point	[N*768,4064]	[768, 4064]	W/(cm ² sr)
ModeScan	The VIIRS operational mode, reported at the scan level	unsigned 8-bit char	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level	unsigned 8-bit char	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans in granule.	32-bit integer	[N]	[1]	unitless
NumberOfMissingPkts	Number of missing packets in scan	32-bit integer	[N*48]	[48]	unitless
NumberOfBadChecksums	Number of packets with bad checksum in scan	32-bit integer	[N*48]	[48]	unitless
NumberOfDiscardedPkts	Number of discarded packets in scan	32-bit integer	[N*48]	[48]	unitless
QF1_VIIRSDNBSDR	Pixel-level Quality Flag	unsigned 8-bit char	[N*768,4064]	[768, 4064]	unitless
QF2_SCAN_SDR	Quality Flag for each Scan (indicates general SDR information)	unsigned 8-bit char	[N*48]	[48]	unitless
QF3_SCAN_RDR	Quality Flag for each Scan (indicates general RDR information)	unsigned 8-bit char	[N*48]	[48]	unitless
QF4_GRAN_BADDETECTOR	Quality Flag - bad detector	unsigned 8-bit char	[N*16,32]	[16,32]	unitless

2.18.2 VIIRS DNB SDR Data Product Profile

Table 2.18.2-1, VIIRS DNB Band SDR Product Profile

Name	Data Size	Dimensions											
Radiance	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	768	768							
		CrossTrack	No	No	4064	4064							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS DNB pixel	0			W/(cm ² sr)	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9				
								MISS_FLOAT32_FILL	-999.8				
								ERR_FLOAT32_FILL	-999.5				
								VDNE_FLOAT32_FILL	-999.3				
ModeScan	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Scan	Yes	No	48	48							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		The VIIRS operational mode, reported at the scan level	0			unitless	No		unsigned 8-bit char	Name	Value	Name	Value
										MISS_UINT8_FILL	254	Night	0
								ERR_UINT8_FILL	251	Day	1		
								VDNE_UINT8_FILL	249	Mixed	2		
ModeGran	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	1	1							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	

		The VIIRS operational mode, reported at the granule level	0			unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>MISS_UINT8_FILL</td> <td>254</td> <td>Night</td> <td>0</td> </tr> <tr> <td>ERR_UINT8_FILL</td> <td>251</td> <td>Day</td> <td>1</td> </tr> <tr> <td>VDNE_UINT8_FILL</td> <td>249</td> <td>Mixed</td> <td>2</td> </tr> </tbody> </table>	Name	Value	Name	Value	MISS_UINT8_FILL	254	Night	0	ERR_UINT8_FILL	251	Day	1	VDNE_UINT8_FILL	249	Mixed	2
Name	Value	Name	Value																							
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ERR_UINT8_FILL	251	Day	1																							
VDNE_UINT8_FILL	249	Mixed	2																							
PadByte1	1byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td>Granule</td> <td>Yes</td> <td>No</td> <td>3</td> <td>3</td> </tr> </tbody> </table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Granule	Yes	No	3	3														
Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																						
Granule	Yes	No	3	3																						
		Datum																								
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries															
		Pad byte	0			unitless	No		unsigned 8-bit char	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value												
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NumberOfScans	4byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td>Granule</td> <td>Yes</td> <td>No</td> <td>1</td> <td>1</td> </tr> </tbody> </table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	Granule	Yes	No	1	1														
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Granule	Yes	No	1	1																						
		Datum																								
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries															
		Actual number of VIIRS scans that were used to create this granule	0			unitless	No		32-bit integer	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name	Value	Name	Value												
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Table 2.18.2-2, VIIRS DNB Band SDR Product Profile - Quality Flags

Name	Data Size	Dimensions																																																					
QF1_VIIRSDNBSDR	1byte(s)	<table border="1"> <thead> <tr> <th>Name</th> <th>Granule Boundary</th> <th>Dynamic</th> <th>Min Array Size</th> <th>Max Array Size</th> </tr> </thead> <tbody> <tr> <td>AlongTrack</td> <td>Yes</td> <td>No</td> <td>768</td> <td>768</td> </tr> <tr> <td>CrossTrack</td> <td>No</td> <td>No</td> <td>4064</td> <td>4064</td> </tr> </tbody> </table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	768	768	CrossTrack	No	No	4064	4064																																		
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Name	Value																																																						

		previous calibration view																																																																																																												
		Saturated Pixel - Indicates the level of pixel saturation	2			unitless	No		2 bit(s)	Name Value	Name Value	Value																																																																																																		
											None	0																																																																																																		
											Saturated	1																																																																																																		
											All Saturated	2																																																																																																		
		Missing Data - Data required for calibration processing is not available for processing	4			unitless	No		2 bit(s)	Name Value	Name Value	Value																																																																																																		
											All data present	0																																																																																																		
											EV RDR data missing	1																																																																																																		
											Cal data (SV, CV, SD, etc.) missing	2																																																																																																		
											Thermistor data missing	3																																																																																																		
		Out of Range - Calibrated pixel value outside of LUT threshold limits	6			unitless	No		1 bit(s)	Name Value	Name Value	Value																																																																																																		
											All data within range	0																																																																																																		
											Radiance out of range	1																																																																																																		
		Spare	7			unitless	No		1 bit(s)	Name Value	Name Value																																																																																																			
QF2_SCAN_SDR	1 byte(s)	<table border="1"> <tr> <td>Name</td> <td>Granule Boundary</td> <td>Dynamic</td> <td>Min Array Size</td> <td>Max Array Size</td> <td colspan="8"></td> </tr> <tr> <td>Scan</td> <td>Yes</td> <td>No</td> <td>48</td> <td>48</td> <td colspan="8"></td> </tr> <tr> <td colspan="12">Datum</td> </tr> <tr> <td>Description</td> <td>Datum Offset</td> <td>Unscaled Valid Range Min</td> <td>Unscaled Valid Range Max</td> <td>Measurement Units</td> <td>Scaled</td> <td>Scale Factor Name</td> <td>Data Type</td> <td>Fill Values</td> <td>Legend Entries</td> <td colspan="2"></td> </tr> <tr> <td>Half Angle Mirror Side</td> <td>0</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value</td> <td>Value</td> <td>Value</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>A-Side</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>B-Side</td> <td>1</td> </tr> <tr> <td>The Moon has corrupted the</td> <td>1</td> <td></td> <td></td> <td>unitless</td> <td>No</td> <td></td> <td>1 bit(s)</td> <td>Name Value</td> <td>Name Value</td> <td>Value</td> <td>Value</td> </tr> </table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									Scan	Yes	No	48	48									Datum												Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			Half Angle Mirror Side	0			unitless	No		1 bit(s)	Name Value	Name Value	Value	Value											A-Side	0											B-Side	1	The Moon has corrupted the	1			unitless	No		1 bit(s)	Name Value	Name Value	Value	Value
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The Moon has corrupted the	1			unitless	No		1 bit(s)	Name Value	Name Value	Value	Value																																																																																																			

		space view									False 0 True 1
		Spare	2			unitless	No		6 bit(s)	Name Value	Name Value
QF3_SCAN_RDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	48	48					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Checksum failed for zone 1	0			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Checksum failed for zone 2	1			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Checksum failed for zone 3	2			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Checksum failed for zone 4	3			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Checksum failed for zone 5	4			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Checksum failed for zone 6	5			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Scan data is not Present (No valid data)	6			unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Spare	7			unitless	No		1 bit(s)	Name Value	Name Value
QF4_GRAN_BADDETECTOR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Detector	Yes	No	16	16					
		AggZone	No	No	32	32					
		Datum									
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor	Data Type	Fill Values	Legend Entries

		Min	Max			Name			
Bad Detector Aggregation Zone	0			unitless	No		1 bit(s)	Name	Value
								False	0
								True	1
Spare	1			unitless	No		7 bit(s)	Name	Value

2.18.3 VIIRS DNB SDR Data HDF5 Details

VIIRS-DNB-SDR
+Radiance : H5T_NATIVE_FLOAT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+NumberOfMissingPkts : H5T_NATIVE_INT
+NumberOfBadChecksums : H5T_NATIVE_INT
+NumberOfDiscardedPkts : H5T_NATIVE_INT
+QF1_VIIRSDNBSDR : H5T_NATIVE_UCHAR
+QF2_SCAN_SDR : H5T_NATIVE_UCHAR
+QF3_SCAN_RDR : H5T_NATIVE_UCHAR
+QF4_GRAN_BADDETECTOR : H5T_NATIVE_UCHAR

Figure 2.18.3-1, VIIRS DNB SDR UML Diagram

2.18.4 VIIRS DNB SDR Data Metadata Details

The HDF5 metadata elements associated with the VIIRS DNB SDRs are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The DNB SDR metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the VIIRS DNB SDR, the items listed in Table 2.18.4-1, VIIRS DNB SDR Quality Summary Metadata are included as name/value pair items under the granule level metadata attribute “N_Quality_Summary”. The listed name/value pair items in the table are the granule level quality summary flags for the VIIRS DNB SDRs.

Note that there is a standard granule level metadata item that identifies the Imagery Band. This metadata item is the “Band_ID” and is set to “DNB”.

Table 2.18.4-1, VIIRS DNB SDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary VIIRS SDR Quality	0 – 100 %	Percentage of good quality pixels in granule	
Scan Quality Exclusion	0 – 48	Number of scans in granule excluded from processing (including partial scans)	

2.18.5 VIIRS DNB SDR Geolocation Content Summary

The VIIRS DNB SDR geolocation arrays structures are summarized below in Table 2.18.5-1, VIIRS DNB SDR Geolocation Content Summary.

Table 2.18.5-1, VIIRS DNB SDR Geolocation Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime	Starting Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
MidTime	Mid-Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
SolarZenithAngle	Zenith angle of sun at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
LunarZenithAngle	Zenith angle of moon at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
LunarAzimuthAngle	Azimuth angle of moon (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*768, 4064]	[768, 4064]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*768, 4064]	[768, 4064]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	32-bit floating point	[N*48,3]	[48, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	32-bit floating point	[N*48,3]	[48, 3]	m/s

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SCAttitude	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw)	32-bit floating point	[N*48, 3]	[48, 3]	arcsecond
SCSolarZenithAngle	The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector	32-bit floating point	[N*48]	[48]	degree
SCSolarAzimuthAngle	The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface)	32-bit floating point	[N*48]	[48]	degree
MoonPhaseAngle	Angle between ray vector to moon from earth and ray vector of satellite to earth	32-bit floating point	[N]	[1]	degree
MoonIllumFraction	Fraction of the moon illuminated (expressed as percent)	32-bit floating point	[N]	[1]	unitless
ModeScan	The VIIRS operational mode, reported at the scan level	unsigned 8-bit char	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level	unsigned 8-bit char	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule	32-bit integer	[N]	[1]	unitless
QF1_SCAN_VIIRSSDRGEO	Scan-level quality flag	unsigned 8-bit char	[N*48]	[48]	unitless
QF2_VIIRSSDRGEO	Pixel-level quality flag	unsigned 8-bit char	[N*768, 4064]	[768,4064]	unitless

2.18.6 VIIRS DNB SDR Geolocation Product Profile

Table 2.18.6-1, VIIRS DNB SDR Geolocation Product Profile

Name	Data Size	Dimensions										
StartTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Starting Time of each scan in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name Value
								NA_INT64_FILL	-999			
								MISS_INT64_FILL	-998			
								ERR_INT64_FILL	-995			
								VDNE_INT64_FILL	-993			
MidTime	8byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Mid-Time of each scan in IET (1/1/1958)	0			microsecond	No		64-bit integer	Name	Value	Name Value
								NA_INT64_FILL	-999			
								MISS_INT64_FILL	-998			
								ERR_INT64_FILL	-995			
								VDNE_INT64_FILL	-993			
Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	4064	4064						
		Datum										
		Description	Datum Offset	Unscaled Valid	Unscaled Valid	Measurement Units	Scaled	Scale Factor	Data Type	Fill Values		Legend Entries

				Range Min	Range Max			Name				
		Latitude of each pixel (positive North)	0	-90	90	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
										VDNE_FLOAT32_FILL	-999.3	
Longitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	4064	4064						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Longitude of each pixel (positive East)	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
										VDNE_FLOAT32_FILL	-999.3	
SolarZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	4064	4064						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Zenith angle of sun at each pixel position	0	0	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
										VDNE_FLOAT32_FILL	-999.3	

SolarAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	4064	4064						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Azimuth angle of sun (measured clockwise positive from North) at each pixel position	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
VDNE_FLOAT32_FILL	-999.3											
SatelliteZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	4064	4064						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Zenith angle to Satellite at each pixel position	0	0	~70	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
VDNE_FLOAT32_FILL	-999.3											
SatelliteAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		AlongTrack	Yes	No	768	768						
		CrossTrack	No	No	4064	4064						
		Datum										
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries

			Min	Max																							
		Azimuth angle 0 (measured clockwise positive from North) to Satellite at each pixel position	-180	180	degree	No			32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>ELINT_FLOAT32_FILL</td> <td>-999.4</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	ELINT_FLOAT32_FILL	-999.4	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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		Azimuth angle of moon (measured clockwise positive from North) at each pixel	0	-180	180	degree	No		32-bit floating point	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>NA_FLOAT32_FILL</td> <td>-999.9</td> </tr> <tr> <td>MISS_FLOAT32_FILL</td> <td>-999.8</td> </tr> <tr> <td>ERR_FLOAT32_FILL</td> <td>-999.5</td> </tr> <tr> <td>ELINT_FLOAT32_FILL</td> <td>-999.4</td> </tr> <tr> <td>VDNE_FLOAT32_FILL</td> <td>-999.3</td> </tr> </tbody> </table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	ELINT_FLOAT32_FILL	-999.4	VDNE_FLOAT32_FILL	-999.3	<table border="1"> <thead> <tr> <th>Name</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Name	Value		
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Name	Value																										

		position												
Height	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		AlongTrack	Yes	No	768	768								
		CrossTrack	No	No	4064	4064								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Ellipsoid-Geoid separation	0			meter	No		32-bit floating point	Name	Value	Name	Value	
										NA_FLOAT32_FILL	-999.9			
										MISS_FLOAT32_FILL	-999.8			
										ERR_FLOAT32_FILL	-999.5			
										ELINT_FLOAT32_FILL	-999.4			
								VDNE_FLOAT32_FILL	-999.3					
SatelliteRange	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		AlongTrack	Yes	No	768	768								
		CrossTrack	No	No	4064	4064								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Line of sight distance from the ellipsoid intersection to the satellite	0			meter	No		32-bit floating point	Name	Value	Name	Value	
										NA_FLOAT32_FILL	-999.9			
										MISS_FLOAT32_FILL	-999.8			
										ERR_FLOAT32_FILL	-999.5			
										ELINT_FLOAT32_FILL	-999.4			
								VDNE_FLOAT32_FILL	-999.3					
SCPosition	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	48	48								
		ECRCoordinate	No	No	3	3								
		Datum												
		Description	Datum Offset	Unscaled Valid Range	Unscaled Valid Range	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		

			Min	Max								
		Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	0			meter	No		32-bit floating point			
										Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
SCVelocity	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48						
		ECRCoordinate	No	No	3	3						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	0			m/s	No		32-bit floating point			
										Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
SCAttitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48						
		GRFCoordinate	No	No	3	3						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw)	0			arcsecond	No		32-bit floating point			
										Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	

SCSolarZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	48	48					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	
The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector	0	0	180	degree	No		32-bit floating point	Name	Value	Name Value	
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		
SCSolarAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	48	48					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	
The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface)	0	-180	180	degree	No		32-bit floating point	Name	Value	Name Value	
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		
MoonPhaseAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Granule	Yes	No	1	1					

		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Angle between ray vector to moon from earth and ray vector of satellite to earth	0	0	180	degree	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										ELINT_FLOAT32_FILL	-999.4	
										VDNE_FLOAT32_FILL	-999.3	
MoonIllumFraction	4byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Granule	Yes	No	1	1						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Fraction of the moon illuminated (expressed as percent)	0	0	100	percent	No		32-bit floating point	Name	Value	Name Value
										NA_FLOAT32_FILL	-999.9	
										MISS_FLOAT32_FILL	-999.8	
										ERR_FLOAT32_FILL	-999.5	
										VDNE_FLOAT32_FILL	-999.3	
ModeScan	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		The VIIRS operational mode, reported at the scan level	0			unitless	No		unsigned 8-bit char	Name	Value	Name Value
										MISS_UINT8_FILL	254	Night 0
										ERR_UINT8_FILL	251	Day 1
										VDNE_UINT8_FILL	249	Mixed 2
ModeGran	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Granule	Yes	No	1	1						

		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		The VIIRS operational mode, reported at the granule level	0			unitless	No		unsigned 8-bit char	Name	Value	Name Value
										MISS_UINT8_FILL	254	Night 0
										ERR_UINT8_FILL	251	Day 1
										VDNE_UINT8_FILL	249	Mixed 2
PadByte1	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	3	3						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Pad byte	0			unitless	No		unsigned 8-bit char	Name	Value	Name Value
NumberOfScans	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	1	1						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Actual number of VIIRS scans that were used to create this granule	0			unitless	No		32-bit integer	Name Value	Name Value	

Table 2.18.6-2, VIIRS DNB Geolocation Product Profile - Quality Flags

Name	Data Size	Dimensions										
QF1_SCAN_VIIRSSDRGEO	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Scan	Yes	No	48	48						
		Datum										
		Description	Datum	Unscaled	Unscaled	Measurement	Scaled	Scale	Data	Fill Values	Legend	Entries

		Offset	Valid Range Min	Valid Range Max	Units		Factor Name	Type				
	Attitude and Ephemeris availability status	0			unitless	No		2 bit(s)	Name	Value	Name	Value
											Nominal - E&A data available	0
											Missing Data <= Small Gap	1
											Small Gap < Missing Data < Granule Boundary	2
											Missing Data >= Granule Boundary	3
	HAM Impulse Flag (Indicates whether the number of encoder pulse values per delta time is as expected (Good Data) or not (Bad Data))	2			unitless	No		1 bit(s)	Name	Value	Name	Value
											Good Data	0
										Bad Data	1	
	Within South Atlantic Anomaly	3			unitless	No		1 bit(s)	Name	Value	Name	Value
											False	0
										True	1	
	Solar Eclipse during Earth view scan	4			unitless	No		1 bit(s)	Name	Value	Name	Value
											False	0
										True	1	
	Lunar Eclipse during Earth view scan	5			unitless	No		1 bit(s)	Name	Value	Name	Value
											False	0
										True	1	
	Spare	6			unitless	No		2 bit(s)	Name	Value	Name	Value
QF2_VIIRSSDRGEO	1byte(s)		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
			AlongTrack	Yes	No	768	768					

CrossTrack	No	No	4064	4064								
Datum												
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
Invalid Input Data (Indicates that any of the Spacecraft Ephemeris or Attitude Data is Invalid)	0			unitless	No		1 bit(s)	Name	Value	Name	Value	
										False	0	
										True	1	
Bad Pointing (Indicates that the sensor LOS does not intersect the geoid, is near the limb, has invalid sensor angles or other similar condition)	1			unitless	No		1 bit(s)	Name	Value	Name	Value	
										False	0	
										True	1	
Bad Terrain (Indicates that the algorithm could not obtain a valid terrain value)	2			unitless	No		1 bit(s)	Name	Value	Name	Value	
										False	0	
										True	1	
Invalid Solar Angles	3			unitless	No		1 bit(s)	Name	Value	Name	Value	
										False	0	
										True	1	
Spare	4			unitless	No		4 bit(s)	Name	Value	Name	Value	

2.18.7 VIIRS DNB SDR Geolocation HDF5 Details

VIIRS-DNB-GEO
+StartTime : H5T_NATIVE_LLONG
+MidTime : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+LunarZenithAngle : H5T_NATIVE_FLOAT
+LunarAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_FLOAT
+SatelliteRange : H5T_NATIVE_FLOAT
+SCPosition : H5T_NATIVE_FLOAT
+SCVelocity : H5T_NATIVE_FLOAT
+SCAttitude : H5T_NATIVE_FLOAT
+SCSolarZenithAngle : H5T_NATIVE_FLOAT
+SCSolarAzimuthAngle : H5T_NATIVE_FLOAT
+MoonPhaseAngle : H5T_NATIVE_FLOAT
+MoonIllumFraction : H5T_NATIVE_FLOAT
+ModeScan : H5T_NATIVE_UCHAR
+ModeGran : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+NumberOfScans : H5T_NATIVE_INT
+QF1_SCAN_VIIRSSDRGEO : H5T_NATIVE_UCHAR
+QF1_VIIRSSDRGEO : H5T_NATIVE_UCHAR

Figure 2.18.7-1, VIIRS DNB SDR Geolocation UML Diagram

2.18.8 VIIRS DNB SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the DNB SDR Geolocation are listed in the CDFCB-X Volume V, Section 4.3, HDF5 (Metadata) Hierarchy. The DNB SDR geolocation metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the VIIRS DNB SDR Geolocation, the items listed in Table 2.18.8-1, VIIRS DNB SDR Geolocation Quality Summary Metadata are included as name/value pair items under the granule level metadata attribute “N_Quality_Summary”. The listed name/value pair items in the table are the granule level quality summary flags for the VIIRS DNB SDR Geolocation.

Table 2.18.8-1, VIIRS DNB SDR Geolocation Quality Summary Metadata

N_Quality_Summary			
Name	Value	Description	Comments
Percent Missing Data	0 – 100 %	Percentage of missing pixels (e.g., insufficient data for geolocation).	
Percent Out of Bounds	0 – 100 %	Percentage of out of bounds pixels. For example, pixels could not be geolocated.	
Automatic Quality Flag	0 – 1	Indicates if processing error has occurred.	0 = Passed 1 = Failed

3.0 TDRS – TEMPERATURE DATA RECORDS

Temperature Data Records are geolocated, antenna temperatures.

3.1 ATMS Temperature Data Record

Data Mnemonic	TDRE-ATMS-C0030
Description/ Purpose	Advanced Technology Microwave Sounder (ATMS) uncorrected antenna temperatures. ATMS rotates counter-clockwise (w.r.t the positive velocity direction) producing 104 views, with each view taking approximately 18 msec. 96 earth view antenna temperatures are reported in the TDR for each of the 22 channels. ATMS rotates three times every 8 seconds resulting in three scans for every single scan of CrIS.
File-Naming Construct	See the CDFCB-X Volume I, D34862-01, Section 3.0 for details.
File Size	Approximately 59 KiB per data granule. See Section 2.4 ATMS SDR for Geolocation data granule sizing. Sizes do not include HDF5 overhead or metadata.
File Format Type	HDF5
Data Content and Data Format	See Section 3.1.1, ATMS TDR Product Data Content Summary See Section 3.1.5, ATMS TDR Geolocation Data Content Summary

3.1.1 ATMS TDR Product Data Content Summary

Table 3.1.1-1, ATMS TDR Product Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
BeamTime	The time in IET at the end of the view period for this observation.	64-bit integer	[N*12, 96]	[12, 96]	microseconds

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
AntennaTemperature	Antenna temperature for each ATMS channel and beam position.	unsigned 16-bit integer	[N*12, 96, 22]	[12, 96, 22]	kelvin
InstrumentMode	Instrument mode word 73 in the Health & Status APID 531	unsigned 16-bit integer	[N*4]	[4]	unitless
QF1_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF2_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF3_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF4_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF5_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF6_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF7_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF8_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF9_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF10_GRAN_HEALTHST ATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF11_GRAN_QUADRATICCORRECTION	Quadratic correction applied to the radiometric transfer function for non-linearity correction.	unsigned 8-bit char	[N]	[1]	unitless
QF12_SCAN_KAVPRTC ONVERR	If a divide-by-zero condition exists, or if computation loop fails to converge in the temperature computations for the 8 KAV PRTs, the condition is flagged by the corresponding bit in the flag to indicate which PRT has failed.	unsigned 8-bit char	[N*12]	[12]	unitless
QF13_SCAN_WGPRTCONVERR	If a divide-by-zero condition exists, or if computation loop fails to converge in the temperature computations for the 7 WG PRTs, the condition is flagged by the corresponding bit in the flag to indicate which PRT has failed.	unsigned 8-bit char	[N*12]	[12]	unitless
QF14_SCAN_SHELFPRTCONVERR	If a divide-by-zero condition exist, or if the computation loop fails to converge in the temperature computations for the 4 Receiver Shelf (KKa, V, W and G) PRTs, the condition is flagged by the corresponding bit in the flag to indicate which PRT has failed.	unsigned 8-bit char	[N*12]	[12]	unitless
QF15_SCAN_KAVPRTTE MPLIMIT	Each of the 8 KAV PRT temperatures is checked against a lower limit and an upper limit. Out of range conditions are flagged by the corresponding bit in the flag to indicate which PRT has failed the test.	unsigned 8-bit char	[N*12]	[12]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF16_SCAN_WGPRTTE MPLIMIT	Each of the 7 WG PRT temperatures is checked against a lower limit and an upper limit. Out of range conditions are flagged by the corresponding bit in the flag to indicate which PRT has failed the test.	unsigned 8-bit char	[N*12]	[12]	unitless
QF17_SCAN_KAVPRTTE MPCONSISTENCY	The 8 KAV PRT temperatures are checked against each other for consistency. The check failure are flagged by the corresponding bit in the flag to indicate which PRT has failed the test.	unsigned 8-bit char	[N*12]	[12]	unitless
QF18_SCAN_WGPRTTE MPCONSISTENCY	The 7 WG PRT temperatures are checked against each other for consistency. The check failure are flagged by the corresponding bit in the flag to indicate which PRT has failed the test.	unsigned 8-bit char	[N*12]	[12]	unitless
QF19_SCAN_ATMSSDR	Scan-level Quality Flag	unsigned 8-bit char	[N*12]	[12]	unitless
QF20_ATMSSDR	Scan-level Quality Flag per channel	unsigned 8-bit char	[N*12, 22]	[12, 22]	unitless
QF21_ATMSSDR	Out of range - Space and Blackbody View Quality Flag	unsigned 8-bit char	[N*12, 22]	[12, 22]	unitless

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF22_ATMSSDR	Space and Blackbody View Quality Flag	unsigned 8-bit char	[N*12, 22]	[12, 22]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*7]	[7]	unitless
AntennaTemperatureFactors	Scale = first array element; offset = second array element	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = kelvin

3.1.2 ATMS TDR Product Profile

Table 3.1.2-1, ATMS TDR Product Profile

Name	Data Size	Dimensions												
BeamTime	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	12	12								
		BeamPosition	No	No	96	96								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		The time in IET at the end of the view period for this observation.	0			microsecond	No		64-bit integer	Name	Value	Name	Value	
										NA_INT64_FILL	-999			
										MISS_INT64_FILL	-998			
										ERR_INT64_FILL	-995			
		VDNE_INT64_FILL	-993											
AntennaTemperature	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Scan	Yes	No	12	12								
		BeamPosition	No	No	96	96								
		Channel	No	No	22	22								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Antenna temperature for each ATMS channel and beam position.	0			kelvin	Yes	Antenna Temperature Factors	unsigned 16-bit integer	Name	Value	Name	Value	
										NA_UINT16_FILL	65535			
										MISS_UINT16_FILL	65534			
										ERR_UINT16_FILL	65531			
VDNE_UINT16_FILL	65529													

Table 3.1.2-2, ATMS TDR Product Profile - Quality Flags

See Section 2.4.2, ATMS SDR Quality Flags.

Table 3.1.2-3, ATMS TDR Product Profile - Factors

Name	Data Size	Dimensions									
AntennaTemperatureFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Factors	Yes	No	2	2					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Scale = first array element; offset = second array element	0			Scale = unitless; Offset = kelvin	No		32-bit floating point	Name Value	Name Value		

3.1.3 ATMS TDR HDF5 Details

Figure 3.1.3-1 provides the details on the content and data types of the ATMS TDR. This UML diagram provide details at the product level only. In addition to this UML diagram, refer to Figure 2.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

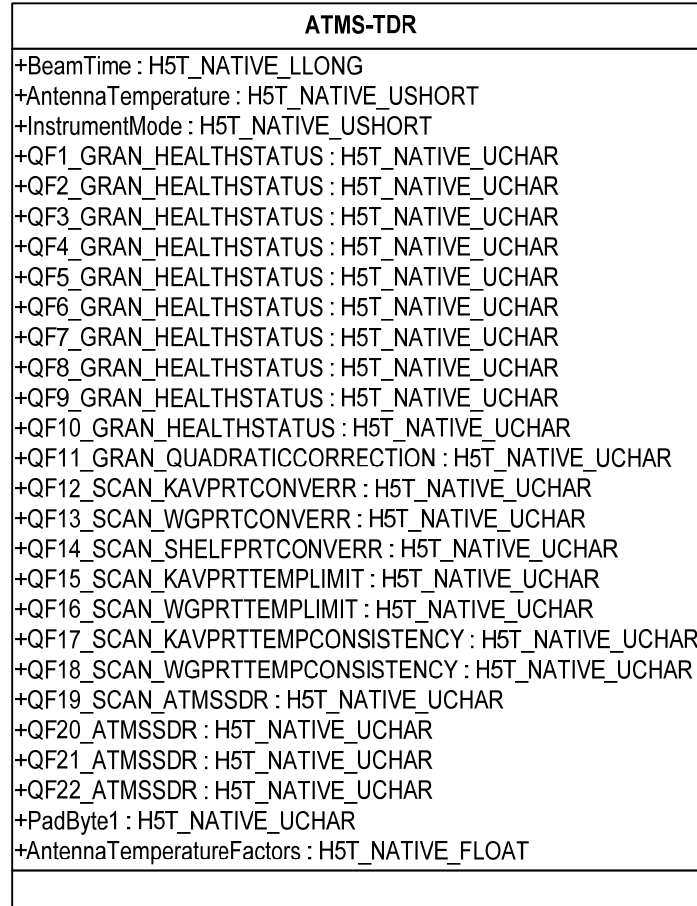


Figure 3.1.3-1, ATMS TDR UML Diagram

3.1.4 ATMS TDR Metadata Details

There are no quality summary metadata items in the ATMS TDR.

3.1.5 ATMS TDR Geolocation Content Summary

See Section 2.4.5 ATMS SDR Geolocation Content Summary.

3.1.6 ATMS TDR Geolocation Product Profile

See Section 2.4.6 ATMS SDR Geolocation Product Profile.

3.1.7 ATMS TDR Geolocation HDF5 Details

See Section 2.4.7 ATMS SDR Geolocation HDF5 Details.

3.1.8 ATMS TDR Geolocation Metadata Details

There are no quality summary metadata items in the ATMS TDR Geolocation.

3.2 DELETED

APPENDIX A: DATA MNEMONIC TO INTERFACE MAPPING

Table A-1, Data Mnemonic to Interface Mapping

Description	Data	File Type	Document	Interface Mnemonic
Advanced Technology Microwave Sounder SDR	SDRE-ATMS-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
ATMS REMAP SDR	SDRE-ATMR-C0030			
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030

Description	Data	File Type	Document	Interface Mnemonic
Cross-track Infrared Sounder SDR	SDRE-CRIS-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
Advanced Data Collection System SDR	SDRE-ADSD-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
Ozone Mapping and Profiler Suite Nadir Profile SDR	SDRE-OMPS-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200

Description	Data	File Type	Document	Interface Mnemonic
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
OMPS Nadir Profile Calibration SDR	SDRE-OMPS-C0031	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
OMPS Total Column SDR	SDRE-OMTC-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040

Description	Data	File Type	Document	Interface Mnemonic
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
OMPS Total Column Calibration SDR	SDRE-OMTC-C0031	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
Search and Rescue Satellite Aided Tracking - SARP SDR	SDRE-SARP-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
Search and Rescue Satellite Aided Tracking - SARR SDR	SDRE-SARR-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
VIIRS Moderate Band 01 SDR	SDRE-VM01-C0030	HDF5		

Description	Data	File Type	Document	Interface Mnemonic
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 02 SDR	SDRE-VM02-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 03 SDR	SDRE-VM03-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030

Description	Data	File Type	Document	Interface Mnemonic
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 04 SDR	SDRE-VM04-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 05 SDR	SDRE-VM05-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045

Description	Data	File Type	Document	Interface Mnemonic
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 06 SDR	SDRE-VM06-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 07 SDR	SDRE-VM07-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 08 SDR	SDRE-VM08-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030

Description	Data	File Type	Document	Interface Mnemonic
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 09 SDR	SDRE-VM09-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 10 SDR	SDRE-VM10-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040

Description	Data	File Type	Document	Interface Mnemonic
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 11 SDR	SDRE-VM11-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 12 SDR	SDRE-VM12-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 13 SDR	SDRE-VM13-C0030	HDF5		

Description	Data	File Type	Document	Interface Mnemonic
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 14 SDR	SDRE-VM14-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 15 SDR	SDRE-VM15-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030

Description	Data	File Type	Document	Interface Mnemonic
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Moderate Band 16 SDR	SDRE-VM16-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Image Band 01 SDR	SDRE-VI01-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045

Description	Data	File Type	Document	Interface Mnemonic
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Image Band 02 SDR	SDRE-VI02-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Image Band 03 SDR	SDRE-VI03-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Image Band 04 SDR	SDRE-VI04-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030

Description	Data	File Type	Document	Interface Mnemonic
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Image Band 05 SDR	SDRE-VI05-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
VIIRS Day Night Band SDR	SDRE-VDNB-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045

Description	Data	File Type	Document	Interface Mnemonic
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030
Advanced Technology Microwave Sounder TDR	TDRE-ATMS-C0030	HDF5		
			D31413: NPOESS to NOAA ICD	X_NP_AD-LN0030
			D31413: NPOESS to NOAA ICD	X_NP_CN-LN0030
			D34466: NPOESS to DOD ICD	X_NP_CN-LC0030
			D34645: NPOESS to SDS ICD	X_NP_SD-L00030
			D34651: NPOESS Field Terminal ICD	X_FD_FM-LB5200
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00040
			D37032: NPOESS Integrated Support Facility ICD	T_DP_SP-L00045
			D37032: NPOESS Integrated Support Facility ICD	T_DP_AU-L00045
			D41068: NPOESS IDPS to NSIPS ICD	T_DP_CV-L00030

APPENDIX B: DELETED