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Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the ATMS RDR/TDR/SDR

NOAA / NASA

Goddard Space Flight Center Greenbelt, Maryland

Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the ATMS RDR/TDR/SDR

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Preface

This document is under JPSS Ground Segment configuration control. Once this document is approved, JPSS approved changes are handled in accordance with Class I and Class II change control requirements as described in the JPSS Configuration Management Procedures, and changes to this document shall be made by complete revision.

Any questions should be addressed to:

JPSS Configuration Management Office
NASA/GSFC
Code 474
Greenbelt, MD 20771

Change History Log

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)	Sections Affected
0200-	Jul 26, 2013	This version incorporates 474-CCR-13-1098 which was approved by JPSS Ground ERB on the effective date shown.	
0200A	Jan 16, 2014	This version incorporates 474-CCR-13-1412 which was approved by JPSS Ground ERB on the effective date shown.	
0200A1	Oct 23, 2014	This version incorporates 474-CCR-14-2091 which was approved by the JPSS Ground ERB for CO10 on the effective date shown.	
0200B	Aug 13, 2014	This version incorporates 474-CCR-14-1865 which was approved by JPSS Ground ERB on the effective date shown.	
0200C	Feb 26, 2015	This version incorporates 474-CCR-14-2168, 474-CCR-15-2288 and 474-CCR-15-2289, which was approved by JPSS Ground ERB on the effective date shown.	
0200D	Jul 28, 2015	This version incorporates 474-CCR-15-2506, which was approved by JPSS Ground ERB on the effective date shown.	
0200E	Jan 19, 2016	This version incorporates 474-CCR-15-2657, and 474-CCR-15-2745 which was approved by JPSS Ground ERB on the effective date shown.	
0200F	Jun 07, 2016	This version incorporates 474-CCR-16-2939 which was approved by JPSS Ground ERB on the effective date shown.	
0200G	May 01, 2018	This version incorporates 474-CCR-16-3864 which was approved by JPSS Ground ERB on the effective date shown.	
H	Sep 26, 2019	This version incorporates 474-CCR-19-4497 which was approved by the JPSS Ground ERB on Sep 03, 2019 and by the JPSS Ground Segment CCB on the effective date shown.	
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J	Aug 26, 2021	This version incorporates 474-CCR-21-5445 which was approved by the JPSS Ground ERB on May 07, 2021 and by the JPSS Ground Segment CCB on the effective date shown.	

K	Mar 28, 2023	This version incorporates 474-CCR-23-6421 which was approved by the JPSS Ground ERB on Mar 14, 2023 and by the JPSS Ground Segment CCB on the effective date shown.	
L	Aug 30, 2023	This version incorporates 474-CCR-23-6541 which was approved by the JPSS Ground ERB on Aug 21, 2023 and by the JPSS Ground Segment CCB on the effective date shown.	

Table of Contents

List of Figures

List of Tables

1 INTRODUCTION

1.1 Scope

The Joint Polar Satellite System (JPSS) Algorithm Specification for ATMS RDR/TDR/SDR - Volume II: Data Dictionary contains the specifications for the format of the ATMS Raw Data Records (RDRs), 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 JPSS. For an overview of the data product formats, see 474-00001-01, JPSS CDFCB-X Vol I. For an overview of the metadata formats for data products, see 474-00448-02-01, JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms.

1.2 Organization

Section	Contents
Section 1	Provides information regarding the scope, and organization of this document, as reference material only.
Section 2	Lists parent documents and related documents that were used as sources of information for this document or that provide additional background information to aid understanding of the interface implementations.
Section 3	Provides an overview of the HDF5 UML for the data product types.
Section 4	Provides a description of the contents of each JPSS RDR.
Section 5	Provides a description of the contents of each JPSS TDR. (if applicable)
Section 6	Provides a description of the contents of each JPSS SDR.
Section 7	Provides a description of relevant Look-Up Tables (LUTs) and Processing Coefficient Tables (PCTs).
Section 8	Provides a description of each Intermediate Product if applicable.
Appendix A	Provides the Data Mnemonic to Interface Mapping for the data products in this volume.
Appendix B	Provides common RDR static header values in this volume.
Appendix C	Provides a mapping of the quality flags by sensor and product that are reportable to the associated data product quality flag Test ID used in the processing environment.
Appendix D	Provides reference to acronyms and glossary of terms found within the JPSS Program Lexicon (470-00041).
Attachment A	Provides the list of applicable xml files for this Data Dictionary.

2 RELATED DOCUMENTATION

The latest JPSS documents can be obtained from URL: https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm. JPSS Project documents have a document number starting with 470, 472 or 474 indicating the governing Configuration Control Board (CCB) (Program, Flight, or Ground) that has the control authority of the document.

2.1 Parent Documents

The following reference document(s) is (are) the Parent Document(s) from which this document has been derived. Any modification to a Parent Document will be reviewed to identify the impact upon this document. In the event of a conflict between a Parent Document and the content of this document, the JPSS Program Configuration Change Board has the final authority for conflict resolution.

Document Number	Title
474-00448-01-02	Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirements Specification (SRS) for the ATMS RDR/TDR/SDR

2.2 Applicable Documents

The following document(s) is (are) the Applicable Document(s) from which this document has been derived. Any modification to an Applicable Document will be reviewed to identify the impact upon this document. In the event of conflict between an Applicable Document and the content of this document, the JPSS Program Configuration Change Board has the final authority for conflict resolution.

Document Number	Title
None	

3 UML FOR HDF5 PRODUCTS

3.1 RDR HDF5 Details

Figure 3.1-1, Science and Diagnostic RDR Generalized UML Diagram, depicts the HDF5 RDR file organization as a Unified Modeling Language (UML) class diagram for Science and Diagnostic RDRs. This also describes the science calibration RDRs generated by OMPS. Figure 3.1-2, Dwell, Dump, and Telemetry RDR Generalized UML Diagram, depicts the HDF5 RDR file organization as a UML Class Diagram for Dwell, Dump and Telemetry RDRs.

Each HDF5 RDR file contains an HDF5 Root Group, '/', a Data_Products Group, one or more Product Groups (CollectionShortName), and an All_Data Group containing one or more (CollectionShortName)_All groups. The latter group contains the Dataset_Array which holds the common RDR structures of Consultative Committee for Space Data Systems (CCSDS) structured APs. For Science and Diagnostic RDRs a Spacecraft Diary Group is also included in the Data_Products group. The Product Groups and Spacecraft Diary Group both contain datasets - an Aggregation Dataset (CollectionShortName_Aggr) and Granule Datasets (CollectionShortName_Gran_n - where n indicates the nth granule in a temporal aggregation of granules (0 .. n-1)). 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 474-00001-06, JPSS CDFCB-X Vol. VI. Attributes that are specific to a particular RDR are listed with the specific RDR's data format definition. Note: In the UML diagrams, an '*' following the name of an attribute indicates an element with exceptions; see JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms, for the details of the exception.

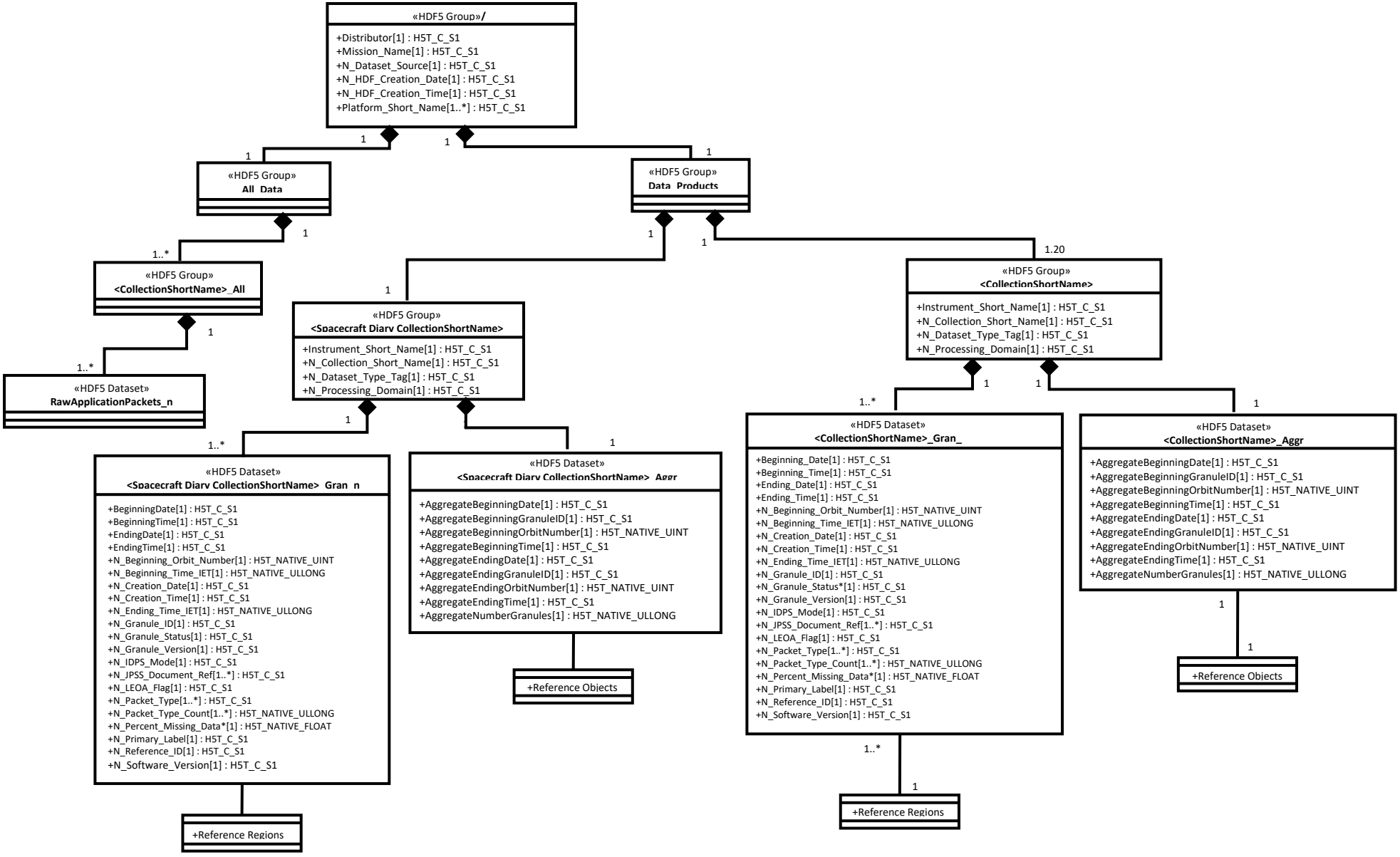

Figure: 3.1-1 Science and Diagnostic RDR Generalized UML Diagram

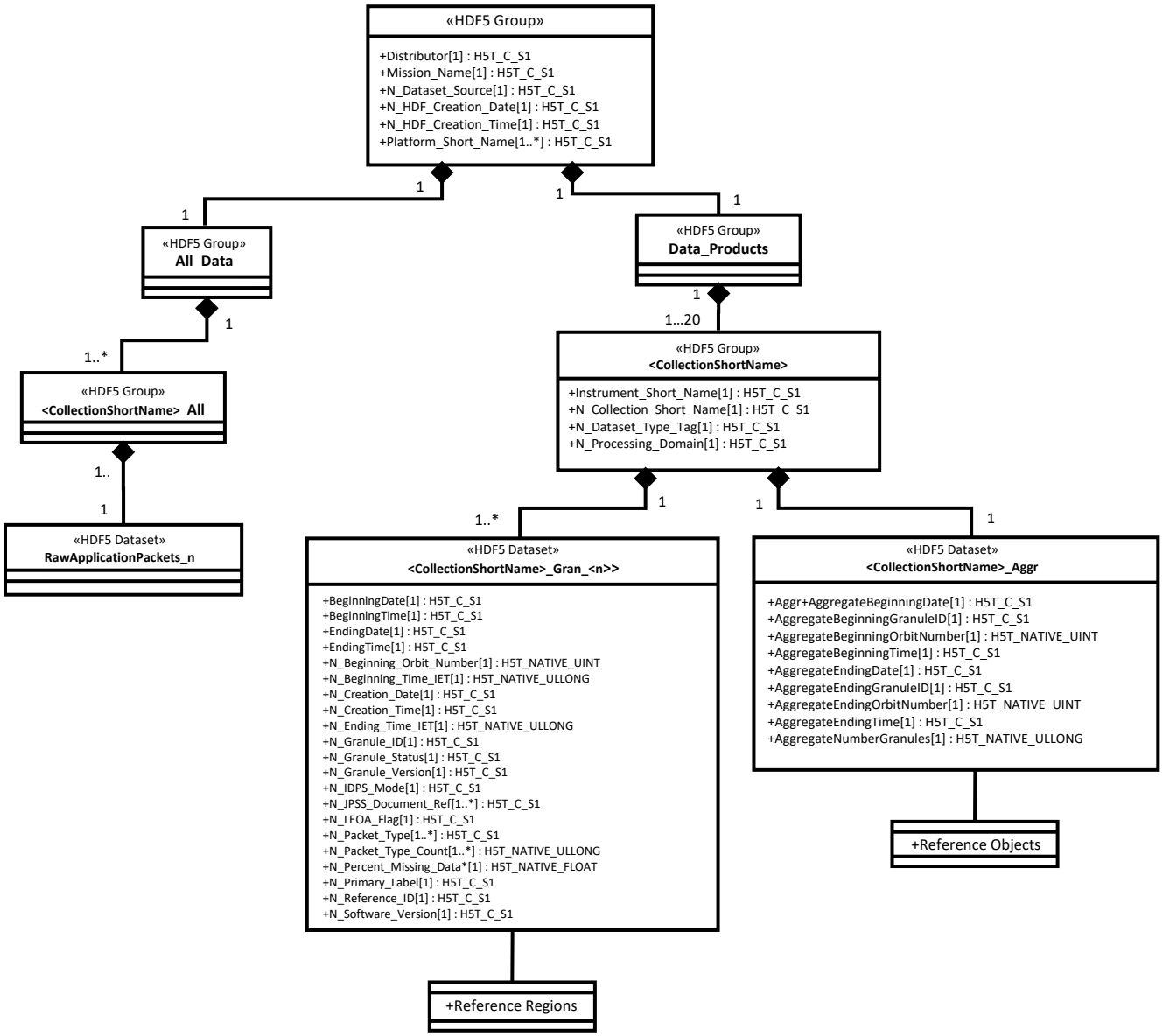

Figure: 3.1-2 Dwell, Dump, Telemetry, and Spacecraft Diary (when requested separately) RDR Generalized UML Diagram

3.2 TDR/SDR HDF5 Details

Figure 3.2-1, 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, '/', a Data Products Group, Product Groups (Collection Short Name), an optional Geolocation Group (depending upon packaging option, see the JPSS CDFCB-X Vol. 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 (0 .. n-1). 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 474-00448-02-01, JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms. 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 JPSS CDFCB-X Vol. I.

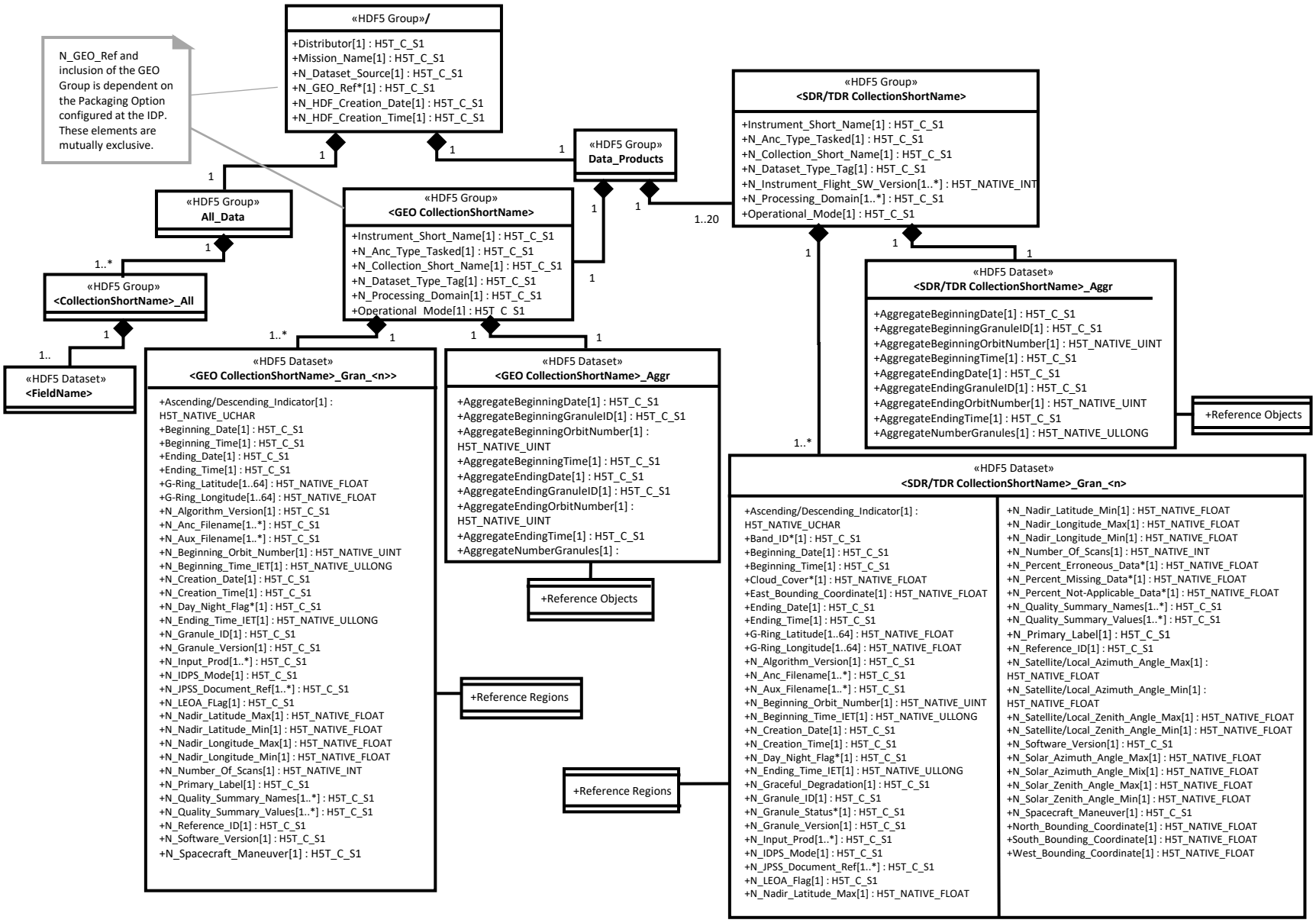

Figure: 3.2-1 Generalized UML Diagram for HDF5 SDR/TDR Files

4 JPSS RAW DATA RECORDS (RDRS)

The following paragraphs describe the structure and contents of the RDR granules formed by the JPSS ground processing software. The ground processing software generates several RDRs for each sensor by accumulating one or more specific APs into a single collection. The accumulated APs are not byte-aligned or otherwise altered. They are merely collected and placed into storage in the order that they are received. The following paragraphs describe the binary packaging structure for these accumulated APs. Table 4-1, Common RDR Structure, shows the common JPSS RDR Structure. All JPSS RDRs are based on the same generic granule storage framework and is illustrated conceptually in Figure 4-1 Common RDR Layout.

The detailed structure and contents of the APs are documented in the Mission Data Format Control Book (MDFCB) for each mission, GSFC 429-05-02-42 for S-NPP, 472-00251 for JPSS-1, and 472-00717 for JPSS-2. For more information on AP formatting, see the Recommendations for Advanced Orbiting Systems, Networks and Data Links, CCSDS 701.0-B-2, Section 3.3.3.

Table: 4-1 Common RDR Structure

Field Name	Description
Static Header	Static header describing the RDR
APID List	Array of structures that contains information about each APID that is collected in the RDR
Packet Tracker	Array of structures that contains information about each AP that is in the RDR
AP Storage area	General buffer where the APs are stored back-to-back in the order that they are received

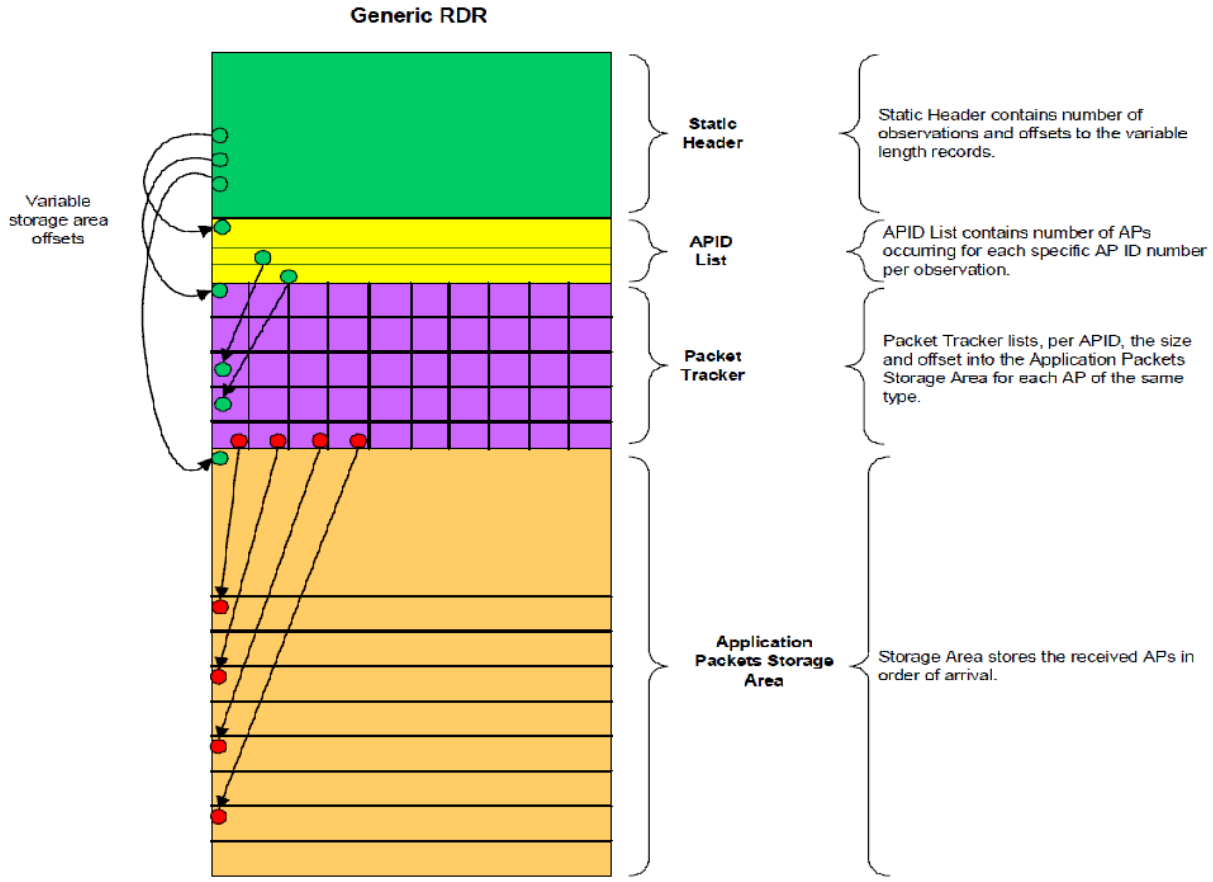

Figure: 4-1 Common RDR Layout

4.1 Common RDR Structures

The following section defines these structures and provides methods for determining the variable length RDR components.

Description/ Purpose	The following tables describe the four structures found in the common RDR Structure. The common RDR Structure granules are referenced by the HDF5 Object and Reference Region pointers in the CollectionShortName_Aggr and CollectionShortName_Gran_# datasets, respectively.
File-Naming Construct	See the JPSS CDFCB-X Vol. I-Overview, Section 3 for details.
File Size	Nominally specified per RDR
File Format Type	Big Endian Binary (structure stored within HDF5)
Production Frequency	Common structure created for each RDR granule Granule durations specified per RDR
Data Content and Data Format	Each RDR has a single RDR Static Header and a dynamic Application Packet content area with three major entries: 1) APID List, 2) Packet Tracker List, and 3) Application Packet Storage Area.

	Table 4.1-1, RDR Static Header, details the spacecraft and sensor that the RDR data originated from, the type of data the RDR contains, and the start and end boundary times of the RDR granule. It also provides byte offset information needed to access individual APs and the number of AP types that are contained in the RDR. Tables 4.1-2, 4.1-3, and 4.1-4 define the Dynamic Application Packet content area. Table 4.1-2, RDR APID List, defines the structure used to identify the AP data type and it provides information necessary for accessing the RDR Packet Tracker. The APID List has details for each APID including number expected and received. Table 4.1-3, RDR Packet Tracker provides information about individual APs. Table 4.1-4, Application Packet Storage Area, describes the storage area containing the APs.

Table 4.1-1, RDR Static Header, details the spacecraft and sensor that the data originated from, the type of the data the RDR contains, and the start and end boundary times of the RDR granule. The RDR contains APs that have observation times which are greater than or equal to the start boundary and less than the end boundary time. The total size of the RDR Static Header is 72 bytes.

Table: 4.1-1 RDR Static Header

Field Name	DataType	Description
satellite	char[4]	Source satellite name as found in JPSS CDFCB-X Vol. I, Table 3.4.1-1, Spacecraft ID.
Sensor	char[16]	The RDR sensor name in a case-sensitive string (Example: “VIIRS”, “ATMS”, “CrIS”, etc. See Appendix B, Common Static Header Values, for specific values.)
typeID	char[16]	The RDR type in an upper case string (Example: “SCIENCE”, “DIAGNOSTIC”, “TELEMETRY”, “MEMORY DUMP”, “DWELL”. See Appendix B, Common Static Header Values, for specific values.)
numAPIDs	Uint32	The number of different types of expected APIDs that make the RDR. (numAPIDs is specific for each type of RDR, see Appendix B, Common Static Header Values, for specific values.)
apidListOffset	Uint32	Byte offset of the APID List (this is equivalent to the size of the static header: 72). The APID List starts immediately after the Generic RDR Static Header. Note: Always use this value to find the APID address.
pktTrackerOffset	Uint32	Byte offset from the beginning of the Common RDR to the Packet Tracker list Note: Always use this value to find the Packet Tracker list.

Field Name	DataType	Description
apStorageOffset	Uint32	Byte offset from the beginning of the Common RDR to the AP Storage Note: Always use this value to find the AP Storage.
nextPktPos	Uint32	Byte offset from the beginning of the Application Packet Storage Area (apStorageOffset) to the end of valid data within the Application Packet Storage Area
startBoundary	int64	All APs occur at or after this time in IDPS Epoch Time (IET) format. Note IET begins January 1, 1958 and is measured in microseconds. For more information on IET see JPSS CDFCB-X Vol. I, Section 3.3.1.
endBoundary	int64	The RDR non-inclusive boundary time in IET format. All APs occur before this time.

Table 4.1-2, RDR APID List, details the APIDs that are in the RDR. The number of elements in the list is equal to the numAPIDs field in the RDR Static Header. The size of a single RDR APID list element is 32 bytes.

Table: 4.1-2 RDR APID List

Field Name	DataType	Description
name	char[16]	Shortname describing the data type (Example: M01 for VIIRS. See individual RDR sections for specific values.)
value	Uint32	This field stores an APID that is in the RDR.
pktTrackerStartIndex	Uint32	The first index in the pktTracker array that will contain an AP of this APID. This index is zero based.
pktsReserved	Uint32	This field stores the number of APs reserved for this APID in this RDR. This value accounts for the worst case expected for the temporal granule period. Due to variability in scan rates, the actual number of packets received can be less than the "reserved" and still be 100% complete as shown in the metadata.
pktsReceived	Uint32	The number of APs of this APID that have been received for this RDR

Each RDR contains an array of Packet Trackers. Table 4.1-3, RDR Packet Tracker, details information about the AP and its location in the storage buffer. The number of elements in this array is equal to the total number of packets that are expected for all expected APIDs. The size of a single RDR Packet Tracker is 24 bytes.

Table: 4.1-3 RDR Packet Tracker

Field Name	DataType	Description
obsTime	int64	The IET observation time of the AP as derived from the CCSDS Secondary Header of the AP or associated with the segmented group of the APID.
sequenceNumber	int32	The 14 bit sequence number extracted from the Primary Header's Packet Sequence Control word of the AP. This is used to track segmented packets and their location.

Field Name	DataType	Description
size	int32	The AP size in bytes as received
offset	int32	The AP begins at this offset from the beginning of the AP Storage Area. From the beginning of the RDR, the AP is at "offset" + apStorageOffset. (offset = -1 for packets not received).
fillPercent	int32	Percentage of fill data included in the AP. Based on received and expected bytes per AP with valid values being 0-100% reported to the nearest %. Any AP with fill data (even one byte) will be reported with at least 1% fill data. Under normal conditions the value is 0. If the primary AP header indicates a secondary AP header is present, and the time code of the secondary AP header is fill, the AP is not made available. In the event that an AP is repaired, resulting in less fillPercent, a repaired RDR granule may be produced. See JPSS CDFCB-X, Vol. I, Section 3.5.7 for more information on Repair Granules.

Table 4.1-4 Application Packet Storage Area, describes the AP storage area.

Table: 4.1-4 Application Packet Storage Area

Field Name	Data Type	Description
apStorage	Array of unsigned int8	Storage area where application packets are stored as they arrive in consecutive order

Table 4.1-5, Application Packet Tables, provides explanations of the fields given for each RDR described in the following sections. APIDs are listed in the JPSS Alg. Spec. for ATMS Volume IV: SRSPF (474-00448-04-02).

Table: 4.1-5 Application Packet Tables

APID Short Name	Description	Value $APID_{10}$
Short name of this Application Packet as an upper-case string	Brief description of this application packet	Numerical Application Packet ID, in base 10.

Note: Grouped or segmented packets contain mission data exceeding the size of a single CCSDS packet.

Accessing APs can be achieved in two fashions; Random Access or Sequential Access.

To access APs in random order by AP type:

- Get the range for a specific type of data from the APID List
    - Find desired AP type using name field
    - Get pktTrackerStartIndex
    - Get pktsReserved

- Loop over the elements in Packet Tracker array starting at pktTrackerStartIndex
    - Get offset (if -1 stop processing no packet received)
    - Get size
    - Access the AP by adding the offset to the apStorageOffset value found in the Static Header
    - Extract size (the AP size in bytes) from the AP Storage Area
    - Repeat above for pktsReserved

To access APs in sequential order:

- Get the apStorageOffset from the Static Header to determine memory location for start of APs in AP Storage Area
- Get the nextPktPos from the Static Header (The nextPktPos value indicates the end of valid RDR data within the AP Storage Area)
- Parse AP's manually by reading the primary header, accessing the size of the packet, and accessing the user data section in the CCSDS packet

Repeat until nextPktPos equals current position.

4.2 ATMS RDR Overview

Data Mnemonic	Science:	RDRE-ATMS-C0030
	Diagnostic:	RDRE-ATMS-C0032
	Dwell:	RDRE-ATMS-C0036
	Telemetry:	RDRE-ATMS-C0031
	Memory Dump:	RDRE-ATMS-C0035
Description/ Purpose	The ATMS instrument is a passive microwave sounder instrument that provides observations which, when combined with observations from an infrared sounder, provides global atmospheric temperature and water vapor profiles. NASA's new instrument has 22 microwave-sounding channels that measure microwave energy emitted and scattered by the atmosphere.	
File-Naming Construct	See the JPSS CDFCB-X Vol. I, Section 3 for details.	
File Size	**Science:** See the following Tables in Section 4.3 for size: S-NPP ATMS Science RDR Structure, JPSS-1 ATMS Science RDR Structure and JPSS-2 ATMS Science RDR Structure **Diagnostic:** See the following Tables in Section 4.4 for size: S-NPP ATMS Diagnostic RDR Structure, JPSS-1 ATMS Diagnostic RDR Structure and JPSS-2 ATMS Diagnostic RDR Structure **Dwell:** See the following Tables in Section 4.5 for size: S-NPP ATMS Dwell RDR Structure, JPSS-1 ATMS Dwell RDR Structure and JPSS-2 ATMS Dwell RDR Structure	

	Telemetry: See the following Tables in Section 4.6 for size: S-NPP ATMS Telemetry RDR Structure, JPSS-1 ATMS Telemetry RDR Structure and JPSS-2 ATMS Telemetry RDR Structure **Memory Dump:** See the following Tables in Section 4.7 for size: S-NPP ATMS Memory Dump RDR Structure, JPSS-1 ATMS Memory Dump RDR Structure and JPSS-2 ATMS Memory Dump RDR Structure All sizes are nominal per granule. Sizes do not include HDF5 overhead.
File Format Type	HDF5
Data Content and Data Format	Section 4.3 describes the ATMS Science RDR Section 4.4 describes the ATMS Diagnostic RDR Section 4.5 describes the ATMS Dwell RDR Section 4.6 describes the ATMS Telemetry RDR Section 4.7 describes the ATMS Memory Dump RDR

4.3 ATMS Science RDR

4.3.1 ATMS Science RDR HDF5 Files

The ATMS Science RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.3.2 ATMS Science RDR Data Content Summary

The tables below list the APIDs accumulated for the ATMS Science RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.3.2-1 S-NPP ATMS Science RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
CAL	Calibration	515
SCI	Science - Operational Mode as well as Diagnostic Mode only if sensor is commanded to Dwell or to output Diagnostic or Memory Dump packets	528
ENG_TEMP	Engineering - Hot Cal Temperatures	530
ENG_HS	Engineering - Health and Status - required for science processing	531

Table: 4.3.2-2 JPSS-1 ATMS Science RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
CAL	Calibration	515
SCI	Science - Operational Mode as well as Diagnostic Mode only if sensor is commanded to Dwell or to output Diagnostic or Memory Dump packets	528
ENG_TEMP	Engineering - Hot Cal Temperatures	530
ENG_HS	Engineering - Health and Status - required for science processing	531

Table: 4.3.2-3 JPSS-2 ATMS Science RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
CAL	Calibration	515
SCI	Science - Operational Mode as well as Diagnostic Mode only if sensor is commanded to Dwell or to output Diagnostic or Memory Dump packets	528
ENG_TEMP	Engineering - Hot Cal Temperatures	530
ENG_HS	Engineering - Health and Status - required for science processing	531

The tables below show the layout and static contents of the ATMS Science RDR.

Table: 4.3.2-4 S-NPP ATMS Science RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'NPP'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'SCIENCE'
	36	numAPIDs	Uint32	4
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	200
	48	apStorageOffset	Uint32	30728
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[4]	Varies
	200	Pkt Tracker List	IngSmdCommon_PktTrackerType[1272]	Varies
	30728	AP storage area	Uint8[81092]	Varies
File Size	111,820 Bytes			

Table: 4.3.2-5 JPSS-1 ATMS Science RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J01'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'SCIENCE'
	36	numAPIDs	Uint32	4
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	200
	48	apStorageOffset	Uint32	30728
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[4]	Varies
	200	Pkt Tracker List	IngSmdCommon_PktTrackerType[1272]	Varies
	30728	AP storage area	Uint8[81092]	Varies
File Size	111,820 Bytes			

Table: 4.3.2-6 JPSS-2 ATMS Science RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J02'

	Byte	Field	Type	Value
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'SCIENCE'
	36	numAPIDs	Uint32	4
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	200
	48	apStorageOffset	Uint32	30728
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[4]	Varies
	200	Pkt Tracker List	IngSmdCommon_PktTrackerType[1272]	Varies
	30728	AP storage area	Uint8[81092]	Varies
File Size	111,820 Bytes			

4.4 ATMS Diagnostic RDR Application Packets

4.4.1 ATMS Diagnostic RDR HDF5 Files

The ATMS Diagnostic RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.4.2 ATMS Diagnostic RDR Data Content Summary

The tables below list the APIDs accumulated for the ATMS Diagnostic RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.4.2-1 S-NPP ATMS Diagnostic RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA	Diagnostic	516
DIA_SCI	Science Packet Radiances measured while in diagnostic mode only if sensor is commanded to Continuous Sampling or Point and Stare	536

Table: 4.4.2-2 JPSS-1 ATMS Diagnostic RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA	Diagnostic	516
DIA_SCI	Science Packet Radiances measured while in diagnostic mode only if sensor is commanded to Continuous Sampling or Point and Stare	536

Table: 4.4.2-3 JPSS-2 ATMS Diagnostic RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA	Diagnostic	516
DIA_SCI	Science Packet Radiances measured while in diagnostic mode only if sensor is commanded to Continuous Sampling or Point and Stare	536

The tables below show the layout and static contents of the ATMS Diagnostic RDR.

Table: 4.4.2-4 S-NPP ATMS Diagnostic RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'NPP'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'DIAGNOSTIC'
	36	numAPIDs	Uint32	2
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	136
	48	apStorageOffset	Uint32	42856
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[2]	Varies
	136	Pkt Tracker List	IngSmdCommon_PktTrackerType[1780]	Varies
	42856	AP storage area	Uint8[112600]	Varies
File Size	155,456 Bytes			

Table: 4.4.2-5 JPSS-1 ATMS Diagnostic RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J01'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'DIAGNOSTIC'
	36	numAPIDs	Uint32	2
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	136
	48	apStorageOffset	Uint32	42856
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[2]	Varies
	136	Pkt Tracker List	IngSmdCommon_PktTrackerType[1780]	Varies
	42856	AP storage area	Uint8[112600]	Varies
File Size	155,456 Bytes			

Table: 4.4.2-6 JPSS-2 ATMS Diagnostic RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J02'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'DIAGNOSTIC'
	36	numAPIDs	Uint32	2
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	136
	48	apStorageOffset	Uint32	42856
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[2]	Varies
	136	Pkt Tracker List	IngSmdCommon_PktTrackerType[1780]	Varies
	42856	AP storage area	Uint8[112600]	Varies

	Byte	Field	Type	Value
File Size	155,456 Bytes			

4.5 ATMS Dwell RDR

4.5.1 ATMS Dwell RDR HDF5 Files

The ATMS Dwell RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.5.2 ATMS Dwell RDR Data Content Summary

The tables below list the APIDs accumulated for the ATMS Dwell RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.5.2-1 S-NPP ATMS Dwell RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DWELL	Diagnostic Dwell Telemetry	517

Table: 4.5.2-2 JPSS-1 ATMS Dwell RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DWELL	Diagnostic Dwell Telemetry	517

Table: 4.5.2-3 JPSS-2 ATMS Dwell RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DWELL	Diagnostic Dwell Telemetry	517

The tables below show the layout and static contents of the ATMS Dwell RDR.

Table: 4.5.2-4 S-NPP ATMS Dwell RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'NPP'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'DWELL'
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	5504
	52	nextPktPos	Uint32	varies
	56	startBoundary	int64	varies
	64	endBoundary	int64	varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[225]	varies
	5504	AP storage area	Uint8[70200]	varies
File Size	75,704 Bytes			

Table: 4.5.2-5 JPSS-1 ATMS Dwell RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J01'
	4	sensor	char[16]	'ATMS'

	Byte	Field	Type	Value
	20	typeID	char[16]	'DWELL'
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	5504
	52	nextPktPos	Uint32	varies
	56	startBoundary	int64	varies
	64	endBoundary	int64	varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[225]	varies
	5504	AP storage area	Uint8[70200]	varies
File Size	75,704 Bytes			

Table: 4.5.2-6 JPSS-2 ATMS Dwell RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J02'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'DWELL'
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	5504
	52	nextPktPos	Uint32	varies
	56	startBoundary	int64	varies
	64	endBoundary	int64	varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[225]	varies
	5504	AP storage area	Uint8[70200]	varies
File Size	75,704 Bytes			

4.6 ATMS Telemetry RDR

4.6.1 ATMS Telemetry RDR HDF5 Files

The ATMS Telemetry RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.6.2 ATMS Telemetry RDR Data Content Summary

The tables below list the APIDs accumulated for the ATMS Telemetry RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.6.2-1 S-NPP ATMS Telemetry RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
HK	Housekeeping	518

Table: 4.6.2-2 JPSS-1 ATMS Telemetry RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
HK	Housekeeping	518

Table: 4.6.2-3 JPSS-2 ATMS Telemetry RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
HK	Housekeeping	518

The tables below show the layout and static contents of the ATMS Telemetry RDR.

Table: 4.6.2-4 S-NPP ATMS Telemetry RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'NPP'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'TELEMETRY'
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	200
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[4]	Varies
	200	AP storage area	Uint8[648]	Varies
File Size	848 Bytes			

Table: 4.6.2-5 JPSS-1 ATMS Telemetry RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J01'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'TELEMETRY'
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	200
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[4]	Varies
	200	AP storage area	Uint8[648]	Varies
File Size	848 Bytes			

Table: 4.6.2-6 JPSS-2 ATMS Telemetry RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J02'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'TELEMETRY'

	Byte	Field	Type	Value
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	200
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[4]	Varies
	200	AP storage area	Uint8[648]	Varies
File Size	848 Bytes			

4.7 ATMS Memory Dump RDR

4.7.1 ATMS Memory Dump RDR HDF5 Files

The ATMS Memory Dump RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.7.2 ATMS Memory Dump RDR Data Content Summary

The tables below list the APIDs accumulated for the ATMS Memory Dump RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.7.2-1 S-NPP ATMS Memory Dump RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DUMP	Memory Dump	524

Table: 4.7.2-2 JPSS-1 ATMS Memory Dump RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DUMP	Memory Dump	524

Table: 4.7.2-3 JPSS-2 ATMS Memory Dump RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DUMP	Memory Dump	524

The tables below show the layout and static contents of the ATMS Memory Dump RDR.

Table: 4.7.2-4 S-NPP ATMS Memory Dump RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'NPP'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'DUMP'
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	6392
	52	nextPktPos	Uint32	Varies

	Byte	Field	Type	Value
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[262]	Varies
	6392	AP storage area	Uint8[268288]	Varies
File Size	274,680 Bytes			

Table: 4.7.2-5 JPSS-1 ATMS Memory Dump RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J01'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'DUMP'
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	6392
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[262]	Varies
	6392	AP storage area	Uint8[268288]	Varies
File Size	274,680 Bytes			

Table: 4.7.2-6 JPSS-2 ATMS Memory Dump RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	'J02'
	4	sensor	char[16]	'ATMS'
	20	typeID	char[16]	'DUMP'
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	6392
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[262]	Varies
	6392	AP storage area	Uint8[268288]	Varies
File Size	274,680 Bytes			

5 TEMPERATURE DATA RECORDS (TDRS)

Temperature Data Records are geolocated, antenna temperatures.

5.1 ATMS TDR

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 msecs. 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 JPSS CDFCB-X Vol. I, Section 3 for details.
File Size	See Table: 5.1.1-1 ATMS TDR Product Data Content Summary See Section 6.2.5 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 5.1.1, ATMS TDR Product Data Content Summary See Section 5.1.2, ATMS TDR Product Profile See Section 5.1.3, ATMS TDR HDF5 Details See Section 5.1.4, ATMS TDR Metadata Details See Section 5.1.5, ATMS TDR Geolocation Data Content Summary

5.1.1 ATMS TDR Product Data Content Summary

Table: 5.1.1-1 ATMS TDR Product Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
BeamTime	The time in IET at the end of the view period for this observation.	64-bit integer	[N*12, 96]	[12, 96]	microsecond
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_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF2_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF3_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF4_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF5_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF6_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF7_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF8_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF9_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF10_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF11_GRAN_QUADRATICCORRECTION	Quadratic correction applied to the radiometric transfer function for non-linearity correction.	unsigned 8-bit char	[N*1]	[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

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
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 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_KAVPRTTEMPLIMIT	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
QF16_SCAN_WGPRTTEMPLIMIT	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_KAVPRTTEMPCONSISTENCY	The 8 KAV PRT temperatures are checked against each other for consistency. The check failures 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_WGPRTTEMPCONSISTENCY	The 7 WG PRT temperatures are checked against each other for consistency. The check failures 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
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
File Size	60,856 Bytes				

5.1.2 ATMS TDR Product Profile

Table: 5.1.2-1 ATMS TDR Product Profile

ATMS TDR Product Profile

Fields

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**: The time in IET at the end of the view period for this observation. / **Datum Offset**: 0 / **Unscaled Valid Range Min**: MIN_VAL / **Unscaled Valid Range Max**: MAX_VAL / **Measurement Units**: microsecond / **Scaled**: No / **Scale Factor Name**: / **Data Type**: 64-bit integer / **Fill Values**: NA_INT64_FILL -999; MISS_INT64_FILL -998; ERR_INT64_FILL -995; VDNE_INT64_FILL -993 / **Legend Entries**: (none)
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**: Antenna temperature for each ATMS channel and beam position. / **Datum Offset**: 0 / **Unscaled Valid Range Min**: 0.00 / **Unscaled Valid Range Max**: 330.00 / **Measurement Units**: Kelvin / **Scaled**: Yes / **Scale Factor Name**: AntennaTemperatureFactors / **Data Type**: unsigned 16-bit integer / **Fill Values**: NA_UINT16_FILL 65535; MISS_UINT16_FILL 65534; ERR_UINT16_FILL 65531; VDNE_UINT16_FILL 65529; SOUB_UINT16_FILL 65528 / **Legend Entries**: (none)
InstrumentMode	2byte(s)	**Name** / **Granule Boundary** / **Dynamic** / **Min Array Size** / **Max Array Size**: Status / Yes / No / 4 / 4
		Datum — **Description**: Instrument mode word 73 in the Health & Status APID 531 / **Datum Offset**: 0 / **Unscaled Valid Range Min**: MIN_VAL / **Unscaled Valid Range Max**: MAX_VAL / **Measurement Units**: unitless / **Scaled**: No / **Scale Factor Name**: / **Data Type**: unsigned 16-bit integer / **Fill Values**: (none) / **Legend Entries**: (none)

ATMS TDR Product Profile - Quality Flags

Fields

Name	Data Size	Dimensions
QF1_GRAN_HEALTHSTATUS	1byte(s)	**Name** / **Granule Boundary** / **Dynamic** / **Min Array Size** / **Max Array Size**: Time / Yes / No / 4 / 4
		Datum — **Description**: Spare / **Datum Offset**: 0 / **Unscaled Valid Range Min**: MIN_VAL / **Unscaled Valid Range Max**: MAX_VAL / **Measurement Units**: unitless / **Scaled**: No / **Scale Factor Name**: / **Data Type**: 1 bit(s) / **Fill Values**: (none) / **Legend Entries**: (none)
		Datum — **Description**: SPA_P5V_A_VMON or SPA_P5V_B_VMON health check failed / **Datum Offset**: 1 / **Unscaled Valid Range Min**: MIN_VAL / **Unscaled Valid Range Max**: MAX_VAL / **Measurement Units**: unitless / **Scaled**: No / **Scale Factor Name**: / **Data Type**: 1 bit(s) / **Fill Values**: (none) / **Legend Entries**: False 0; True 1
		Datum — **Description**: SPA_P15V_A_VMON or SPA_P15V_B_VMON health check failed / **Datum Offset**: 2 / **Unscaled Valid Range Min**: MIN_VAL / **Unscaled Valid Range Max**: MAX_VAL / **Measurement Units**: unitless / **Scaled**: No / **Scale Factor Name**: / **Data Type**: 1 bit(s) / **Fill Values**: (none) / **Legend Entries**: (none)

											False 0 True 1	
		SPA_N15V_A_VMON or SPA_N15V_B_VMON health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		RCV_P6V_RF_VMON health check failed (NPP/J1) RCV_P6_25V_RF_VMON- health check failed (J2/J3/J4)	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		RCV_P12V_RF2_VMON health check failed (NPP/J1) RCV_P6_8V_RF2_VMON health check failed (J2/J3/J4)	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		RCV_P15V_RF_VMON health check failed (NPP/J1) RCV_P12_RF_VMON health check failed (J2/J3/J4)	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		RCV_N15V_RF_VMON health check failed	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	

QF2_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
RCV_P15V_ANA_VMON health check failed	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
RCV_N15V_ANA_VMON health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
K_RFE_PRT health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KA_RFE_PRT health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_RFE_PRT health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_PRI_PLO_PRT health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_RED_PLO_PRT health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_IF_PRT health check failed	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF3_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
W_RFE_PRT health check failed	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

		SAW_FILT_PRT health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		W_IF_PRT health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		W_PRI_GDO_PRT health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		W_RED_GDO_PRT health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		G_PRI_CSO_PRT health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		G_RED_CSO_PRT health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		G1_IF_PRT health check failed	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
QF4_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**
		G2_IF_PRT health check failed	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		W_SHELF_PRT health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		KKA_SHELF_PRT health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		G_SHELF_PRT health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		V_SHELF_PRT health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		RCVPS_A_PRT health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		RCVPS_B_PRT health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		OCXO_PRI_PRT health check failed	7	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
DSPA_1553_PRT health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
DSPB_1553_PRT health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SPA_PS_A_PRT health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SPA_PS_B_PRT health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
DSPA_PROC_PRT health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
DSPB_PROC_PRT health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_MECH_TEMP health check failed	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value 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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_PLO_A_LOCK_VMON health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_PLO_B_LOCK_VMON health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
HK_2WREST1_A or HK_2WREST1_B health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
HK_2WREST2_A or HK_2WREST2_B health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
4W_GND_A or 4W_GND_B health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
2W_GND_A or 2W_GND_B health check failed	6	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0

		True 1
QF7_GRAN_HEALTHSTATUS	1byte(s)	**Name** Time; **Granule Boundary** Yes; **Dynamic** No; **Min Array Size** 4; **Max Array Size** 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
VD_REF_A or VD_REF_B; Module 2 health check failed	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_P5V_VMON health check failed	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF8_GRAN_HEALTHSTATUS	1byte(s)	**Name** Time; **Granule Boundary** Yes; **Dynamic** No; **Min Array Size** 4; **Max Array Size** 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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_N12V_VMON health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
MAIN_MOTOR_CUR health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
COMP_MOTOR_CUR health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
RESOLVER_VMON health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_MAIN_MOTOR_VEL health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_COMP_MOTOR_VEL health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value

												False 0 True 1	
		SD_MAIN_LOOP_ERROR health check failed	7	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_MAIN_LOOP_VEL_ERROR health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_COMP_LOOP_ERROR health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_MAIN_MOTOR_REQ_VOLTAGE health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_COMP_MOTOR_REQ_VOLTAGE health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_FEED_FORWARD_VOLTAGE health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
COMP_MOTOR_POS health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value

QF10_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
Spare	0	MIN_VAL	MAX_VAL	unitless	No		8 bit(s)	Name Value	Name Value

QF11_GRAN_QUADRATICCORRECTION	1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size

Datum

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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	1	MIN_VAL	MAX_VAL	unitless	No		7 bit(s)	Name Value	Name Value

QF12_SCAN_KAVPRTCONVERR	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 and V (KAV) Band PRT #1 temperature computation.	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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 #3 temperature computation.	2	MIN_VAL	MAX_VAL	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 #4 temperature computation.	3	MIN_VAL	MAX_VAL	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 #5 temperature computation.	4	MIN_VAL	MAX_VAL	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 #6 temperature computation.	5	MIN_VAL	MAX_VAL	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 #7 temperature computation.	6	MIN_VAL	MAX_VAL	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 #8 temperature computation.	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
QF13_SCAN_WGPRTCONVERR	1byte(s)	**Name** Scan **Granule Boundary** Yes **Dynamic** No **Min Array Size** 12 **Max Array Size** 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 WG Band PRT #1 temperature computation.	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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 #5 temperature computation.	4	MIN_VAL	MAX_VAL	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 #6 temperature computation.	5	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value
QF14_SCAN_SHELFPRTCONVERR	1byte(s)	**Name** Scan **Granule Boundary** Yes **Dynamic** No **Min Array Size** 12 **Max Array Size** 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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	4	MIN_VAL	MAX_VAL	unitless	No		4 bit(s)	Name Value	Name Value

QF15_SCAN_KAVPRTTEMPLIMIT — 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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF16_SCAN_WGPRTTEMPLIMIT — 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 WG Band PRT #1 temperatures.	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value	

QF17_SCAN_KAVPRTTEMPCONSISTENCY — 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
KAV PRT #1 temperature inconsistency	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #2 temperature inconsistency	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #3 temperature inconsistency	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #4 temperature inconsistency	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #5 temperature inconsistency	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #6 temperature inconsistency	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #7 temperature inconsistency	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #8 temperature inconsistency	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF18_SCAN_WGPRTTEMPCONSISTENCY — 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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0

											True 1
		WG PRT #2 temperature inconsistency	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #3 temperature inconsistency	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #4 temperature inconsistency	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #5 temperature inconsistency	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #6 temperature inconsistency	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #7 temperature inconsistency	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		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 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.	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Data Gap - One or more of the current scan 96 Earth View packets is/are missing.	1	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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 +/- (Epsilon)c, the Space View Antenna Position Error flag is set. The expected counts and (Epsilon)c are tunable parameters. (Epsilon)c is set to 7 counts.	4	MIN_VAL	MAX_VAL	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 +/- (Epsilon)w, the Blackbody Antenna Position Error flag is set. The expected counts and (Epsilon)w are tunable parameters. (Epsilon)w is set to 7 counts.	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	6	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name Value

QF20_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
Moon in Space View - The Moon appears in any of the four calibration space views.	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Gain Error - The lowest blackbody count is smaller than or equal to the highest space view count in a scan.	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Space View Data Sufficiency Check - Insufficient space view samples are available, either because of missing data or failing to pass the quality checks.	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	5	MIN_VAL	MAX_VAL	unitless	No		3 bit(s)	Name Value	Name Value

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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Space View #2 out of range condition	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Space View #3 out of range condition	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Space View #4 out of range condition	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
BlackBody View #1 out of range condition	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
BlackBody View #2 out of range condition	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
BlackBody View #3 out of range condition	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
BlackBody View #4 out of range condition	7	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Space view #2 inconsistency	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Space view #3 inconsistency	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Space view #4 inconsistency	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		BlackBody view #1 inconsistency	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		BlackBody view #2 inconsistency	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		BlackBody view #3 inconsistency	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		BlackBody view #4 inconsistency	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
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 / MIN_VAL / MAX_VAL / unitless / No / / unsigned 8-bit char / Name Value / Name Value									

ATMS TDR Product Profile - Scale Factors

Fields														
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 / MIN_VAL / MAX_VAL / Scale = unitless; Offset = Kelvin / No / / 32-bit floating point / Name Value / Name Value												

5.1.3 ATMS TDR HDF5 Details

Figure 5.1.3-1 provides the details on the content and data types of the ATMS TDR. This UML diagram provides details at the product level only. In addition to this UML diagram, refer to Figure 3.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

ATMS-TDR
+BeamTime: H5T_NATIVE_LLONG
+AntennaTemperature: H5T_NATIVE_USHORT
+InstrumentMode: H5T_NATIVE_USHORT
+QF1_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF2_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF3_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF4_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF5_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF6_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF7_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF8_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF9_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF10_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF11_GRAN_QUADRATICCORRECTION: H5T_NATIVE_UCHAR
+QF12_SCAN_KAVPRTCONVERR: H5T_NATIVE_UCHAR
+QF13_SCAN_WGPRTCONVERR: H5T_NATIVE_UCHAR
+QF14_SCAN_SHELFPRTCONVERR: H5T_NATIVE_UCHAR
+QF15_SCAN_KAVPRTTEMPLIMIT: H5T_NATIVE_UCHAR
+QF16_SCAN_WGPRTTEMPLIMIT: H5T_NATIVE_UCHAR
+QF17_SCAN_KAVPRTTEMPCONSISTENCY: H5T_NATIVE_UCHAR
+QF18_SCAN_WGPRTTEMPCONSISTENCY: H5T_NATIVE_UCHAR
+QF19_SCAN_ATMSSDR: H5T_NATIVE_UCHAR
+QF20_ATMSSDR: H5T_NATIVE_UCHAR
+QF21_ATMSSDR: H5T_NATIVE_UCHAR
+QF22_ATMSSDR: H5T_NATIVE_UCHAR
+PadByte1: H5T_NATIVE_UCHAR
+AntennaTemperatureFactors: H5T_NATIVE_FLOAT

Figure: 5.1.3-1 ATMS TDR UML Diagram

5.1.4 ATMS TDR Metadata Details

The HDF5 metadata elements associated with the ATMS TDR are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms, Section5.3, HDF5 (Metadata) Hierarchy. The ATMS TDR metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for the ATMS TDR, the items listed in Table 5.1.4-1, ATMS TDR 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 TDRs.

Table: 5.1.4-1 ATMS TDR Quality Summary Metadata Values

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

5.1.5 ATMS TDR Geolocation Content Summary

See Section 6.2.5 ATMS SDR Geolocation Content Summary.

5.1.6 ATMS TDR Geolocation Product Profile

See Section 6.2.6 ATMS SDR Geolocation Product Profile.

5.1.7 ATMS TDR Geolocation HDF5 Details

See Section 6.2.7 ATMS SDR Geolocation HDF5 Details.

5.1.8 ATMS TDR Geolocation Metadata Details

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

6 SENSOR DATA RECORDS (SDRS)

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

6.1 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.

6.2 Advanced Technology Microwave Sounder SDR

Data Mnemonic	SDRE-ATMS-C0030
Description/ Purpose	Advanced Technology Microwave Sounder (ATMS) sensor data calibrated to support Environmental Data Record (EDR) generation. 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 rotates three times every 8 seconds resulting in three scans for every single scan of CrIS. For optimal performance within the JPSS processing system, the length of each ATMS granule is set to 32 seconds, which is equivalent to 12 scans. 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.

	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.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, Section 3 for details.
File Size	See Table: 6.2.1-1 ATMS SDR Product Data Content Summary below for data granule. See Table: 6.2.5-1 ATMS SDR Geolocation Data Content Summary below for geolocation granule. Sizes do not include HDF5 overhead or metadata.
File Format Type	HDF5
Data Content and Data Format	See Section 6.2.1, ATMS SDR Data Content Summary. See Section 6.2.5, ATMS SDR Geolocation Content Summary

6.2.1 ATMS SDR Product Data Content Summary

Table: 6.2.1-1 ATMS SDR Product Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
BeamTime	The time in IET of the end of the view period for this observation	64-bit integer	[N*12, 96]	[12, 96]	microsecond
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_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF2_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF3_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF4_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF5_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF6_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF7_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF8_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF9_GRAN_HEALTHSTATUS	Out of range quality flag for 8 second health and status packet	unsigned 8-bit char	[N*4]	[4]	unitless
QF10_GRAN_HEALTHSTATUS	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 Dimensions (N = Number of Granules)	Granule Dimensions	Units
QF11_GRAN_QUADRATICCORRECTION	Quadratic correction applied to the radiometric transfer function for non-linearity correction.	unsigned 8-bit char	[N*1]	[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_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 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_KAVPRTTEMPLIMIT	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
QF16_SCAN_WGPRTTEMPLIMIT	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_KAVPRTTEMPCONSISTENCY	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_WGPRTTEMPCONSISTENCY	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_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 Dimensions (N = Number of Granules)	Granule Dimensions	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
BrightnessTemperatureFactors	Scale = first array element; offset = second array element	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = Kelvin
File Size	64.024 Bytes				

6.2.2 ATMS SDR Product Profile

Table: 6.2.2-1 ATMS SDR Product Profile

ATMS SDR Product Profile

Fields

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	MIN_VAL	MAX_VAL	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 position. This output is the Rayleigh equivalent temperature.	0	0.00	330.00	Kelvin	Yes	BrightnessTemperatureFactors	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		

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	Legend Entries

		Noise equivalent delta Temperature while viewing cold space	0	MIN_VAL	MAX_VAL	Kelvin	No		32-bit floating point	Name / Value: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3	Name / Value	
NEdTWarm	4byte(s)	Name / Granule Boundary / Dynamic / Min Array Size / Max Array Size: Scan / Yes / No / 12 / 12; Channel / No / No / 22 / 22										
		Datum										
		Noise-equivalent delta Temperature while viewing warm target	0	MIN_VAL	MAX_VAL	Kelvin	No		32-bit floating point	Name / Value: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3	Name / Value	
GainCalibration	4byte(s)	Name / Granule Boundary / Dynamic / Min Array Size / Max Array Size: Scan / Yes / No / 12 / 12; Channel / No / No / 22 / 22										
		Datum										
		Gain factor used in calibrating earth scene brightness temperatures	0	MIN_VAL	MAX_VAL	Kelvin	No		32-bit floating point	Name / Value: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3	Name / Value	
InstrumentMode	2byte(s)	Name / Granule Boundary / Dynamic / Min Array Size / Max Array Size: Status / Yes / No / 4 / 4										
		Datum										
		Instrument mode word 73 in the Health & Status APID 531	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 16-bit integer	Name / Value	Name / Value	

ATMS SDR Product Profile - Quality Flags

Fields												
Name	Data Size	Dimensions										
QF1_GRAN_HEALTHSTATUS	1byte(s)	Name / Granule Boundary / Dynamic / Min Array Size / Max Array Size: Time / Yes / No / 4 / 4										
		Datum										
		Spare	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name / Value	Name / Value	
		SPA_P5V_A_VMON or SPA_P5V_B_VMON health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name / Value	Name / Value: False 0; True 1	
		SPA_P15V_A_VMON or SPA_P15V_B_VMON health check failed	2	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		RCV_P6V_RF_VMON health check failed (NPP/J1) RCV_P6_25V_RF_VMON- health check failed (J2/J3/J4)	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		RCV_P12V_RF2_VMON health check failed (NPP/J1) RCV_P6_8V_RF2_VMON health check failed (J2/J3/J4)	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		RCV_P15V_RF_VMON health check failed (NPP/J1) RCV_P12_RF_VMON health check failed (J2/J3/J4)	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		RCV_N15V_RF_VMON health check failed	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF2_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
RCV_P15V_ANA_VMON health check failed	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
RCV_N15V_ANA_VMON health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
K_RFE_PRT health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KA_RFE_PRT health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_RFE_PRT health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_PRI_PLO_PRT health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_RED_PLO_PRT health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_IF_PRT health check failed	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF3_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
W_RFE_PRT health check failed	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SAW_FILT_PRT health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value

											False 0 True 1
		W_IF_PRT health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		W_PRI_GDO_PRT health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		W_RED_GDO_PRT health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		G_PRI_CSO_PRT health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		G_RED_CSO_PRT health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		G1_IF_PRT health check failed	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF4_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
G2_IF_PRT health check failed	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
W_SHELF_PRT health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KKA_SHELF_PRT health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
G_SHELF_PRT health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
V_SHELF_PRT health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
RCVPS_A_PRT health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
RCVPS_B_PRT health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
OCXO_PRI_PRT health check failed	7	MIN_VAL	MAX_VAL	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 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name/Value: — | Name/Value: False 0, True 1
		DSPA_1553_PRT health check failed | 1 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name/Value: — | Name/Value: False 0, True 1
		DSPB_1553_PRT health check failed | 2 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name/Value: — | Name/Value: False 0, True 1
		SPA_PS_A_PRT health check failed | 3 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name/Value: — | Name/Value: False 0, True 1
		SPA_PS_B_PRT health check failed | 4 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name/Value: — | Name/Value: False 0, True 1
		DSPA_PROC_PRT health check failed | 5 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name/Value: — | Name/Value: False 0, True 1
		DSPB_PROC_PRT health check failed | 6 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name/Value: — | Name/Value: False 0, True 1
		SD_MECH_TEMP health check failed | 7 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name/Value: — | Name/Value: False 0, True 1
QF6_GRAN_HEALTHSTATUS	1byte(s)	Name: Time; Granule Boundary: Yes; Dynamic: No; Min Array Size: 4; Max Array Size: 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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name/Value: —	Name/Value: False 0, True 1
V_PLO_A_LOCK_VMON health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name/Value: —	Name/Value: False 0, True 1
V_PLO_B_LOCK_VMON health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name/Value: —	Name/Value: False 0, True 1
HK_2WREST1_A or HK_2WREST1_B health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name/Value: —	Name/Value: False 0, True 1
HK_2WREST2_A or HK_2WREST2_B health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name/Value: —	Name/Value: False 0, True 1
4W_GND_A or 4W_GND_B health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name/Value: —	Name/Value: False 0, True 1
2W_GND_A or 2W_GND_B health check failed	6	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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 Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
VD_REF_A or VD_REF_B; Module 2 health check failed	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_P5V_VMON health check failed	7	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_N12V_VMON health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
MAIN_MOTOR_CUR health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
COMP_MOTOR_CUR health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
RESOLVER_VMON health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_MAIN_MOTOR_VEL health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_COMP_MOTOR_VEL health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0

											True 1	
		SD_MAIN_LOOP_ERROR health check failed	7	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_MAIN_LOOP_VEL_ERROR health check failed	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_COMP_LOOP_ERROR health check failed	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_MAIN_MOTOR_REQ_VOLTAGE health check failed	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_COMP_MOTOR_REQ_VOLTAGE health check failed	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
SD_FEED_FORWARD_VOLTAGE health check failed	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
COMP_MOTOR_POS health check failed	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value

QF10_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
Spare	0	MIN_VAL	MAX_VAL	unitless	No		8 bit(s)	Name Value	Name Value

QF11_GRAN_QUADRATICCORRECTION — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size

Datum

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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	1	MIN_VAL	MAX_VAL	unitless	No		7 bit(s)	Name Value	Name Value

QF12_SCAN_KAVPRTCONVERR — 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 and V (KAV) Band PRT #1 temperature computation.	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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 #3 temperature computation.	2	MIN_VAL	MAX_VAL	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 #4 temperature computation.	3	MIN_VAL	MAX_VAL	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 #5 temperature computation.	4	MIN_VAL	MAX_VAL	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 #6 temperature computation.	5	MIN_VAL	MAX_VAL	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 #7 temperature computation.	6	MIN_VAL	MAX_VAL	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 #8 temperature computation.	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
QF13_SCAN_WGPRTCONVERR	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 WG Band PRT #1 temperature computation.	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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 #5 temperature computation.	4	MIN_VAL	MAX_VAL	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 #6 temperature computation.	5	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value
QF14_SCAN_SHELFPRTCONVERR	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	4	MIN_VAL	MAX_VAL	unitless	No		4 bit(s)	Name Value	Name Value

QF15_SCAN_KAVPRTTEMPLIMIT — 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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF16_SCAN_WGPRTTEMPLIMIT — 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 WG Band PRT #1 temperatures.	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1	
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value	

QF17_SCAN_KAVPRTTEMPCONSISTENCY — 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
KAV PRT #1 temperature inconsistency	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #2 temperature inconsistency	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #3 temperature inconsistency	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #4 temperature inconsistency	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #5 temperature inconsistency	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #6 temperature inconsistency	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #7 temperature inconsistency	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
KAV PRT #8 temperature inconsistency	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1

QF18_SCAN_WGPRTTEMPCONSISTENCY — 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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0

											True 1
		WG PRT #2 temperature inconsistency	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #3 temperature inconsistency	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #4 temperature inconsistency	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #5 temperature inconsistency	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #6 temperature inconsistency	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		WG PRT #7 temperature inconsistency	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		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 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.	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Data Gap - Missing scan(s) preceding the current scan.	1	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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 +/- (Epsilon)c, the Space View Antenna Position Error flag is set. The expected counts and (Epsilon)c are tunable parameters. (Epsilon)c is set to 7 counts.	4	MIN_VAL	MAX_VAL	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 +/- (Epsilon)w, the Blackbody Antenna Position Error flag is set. The expected counts and (Epsilon)w are tunable parameters. (Epsilon)w is set to 7 counts.	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	6	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name Value

QF20_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** Moon in Space View - The Moon appears in any of the four calibration space views. / 0 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 Gain Error - The lowest blackbody count is smaller than or equal to the highest space view count in a scan. / 1 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, 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 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 Space View Data Sufficiency Check - Insufficient space view samples are available, either because of missing data or failing to pass the quality checks. / 3 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, 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 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 Spare / 5 / MIN_VAL / MAX_VAL / unitless / No / / 3 bit(s) / Name Value / Name Value
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 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 Space View #2 out of range condition / 1 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 Space View #3 out of range condition / 2 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 Space View #4 out of range condition / 3 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 BlackBody View #1 out of range condition / 4 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 BlackBody View #2 out of range condition / 5 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 BlackBody View #3 out of range condition / 6 / MIN_VAL / MAX_VAL / unitless / No / / 1 bit(s) / Name Value / Name Value: False 0, True 1 BlackBody View #4 out of range condition / 7 / MIN_VAL / MAX_VAL / 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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value: False 0; True 1
		Space view #2 inconsistency	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value: False 0; True 1
		Space view #3 inconsistency	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value: False 0; True 1
		Space view #4 inconsistency	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value: False 0; True 1
		BlackBody view #1 inconsistency	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value: False 0; True 1
		BlackBody view #2 inconsistency	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value: False 0; True 1
		BlackBody view #3 inconsistency	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value: False 0; True 1
		BlackBody view #4 inconsistency	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value: False 0; True 1
PadByte1	1byte(s)	Name: Granule; Granule Boundary: Yes; Dynamic: No; Min Array Size: 7; Max Array Size: 7									
		Datum: Description: Pad byte; Datum Offset: 0; Unscaled Valid Range Min: MIN_VAL; Unscaled Valid Range Max: MAX_VAL; Measurement Units: unitless; Scaled: No; Scale Factor Name: ; Data Type: unsigned 8-bit char; Fill Values: Name Value; Legend Entries: Name Value									

ATMS SDR Product Profile - Scale Factors

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

6.2.3 ATMS SDR HDF5 Details

Figure 6.2.3-1 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 3.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

ATMS-SDR
+BeamTime: H5T_NATIVE_LLONG
+BrightnessTemperature: H5T_NATIVE_USHORT
+NEdTCold: H5T_NATIVE_FLOAT
+NEdTWarm: H5T_NATIVE_FLOAT
+GainCalibration: H5T_NATIVE_FLOAT
+InstrumentMode: H5T_NATIVE_USHORT
+QF1_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF2_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF3_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF4_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF5_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF6_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF7_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF8_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF9_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF10_GRAN_HEALTHSTATUS: H5T_NATIVE_UCHAR
+QF11_GRAN_QUADRATICCORRECTION: H5T_NATIVE_UCHAR
+QF12_SCAN_KAVPRTCONVERR: H5T_NATIVE_UCHAR
+QF13_SCAN_WGPRTCONVERR: H5T_NATIVE_UCHAR
+QF14_SCAN_SHELFPRTCONVERR: H5T_NATIVE_UCHAR
+QF15_SCAN_KAVPRTTEMPLIMIT: H5T_NATIVE_UCHAR
+QF16_SCAN_WGPRTTEMPLIMIT: H5T_NATIVE_UCHAR
+QF17_SCAN_KAVPRTTEMPCONSISTENCY: H5T_NATIVE_UCHAR
+QF18_SCAN_WGPRTTEMPCONSISTENCY: H5T_NATIVE_UCHAR
+QF19_SCAN_ATMSSDR: H5T_NATIVE_UCHAR
+QF20_ATMSSDR: H5T_NATIVE_UCHAR
+QF21_ATMSSDR: H5T_NATIVE_UCHAR
+QF22_ATMSSDR: H5T_NATIVE_UCHAR
+PadByte1: H5T_NATIVE_UCHAR
+BrightnessTemperatureFactors: H5T_NATIVE_FLOAT

Figure: 6.2.3-1 ATMS SDR UML Diagram

6.2.4 ATMS SDR Metadata Details

The HDF5 metadata elements associated with the ATMS SDR are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms, Section 5.3, 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 6.2.4-1, 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: 6.2.4-1 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	

6.2.5 ATMS SDR Geolocation Content Summary

Table: 6.2.5-1 ATMS SDR Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	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
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
PadByte1	Pad byte	unsigned 8-bit char	[N*4]	[4]	unitless
File Size	83,584 Bytes				

6.2.6 ATMS SDR Geolocation Product Profile

Table: 6.2.6-1 ATMS SDR Geolocation Product Profile

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**: Starting Time of scan in IET (1/1/1958) **Datum Offset**: 0 **Unscaled Valid Range Min**: MIN_VAL **Unscaled Valid Range Max**: MAX_VAL **Measurement Units**: microsecond **Scaled**: No **Scale Factor Name**: **Data Type**: 64-bit integer **Fill Values**: NA_INT64_FILL -999; MISS_INT64_FILL -998; ERR_INT64_FILL -995; VDNE_INT64_FILL -993 **Legend Entries**
MidTime	8byte(s)	**Name** / **Granule Boundary** / **Dynamic** / **Min Array Size** / **Max Array Size**: Scan / Yes / No / 12 / 12 **Datum** **Description**: Mid Time of scan in IET (1/1/1958) **Datum Offset**: 0 **Unscaled Valid Range Min**: MIN_VAL **Unscaled Valid Range Max**: MAX_VAL **Measurement Units**: microsecond **Scaled**: No **Scale Factor Name**: **Data Type**: 64-bit integer **Fill Values**: NA_INT64_FILL -999; MISS_INT64_FILL -998; ERR_INT64_FILL -995; VDNE_INT64_FILL -993 **Legend Entries**
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**: Latitude of channel 17 beam position center (positive North) **Datum Offset**: 0 **Unscaled Valid Range Min**: -90 **Unscaled Valid Range Max**: 90 **Measurement Units**: degree **Scaled**: No **Scale Factor Name**: **Data Type**: 32-bit floating point **Fill Values**: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; ELLIPSOID_FLOAT32_FILL -999.4; VDNE_FLOAT32_FILL -999.3 **Legend Entries**
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**: Longitude of channel 17 beam position center (positive East) **Datum Offset**: 0 **Unscaled Valid Range Min**: -180 **Unscaled Valid Range Max**: 180 **Measurement Units**: degree **Scaled**: No **Scale Factor Name**: **Data Type**: 32-bit floating point **Fill Values**: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; ELLIPSOID_FLOAT32_FILL -999.4; VDNE_FLOAT32_FILL -999.3 **Legend Entries**
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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		

		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
SolarAzimuthAngle	4byte(s)	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		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3		

		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
SatelliteZenithAngle	4byte(s)	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	Approx. 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		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3		

		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
SatelliteAzimuthAngle	4byte(s)	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		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								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	MIN_VAL	MAX_VAL	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		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								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	MIN_VAL	MAX_VAL	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		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								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		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								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
									ELLIPSOID_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	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		Legend Entries	
Spacecraft position in Earth Centered Rotating (ECR) Coordinates (X, Y, Z) at the mid-time of scan	0	MIN_VAL	MAX_VAL	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		Legend Entries	
Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	0	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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		

ATMS SDR Geolocation Product Profile - Quality Flags

Fields

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** (Name, Value) / **Legend Entries** (Name, Value) Attitude and Ephemeris availability status / 0 / MIN_VAL / MAX_VAL / unitless / No / / 2 bit(s) / 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 / MIN_VAL / MAX_VAL / unitless / No / / 6 bit(s)
PadByte1	1byte(s)	**Name** / **Granule Boundary** / **Dynamic** / **Min Array Size** / **Max Array Size** Granule / 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** (Name, Value) / **Legend Entries** (Name, Value) Pad byte / 0 / MIN_VAL / MAX_VAL / unitless / No / / unsigned 8-bit char

6.2.7 ATMS SDR Geolocation HDF5 Details

Figure 6.2.7-1 provides the details on the content and data types of the ATMS SDR Geolocation. This UML diagram provides details at the product level only. In addition to this UML diagram, refer to Figure 3.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

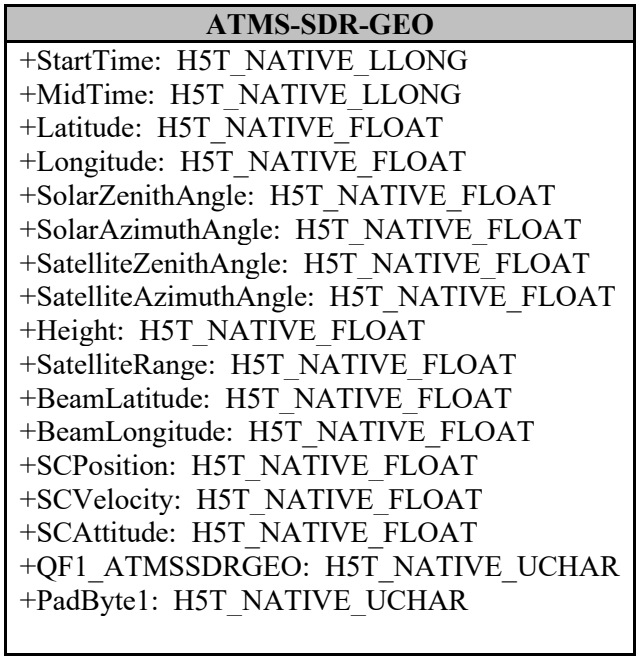

Figure: 6.2.7-1 ATMS SDR Geolocation UML Diagram

6.2.8 ATMS SDR Geolocation Metadata Details

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

7 LOOK-UP TABLES AND PROCESSING COEFFICIENT TABLES

The template used for these formats in this document is described below.

Data Mnemonic: This is a unique identifier. JPSS CDFCB-X Vol. I, 474-00001-01 describes the data mnemonic definition methodology.

Description/Purpose: A brief description of the data format and its purpose.

Instrument: Identification of the Instrument associated with the table.

File-Naming Construct: A description of the file-naming constructs for those data units that apply. JPSS CDFCB-X Vol. I, 474-00001-01 defines file-naming conventions.

File Size: The size of the data file.

File Format Type: The format type of the data file.

Production Frequency: Production frequency is the interval of time for data generation. A production frequency equal to dynamic implies that it is only as requested or as needed.

Data Format/Structure: This defines the actual data format. The definitions provide information for every data element in the data unit.

The following rules apply to all tables:

1. All field names mandatory, unless specified otherwise.
2. Fill data is specified, where applicable.
3. Strings are left-aligned and integers are right-aligned, unless specified otherwise.
4. For information regarding Coordinated Universal Time (UTC) and IDPS Epoch Time (IET) conventions, see the JPSS CDFCB-X Vol. I, 474-00001-01.
5. For all references of the ASCII Standard, the corresponding International Standards Organization (ISO) standard is ISO/IEC 10646. The specific Unicode is UTF8, unless stated otherwise.
6. The fields are presented in order (either top - down or most significant first), unless stated otherwise.

7.1 Look-up Tables

Algorithm Look-up Table (LUT) files contain tables of pre-computed values used in lieu of real-time algorithm computations to reduce processing resource demands. Table values are typically the result of RTM executions and other environmental model simulations. These data generally cover broad, multi-dimensional parameter spaces which are unique to each algorithm.

7.1.1 ATMS RDR, TDR and SDR LUTs

The ATMS RDR, TDR and SDR data and products currently use no LUTs.

7.2 Processing Coefficient Tables

The S-NPP/JPSS-1 ground system data product generation subsystem uses Processing Coefficient Table (PCT) file parameters. PCT files can be either Automated or Manual coefficient tables. Within the Manual table type are two coefficient classes: Initial and Ephemeral. Sections below describe all three and any tables of that type for the product.

7.2.1 Automated Processing Coefficients

Automated Processing Coefficient (PC) files contain parameters updated and/or created during the processing of the S-NPP/JPSS Data Products by the processing algorithms. The processing environment subsequently uses these files without human review of their contents. Files can be used immediately after creation or in future processing such as the next granule in the production data stream processing.

7.2.1.1 ATMS RDR, TDR and SDR Automated PCs

The ATMS RDR, TDR, and SDR data and products currently use no Automated PCs.

7.2.2 Manual Processing Coefficients

Manual Processing Coefficient (PC) files contain parameters used for S-NPP/JPSS Data Product generation which require human review prior to operational processing environment insertion. Manual Processing Coefficients have two classes:

- Initialization PCTs contain infrequently updated initial parameters sets S-NPP/JPSS uses for data product generation.
- Ephemeral PCTs contain frequently updated parameters sets S-NPP/JPSS uses for data product generation.

7.2.2.1 ATMS RDR, TDR and SDR Initialization PCs

The ATMS RDR, TDR, and SDR data and product currently use no Initialization PCs.

7.2.2.2 ATMS SDR Ephemeral PC

Data Mnemonic	DP_NU-LM2020-001
Description/ Purpose	The ATMS SDR Ephemeral PCT file provides the calibrated manual ephemeral coefficients for production of the ATMS SDR. This file is used in the ATMS algorithm.
Instrument	ATMS
PC Type	Ephemeral
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. Version Number Field provides Provenance Version Identifier. The Collection Short Name used in the filename is based on the table - see the

	JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names. Notes: 1 The origin Field is always GRAVITE 2. The End Effectivity field displays all zeroes for the date, since it cannot be pre-determined for these files
File Size	See the Table: 7.2.2.2-1 ATMS SDR Ephemeral PC Data Format below
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Section 3.2 of JPSS CDFCB-X, Vol VI, 474-00001-06 and Table 7.2.2.2-1, ATMS SDR Ephemeral PC Data Format

Table: 7.2.2.2-1 ATMS SDR Ephemeral PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
scanWeightsWc	1760	64-bit floating point	0 - 1	unitless	Weighting factors applied to hot calibration target data 2 Dimensional Array: NUM_SCAN_WC x NUM_CHANNELS Size of Dimension(s): 10 x 22
scanWeightsCc	1760	64-bit floating point	0 - 1	unitless	Weighting factors applied to cold calibration target data 2 Dimensional Array: NUM_SCAN_CC x NUM_CHANNELS Size of Dimension(s): 10 x 22
scanBias	16896	64-bit floating point	-5 - 5	Kelvin	Scan-angle dependent BT biases for each channel coefficient of 0th order term in brightness temperature equation Tcorrected = AT + B 2 Dimensional Array: NUM_CHANNELS x NUM_BEAM_POSITIONS Size of Dimension(s): 22 x 96
beamEfficiencyCorrection	16896	64-bit floating point	0 - 1.2	unitless	Scan-angle dependent beam efficiency correction factor for each channel coefficient of 1st order term in brightness temperature equation corrected = AT + B 2 Dimensional Array: NUM_CHANNELS x NUM_BEAM_POSITIONS Size of Dimension(s): 22 x 96
warmBiasCorrection	528	64-bit floating point	-1 - 1	a1: K a2: KC^{-1} a3: KC^{-2}	Warm bias corrections of the form a1 + a2TR + a3TR**2 and coefficients are a1, a2, and a3. TR is the receiver temperature in degrees C. 2 Dimensional Array: NUM_BIAS_COEFFS x NUM_CHANNELS Size of Dimension(s): 3 x 22
instr2scMatrix	72	64-bit floating point	MIN_VAL - MAX_VAL	unitless	3x3 Instrument to Spacecraft frame transformation matrix 2 Dimensional Array: ROTATION_MATRIX_DIM x ROTATION_MATRIX_DIM Size of Dimension(s): 3 x 3
centralFrequency	176	64-bit floating point	23.7x10^9 – 183.32x10^ 9	Hz	22 channels central frequency in Hz for radiance based calibration algorithm band correction 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
radianceBandCorrection	352	64-bit floating point	-1.5 – 1.5	unitless	Radiance based calibration algorithm band correction of the form a1+a2T and coefficients are a1 and a2. T is the temperature in degrees C. 2 Dimensional Array: NUM_BC_COEFFS x NUM_CHANNELS Size of Dimension(s): 2 x 22

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
scanWeightsPrtKav	288	32-bit floating point	0 - 1	unitless	Weighting factors applied to KAV target PRT measurements 2 Dimensional Array: NUM_SCAN_PRT x NUM_PRT_KAV Size of Dimension(s): 9 x 8
scanWeightsPrtWg	252	32-bit floating point	0 - 1	unitless	Weighting factors applied to WG target PRT measurements 2 Dimensional Array: NUM_SCAN_PRT x NUM_PRT_WG Size of Dimension(s): 9 x 7
coldSpaceTbs	88	32-bit floating point	2.76 - 4.70	Kelvin	Brightness temperature of cosmic cold space, with Planck correction applied, for each ATMS channel 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
quadraticRc	1056	32-bit floating point	MIN_VAL – MAX_VAL	unitless	Three quadratic coefficients for 22 channels, four redundancy configurations (RC1, RC2, RC5 and RC6) 3 Dimensional Array: NUM_NL_COEFFS x NUM_REDUNCDANCY_CONFIGS x NUM_CHANNELS Size of Dimension(s): 3 x 4 x 22
shelfTemp	48	32-bit floating point	-10 - 50	Celsius	Four shelf temperatures (KKA, V, W, G) measured at each of the three cold plate temperatures tested (-10°, +5° and +20° C) 2 Dimensional Array: NUM_COLD_PLATE_TEMP x NUM_SHELF_TEMPS Size of Dimension(s): 3 x 4
beamAlignmentError	792	32-bit floating point	-0.665 - 0.656	Degrees	Bore-sight(beam) alignment errors at scan positions 1, 48 and 96 3 Dimensional Array: NUM_CHANNELS x BEAM_POS_OFFSET x ATTITUDE Size of Dimension(s): 22 x 3 x 3
coldBiasCorrection	352	32-bit floating point	0 - 0.6	Kelvin	Cold bias correction for 22 channels and four cold space view groups 2 Dimensional Array: NUM_COLD_SAMPLES x NUM_CHANNELS Size of Dimension(s): 4 x 22
lowLimitPrt	8	32-bit floating point	245- 340	Kelvin	Lower PRT temperature limit for the KAV and WG targets 1 Dimensional Array: NUM_BAND_CATEGORIES Size of Dimension(s): 2
uppLimitPrt	8	32-bit floating point	245- 340	Kelvin	Upper PRT temperature limit for the KAV and WG targets 1 Dimensional Array: NUM_BAND_CATEGORIES

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					Size of Dimension(s): 2
maxVarPrt	8	32-bit floating point	0 -10	Kelvin	Maximum temperature difference among the PRTs for the KAV and WG targets 1 Dimensional Array: NUM_BAND_CATEGORIES Size of Dimension(s): 2
threeDBeamWidth	88	32-bit floating point	1 - 6	degrees	Channel-specific 3dB beamwidths 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
lunarContaminationThreshold	88	32-bit floating point	0 - 1	Kelvin	Channel-specific thresholds for cold space view temperature increase caused by lunar contamination 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
prtConvergence	4	32-bit floating point	Initially set to 0.0005	Celsius	Convergence criteria for Newton-Raphson computation of temperature from PRT resistance
wtThresholdPrt	4	32-bit floating point	0 -1	unitless	Minimum normalized weight-sum required for passing the PRT data sufficiency check
wtThresholdWc	4	32-bit floating point	0 -1	unitless	Weight threshold for WC - Minimum normalized weight-sum required for passing the warm count data sufficiency check
wtThresholdCc	4	32-bit floating point	0 -1	unitless	Weight threshold for CC - Minimum normalized weight-sum required for passing the cold count data sufficiency check
dataLimits	592	32-bit floating point	MIN_VAL - MAX_VAL	unitless	The valid value range for the Health & Status telemetry 2 Dimensional Array: MIN_MAX_DIM x NUM_HS_VARS Size of Dimension(s): 2 x 74
ReflectorEmissivity	88	32-bit floating point	0 – 1	unitless	Satellite dependent reflector emissivity 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
reflectorTempOffset	4	32-bit floating point	Initially set to 0.0	Celsius	Reflector temperature offset. V-band shelf temperature is used to represent reflector temperature initially
spaceViewresolverCounts	64	32-bit integer	13746 - 15565	Expected Counts	Space view resolver counts - Expected count for 4 cold view positions and 4 cold scan profiles 2 Dimensional Array: NUM_COLD_SAMPLES x NUM_COLD_SCAN_PROFILES Size of Dimension(s): 4 x 4
blackBodyResolverCounts	64	32-bit integer	35286 - 35892	Expected Counts	Black body resolver counts - Expected count for 4 warm view positions 2 Dimensional Array:

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					NUM_WARM_SAMPLES x NUM_WARM_SCAN_PROFILES Size of Dimension(s): 4 x 4
lowLimitWc	88	32-bit integer	0 - 65635	Count	Lower limit WC - Channel-specific lower limit for warm count 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
uppLimitWc	88	32-bit integer	0 - 65635	Count	Upper limit WC - Channel-specific upper limit for warm count 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
maxVarWc	88	32-bit integer	0 - 65635	Count	Max variance WC - Channel-specific maximum difference among four warm samples 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
lowLimitCc	88	32-bit integer	0 - 65635	Count	Lower limit CC - Channel-specific lower limit for cold count 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
uppLimitCc	88	32-bit integer	0 - 65635	Count	Upper limit CC - Channel-specific upper limit for cold count 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
maxVarCc	88	32-bit integer	0 - 65635	Count	Max variance CC - Channel-specific maximum difference among four cold samples 1 Dimensional Array: NUM_CHANNELS Size of Dimension(s): 22
numThresholdPrt	8	32-bit integer	1 - 8	unitless	Number of threshold PRTs - Minimum number of 'good' PRTs in a scan below which all PRTs is considered 'bad' 1 Dimensional Array: NUM_BAND_CATEGORIES Size of Dimension(s): 2
mapRc	32	32-bit integer	1 - 4	unitless	Map of RC - Map 8 Redundancy Configurations to 4 experimental cases RC1, RC2, RC5 RC6 1 Dimensional Array: NUM_MAP_RC_SIZE Size of Dimension(s): 8
resolverOffset	4	32-bit integer	-200 - 200	Count	Resolver mechanical offset specific for each instrument; for the PFM, it is 91

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
epsilonCold	4	32-bit integer	0 - 20	unitless	Allowable deviation from the cold view expected resolver counts
epsilonWarm	4	32-bit integer	0 - 20	unitless	Allowable deviation from the warm view expected resolver counts
allowableDev	4	32-bit integer	0 - 20	milliseconds	Allowable deviation from the nominal scan period (8/3 sec)
prtLoops	4	32-bit integer	1 - 200	unitless	Maximum allowable loops for PRT temperature calculations
useQuadraticTerm	1	8-bit char	0 - 1	unitless	Flag indicating use of quadratic 0: do not use quadratic term 1: use quadratic term
useQuadraticTele	1	8-bit char	0 - 1	unitless	Flag indicating source of quadratic coefficients: 0: quadratic coefficients from ancillary file 1: quadratic coefficients from telemetry
useBeamAlignTele	1	8-bit char	0 - 1	unitless	Flag indicating the source of beam alignment errors: 0: beam alignment errors (22 channels) from ancillary file 1: beam alignment errors (five bands) from telemetry
useWarmBiasTele	1	8-bit char	0 - 1	unitless	Flag indicating the source of warm bias: 0: warm bias (22 channels) from ancillary file 1: warm bias (five bands) from telemetry
useColdBiasTele	1	8-bit char	0 - 1	unitless	Flag indicating the source of cold bias: 0: cold bias (22 channels) from ancillary file 1: cold bias (five bands) from telemetry
chkConsistWcCc	1	8-bit char	0 - 1	unitless	Flag indicating consistency check for warm and cold counts: 0: do not check consistency 1: check consistency
chkConsistPrt	1	8-bit char	0 - 1	unitless	Flag indicating consistency check for PRTs: 0: do not check consistency 1: check consistency
pad	1	8-bit char	0	unitless	Padding array 1 Dimensional Array: NUM_PADBYTES_COEFF Size of Dimension(s): 1
File Size	42,940 Bytes				

8 INTERMEDIATE PRODUCTS (IPS)

Not Applicable

Appendix A. Data Mnemonic to Interface Mapping

For a complete list of Data Mnemonic to Interface Mapping, see 474-00001-01, JPSS CDFCB-X Vol I. The CDFCB contains Data Mnemonics, Identifiers, Collection Short Names, Interface Documents, and Collection Long Names for each JPSS Data Product and for Geolocation data.

Appendix B. Common RDR Static Header Values

Table: B-1 Common RDR Static Header Values list pre-defined unique values for the fields from the static header for each of the RDRs defined.

RDR Name	Sensor	TypeID	numAPIDs
ATMS Science	ATMS	SCIENCE	4
ATMS Diagnostic	ATMS	DIAGNOSTIC	2
ATMS Dwell	ATMS	DWELL	1
ATMS Telemetry	ATMS	TELEMETRY	1
ATMS Memory Dump	ATMS	DUMP	1

Appendix C. DQTT Quality Flag Mapping

The following table maps the quality flags by sensor and product that are reportable to the associated data product quality flag Test ID used in the processing environment.

Table: C-1 DQTT Quality Flag Mapping

Algorithm	Product	Test ID	Quality Flag
ATMS SDR	ATMS-SDR	1300	Summary ATMS SDR Quality
ATMS SDR	ATMS-SDR	1301	Health and Status
ATMS SDR	ATMS-SDR	1302	Gain Error
ATMS SDR	ATMS-TDR	8000	Summary ATMS TDR Quality
ATMS SDR	ATMS-TDR	8001	Health and Status
ATMS SDR	ATMS-TDR	8002	Gain Error

Appendix D. Abbreviations and Acronyms

See 470-00041 JPSS Program Lexicon for abbreviations and acronyms.

Attachment A. XML Formats for Related Data products

Table: ATT-1 XML Formats for Related Products

File Number	XML Filename
1	Reserved
2	Reserved
3	474-00448-02-02_JPSS-DD_L_ATMS-SDR-GEO-PP.xml
4	474-00448-02-02_JPSS-DD_L_ATMS-SDR-PP.xml
5	474-00448-02-02_JPSS-DD_L_ATMS-TDR-PP.xml