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Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirement Specification (SRS) for the ATMS RDR/TDR/SDR

NOAA / NASA

Goddard Space Flight Center Greenbelt, Maryland

Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirement Specification (SRS) for the ATMS RDR/TDR/SDR

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Preface

This document is under JPSS Ground Segment (GS) 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:

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NASA/GSFC
Code 474
Greenbelt, MD 20771

NOTE

NOAA's Office of Low Earth Orbit (LEO) Observations encompasses the Joint Polar Satellite System (JPSS) and Near Earth Orbit Network (NEON) Programs. The JPSS Ground Segment Project has evolved to the LEO Ground Services Project and its ground system serves the needs of both JPSS and NEON missions. For efficiency, documents created prior to the formulation of LEO Ground Services will retain legacy terminology (e.g., JPSS Ground Project, JPSS Ground System).

Change History Log

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)
Rev -	July 26, 2013	This version incorporates **474-CCR-13-1098** which was approved by the JPSS Ground ERB on the effective day shown.
A	Jan 16, 2014	This version incorporates **474-CCR-13-1412** and **474-CCR-13-1360** which was approved by the JPSS Ground ERB on the effective date shown.
A1	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.
B	Aug 13, 2014	This version incorporates **474-CCR-14-1721, 474-CCR-14-1741, 474-CCR-14-1793, 474-CCR-14-1781 and 474-CCR-14-1865** which was approved by the JPSS Ground ERB on the effective day shown.
C	Feb. 26, 2015	This version incorporates **474-CCR-14-2110 and 474-CCR-15-2289** which was approved by the JPSS Ground ERB on the effective day shown.
D	Jan 19, 2016	This version incorporates **474-CCR-15-2452 and 474-CCR-15-2480, 474-CCR-15-2657 and 474-CCR-15-2745** which was approved by JPSS Ground ERB on the effective date shown.
0200E	Sep 22, 2016	This version incorporates **474-CCR-16-2939 and 474-CCR-16-3049** which was approved by JPSS Ground ERB on the effective date shown
0200F	Feb 09, 2018	This version incorporates **474-CCR-18-3822** which was approved by JPSS Ground ERB on the effective date shown
G	Dec 14, 2018	This version incorporates **474-CCR-18-4203.** This version incorporates 0220A of 474-00448-01-02-B0220, dated 11/29/2016 to create this baseline. This was approved by the JPSS Ground ERB on the effective date shown.
H	Oct 24, 2019	This version incorporates **474-CCR-19-4584** which was approved by the JPSS Ground ERB on Oct 17, 2019 and by the JPSS Ground Segment CCB on the effective date shown.
I	Sep 14, 2020	This version incorporates 474-CCR-19-4697 which was approved by the JPSS Ground ERB on Nov 26, 2019 and by the JPSS Ground Segment CCB on Dec 5, 2019; 474-CCR-19-4719 which was approved by the JPSS Ground ERB on Mar 11, 2020 and by the JPSS Ground Segment CCB on Mar 26, 2020; 474-CCR-20-5127 which was approved by the JPSS Ground ERB on Jul 24, 2020 and by

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)
		the JPSS Ground Segment CCB on Jul 30, 2020; 474-CCR-20-4960 which was approved by the JPSS Ground ERB on Apr 22, 2020 and by the JPSS Ground Segment CCB on the effective date shown.
J	Mar 09, 2021	This version incorporates 474-CCR-21-5418 which was approved by the JPSS Ground ERB on Mar 09, 2021 and by the JPSS Ground Segment CCB on the effective date shown.
K	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.
L	Aug 25, 2023	This version incorporates 474-CCR-23-6749 which was approved by the JPSS Ground ERB on Aug 18, 2023, and by the JPSS Ground Segment CCB on the effective date shown. This version was baselined for the LGSS contract.

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1 INTRODUCTION

The Joint Polar Satellite System (JPSS) is the National Oceanic and Atmospheric Administration's (NOAA) next-generation operational Earth observation program that acquires and distributes global environmental data primarily from multiple polar-orbiting satellites. The program plays a critical role in NOAA's mission to understand and predict changes in weather, climate, oceans and coasts, and the space environment, which support the Nation's economy and protect lives and property. For information regarding the JPSS Program, missions, instruments, and partners, see the JPSS website at https://www.jpss.noaa.gov/.

1.1 Identification

The Advanced Technology Microwave Sounder (ATMS), together with the Crosstrack Infrared Sounder (CrIS) — a high spectral resolution IR spectrometer — are designed to meet the measurement requirements set for the Joint Polar-orbiting Satellite System (JPSS) as well as satisfy the climate research objectives of the National Aeronautics and Space Administration (NASA). ATMS and CrIS Sensor Data Records are used to support the generation of downstream Atmospheric Vertical Moisture Profile and Atmospheric Vertical Temperature Profile products. ATMS is a 22-channel microwave sounder providing both temperature soundings - between the surface and the upper stratosphere (i.e., to about 1 mb, at an altitude of about 45 km) - and humidity soundings - between the surface and the upper troposphere (i.e., to about 200 mb, at an altitude of about 15 km). Like AMSU, it is a crosstrack scanner. There are two receiving antennas — one serving 15 channels below 60 GHz (with a beam width of 2.2° for all except the lowest two channels) and one serving 7 channels above 60 GHz (with a beam width of 1.1° for all except the lowest channel). The antennas consist of plane reflectors mounted on a scan axis at a 45° tilt angle, so that radiation is reflected from a direction perpendicular to the scan axis into a direction along the scan axis (i.e., a 90° reflection). With the scan axis oriented in the along-track direction, this results in a cross-track scan pattern. The reflected radiation is in each case focused by a stationary parabolic reflector onto a dichroic plate and from there either reflected to or passed through to a feedhorn. Each aperture/reflector therefore serves two frequency bands, for a total of four bands. Thus, radiation from a direction within the scan plane, which depends on the angle of rotation of the reflector, is reflected and focused onto the receiver apertures — conical feedhorns.

1.2 Algorithm Overview

The algorithms described in this document are very similar to those that have been developed by NOAA and NASA for the AMSU-A and -B instruments, which have flown since 1998 (NOAA) and 2002 (NASA), respectively. Details of the description are based on preliminary software developed by the ATMS contractor, NGES, and delivered in mid-2004 as version 2.2. Since the basic functionalities and principles of operation of these instruments are quite similar, the differences between the respective algorithmic approaches are relatively minor. For example, while NOAA prefers to convert radiometer measurements to physical radiance units (mW/m^2- sr-cm^{-1}), the approach of NASA is to convert to brightness temperature units (K) instead, which is the most common practice in the microwave field.

The following steps describe the on-board calibration measurements used to determine the calibration coefficients.

1. Determine the blackbody brightness temperature, from its physical temperature as measured by the embedded PRTs and a possibly temperature dependent bias correction.
2. Estimate the cold-space view brightness temperature, taking into account earth radiation into the antenna sidelobes and a correction to the Rayleigh-Jeans approximation.
3. Average the blackbody and cold-space radiometer counts, measured in a calibration cycle (i.e., up to 4 values) and smooth the averages over several calibration cycles.
4. Determine the radiometer gain.
5. Estimate a scene brightness temperature from the linear approximation.
6. Use the linear approximation to estimate the relative brightness temperature.
7. Estimate the radiometer nonlinearity amplitude, possibly based on a measured instrument temperature.
8. Compute a quadratic correction of the brightness temperature

This implicit transfer function is applied to the earth-scene radiometer counts for one scan cycle.

1.3 Document Overview

Section	Description
Section 1	Introduction - Provides a brief overview of the JPSS Ground System and the relevant algorithm, as reference material only.
Section 2	Related Documentation - Lists related documents and identifies them as Parent, Applicable, or Information Documents such as, MOAs, MOUs, technical implementation agreements, as well as Data Format specifications. This section also establishes an order of precedence in the event of conflict between two or more documents.
Section 3	Algorithm Requirements - Provides a summary of the science requirements for the products covered by this volume.
Appendix A	Requirements Attributes - Provides the mapping of requirements to verification methodology and attributes.

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 documents are the Parent Documents 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.

Doc. No.	Document Title
474-01541	Joint Polar Satellite System (JPSS) Ground System Requirements Document (GSRD)
474-01543	Joint Polar Satellite System (JPSS) Ground Segment Data Product Specification
474-00448-01-01	Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirements Specification (SRS) for the Common Algorithms

2.2 Applicable Documents

The following documents are the Applicable Documents 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.

Doc. No.	Document Title
474-00448-04-02	Joint Polar Satellite System (JPSS) Algorithm Specification Volume IV: Software Requirements Specification Parameter File (SRSPF) for the ATMS RDR/TDR/SDR
474-00448-02-02	Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the ATMS RDR/TDR/SDR
472-00251	Joint Polar Satellite System (JPSS) Mission Data Format Control Book for JPSS-1
429-05-02-42	Joint Polar Satellite System (JPSS) Mission Data Format Control Book for NPP
474-00448-04-08	JPSS Algorithm Specification Vol IV: SRS Parameter File for Geolocation and Spacecraft Orientation
472-00717	Mission Data Format Control Book Joint Polar Satellite System-2/3/4

3 ALGORITHM REQUIREMENTS

3.1 States and Modes

3.1.1 Normal Mode Performance

Not applicable

3.1.2 Graceful Degradation Mode Performance

Not applicable

3.2 Algorithm Functional Requirements

3.2.1 Product Production Requirements

Not applicable

3.2.2 Algorithm Science Requirements

Not applicable

3.2.3 Algorithm Exception Handling

SRS.01.02_45 The ATMS TDR software shall set <FillField> to indicated <FillValue> for <FillCondition> specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) for <TDR><fill>.

Rationale: The algorithm through its computing software must fill the TDR values based on the established fill conditions to satisfy exclusion and fill conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_95 The ATMS SDR software shall set <FillField> to indicated <FillValue> for <FillCondition> specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) for <SDR><fill>.

Rationale: The algorithm through its' computing software must fill the SDR values based on the established fill conditions to satisfy exclusion and fill conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

3.3 External Interfaces

3.3.1 Inputs

SRS.01.02_48 The ATMS TDR software shall incorporate inputs specified in Table 3.3.1-1.

Rationale: The details of the RDR and AP formatting and how to extract the data is contained with the relevant spacecraft Mission Data Format Control Book (429-05-02-42 for S-NPP, 472-00251 for JPSS-1, and 472-00717 for JPSS-2/3/4).

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_99 The ATMS SDR software shall incorporate inputs specified in Table 3.3.1-1.

Rationale: The ATMS SDR generation software must be able to receive and process the resource interaction items shown in Table 3.3.1-1 in order to produce the intended ATMS SDR products.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_157 The ATMS SDR geolocation software shall incorporate inputs per Table 3.3.1-1.

Rationale: The ATMS SDR geolocation software must be able to receive and process the resource interaction items shown in Table 3.3.1-1 in order to produce the intended ATMS SDR geolocation products.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_862 The ATMS SDR software shall ingest tables and coefficients formatted in accordance with Section 7 of the JPSS Algorithm Specification Vol II: Data Dictionary for ATMS RDR/TDR/SDR (474-00448-02-02).

Rationale: This defines the formats for Lookup Tables, and Processing Coefficients for input into the algorithm module.

Block Start: 2.0.0 *Block End:* 3.0.0

Table 3-1 and Figure 3-1 are best viewed together since they describe the processes governed by this SRS in different ways. The figure diagrams the data flowing into, out of, and within the code governed by this SRS. The table lists these same data interactions as well as all downstream dependencies for outputs from this SRS.

Each row in the table describes a single software interaction - data flowing from one software item to another. The data is listed in the first column. The second and third columns include the short name or mnemonic for the data. Blanks indicate there is no mnemonic. The fourth and fifth columns contain the SRS that generates the data product(s) in the first column, and the SRS that receives those products. The final two columns contain the actual function name in Algorithm Development Library (ADL) that produces those products, and the function that inputs those products. The SRS's titled "Ingest MSD" and "Store/Retrieve" are non-existent SRS's functioning as data handling for the IDPS. The software functions "Store Products" and "Retrieve Products" are similar non-existent functions that operate as IDPS data handling.

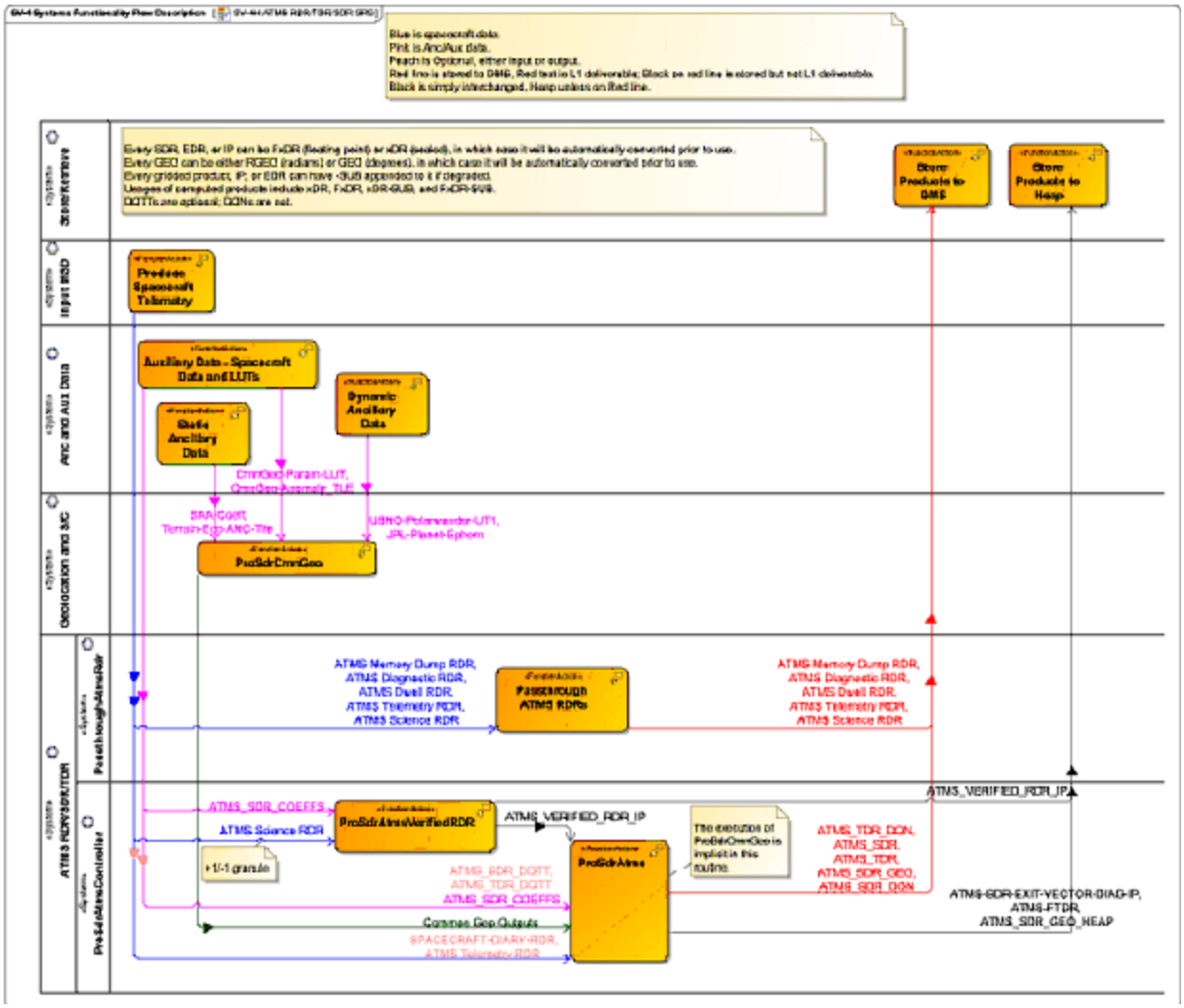

Figure: 3.3.1-1 ATMS RDR/TDR/SDR Data Flows

Table: 3.3.1-1 Systems Resource Flow Matrix: ATMS RDR/TDR/SDR

Data Product Name	Collection Short Name	Mnemonic	Sending SRS	Receiving SRS	Sending Function	Receiving Function
•ATMS Memory Dump RDR •ATMS Diagnostic RDR •ATMS Dwell RDR •ATMS Telemetry RDR •ATMS Science RDR	•ATMS-DUMP-RDR •ATMS-DIAGNOSTIC-RDR •ATMS-DWELL-RDR •ATMS-TELEMETRY-RDR •ATMS-SCIENCE-RDR	•RDRE-ATMS-C0035 •RDRE-ATMS-C0032 •RDRE-ATMS-C0036 •RDRE-ATMS-C0031 •RDRE-ATMS-C0030	Input MSD	ATMS RDR/SDR/TDR	Produce Spacecraft Telemetry	Passthrough ATMS RDRs
•ATMS Science RDR	•ATMS-SCIENCE-RDR	•RDRE-ATMS-C0030	Input MSD	ATMS RDR/SDR/TDR	Produce Spacecraft Telemetry	ProSdrAtmsVerifiedRDR
•SPACECRAFT-DIARY-RDR •ATMS Telemetry RDR	•SPACECRAFT-DIARY-RDR •ATMS-TELEMETRY-RDR	•RDRE-SCAE-C0030 •RDRE-ATMS-C0031	Input MSD	ATMS RDR/SDR/TDR	Produce Spacecraft Telemetry	ProSdrAtms
•ATMS_SDR_COEFFS	•ATMS-SDR-CC	•DP_NU-L00020-020	Anc and Aux Data	ATMS RDR/SDR/TDR	Auxiliary Data - Spacecraft Data and LUTs	ProSdrAtms
•ATMS_SDR_COEFFS	•ATMS-SDR-CC	•DP_NU-L00020-020	Anc and Aux Data	ATMS RDR/SDR/TDR	Auxiliary Data - Spacecraft Data and LUTs	ProSdrAtmsVerifiedRDR
•ATMS_SDR_DQTT •ATMS_TDR_DQTT	•ATMS-SDR-DQTT •ATMS-TDR-DQTT	•DP_NU-LM2030-000 •DP_NU-LM2030-000	Anc and Aux Data	ATMS RDR/SDR/TDR	Auxiliary Data - Spacecraft Data and LUTs	ProSdrAtms
•Common Geo Outputs	•None	•None	Geolocation and S/C	ATMS RDR/SDR/TDR	ProSdrCmnGeo	ProSdrAtms
•ATMS_VERIFIED_RDR_IP	•ATMS-Verified-RDR-IP	•None	ATMS RDR/SDR/TDR	ATMS RDR/SDR/TDR	ProSdrAtmsVerifiedRDR	ProSdrAtms

Data Product Name	Collection Short Name	Mnemonic	Sending SRS	Receiving SRS	Sending Function	Receiving Function
•ATMS-SDR-EXIT-VECTOR-DIAG-IP •ATMS-FTDR •ATMS_SDR_GEO_HEAP	•ATMS-SDR-EXIT-VECTOR-DIAG-IP •ATMS-FTDR •ATMS-SDR-GEO-HEAP	•None •None •None	ATMS RDR/SDR/TDR	Store/Retrieve	ProSdrAtms	Store Products to Heap
•ATMS_VERIFIED_RDR_IP	•ATMS-Verified-RDR-IP	•None	ATMS RDR/SDR/TDR	Store/Retrieve	ProSdrAtmsVerifiedRDR	Store Products to Heap
•ATMS_SDR_IP •ATMS-FSDR	•ATMS-SDR-IP •ATMS-FSDR	•None •None	ATMS RDR/SDR/TDR	Store/Retrieve	ProSdrAtms	Store Products to DMS
•ATMS Memory Dump RDR •ATMS Diagnostic RDR •ATMS Dwell RDR •ATMS Telemetry RDR •ATMS Science RDR	•ATMS-DUMP-RDR •ATMS-DIAGNOSTIC-RDR •ATMS-DWELL-RDR •ATMS-TELEMETRY-RDR •ATMS-SCIENCE-RDR	•RDRE-ATMS-C0035 •RDRE-ATMS-C0032 •RDRE-ATMS-C0036 •RDRE-ATMS-C0031 •RDRE-ATMS-C0030	ATMS RDR/SDR/TDR	Store/Retrieve	Passthrough ATMS RDRs	Store Products to DMS
•ATMS_TDR_DQN •ATMS_SDR •ATMS_TDR •ATMS_SDR_GEO •ATMS_SDR_DQN	•ATMS-TDR-DQN •ATMS-SDR •ATMS-TDR •ATMS-SDR-GEO •ATMS-SDR-DQN	•DP_NU-L00090-001 •SDRE-ATMS-C0030 •TDRE-ATMS-C0030 •None •DP_NU-L00090-001	ATMS RDR/SDR/TDR	Store/Retrieve	ProSdrAtms	Store Products to DMS

3.3.2 Outputs

SRS.01.02_47 The ATMS TDR software shall generate the ATMS TDR product in conformance with the XML format file in Attachment A.5 of the JPSS Algorithm Specification Vol II: Data Dictionary for ATMS RDR/TDR/SDR (474-00448-02-02).

Rationale: The product profile must conform to the XML format file.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_98 The ATMS SDR software shall generate the ATMS SDR product in conformance with the XML format file in Attachment A.4 of the JPSS Algorithm Specification Vol II: Data Dictionary for ATMS RDR/TDR/SDR (474-00448-02-02).

Rationale: The product profile must conform to the XML format file.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_138 The ATMS RDR software shall generate the ATMS Science RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) <RDR><Science>.

Rationale: The Science RDR is generated from the specified mission data packet APIDs. APIDs associated with the Spacecraft Diary, as defined in the JPSS Algorithm Specification Vol IV: SRS Parameter File for Geolocation and Spacecraft Orientation (474-00448-04-08), are included in the deliverable RDR.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_139 The ATMS RDR software shall generate the ATMS Diagnostic RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) <RDR><Diagnostic>.

Rationale: The Diagnostic RDR is generated from the specified mission data packet APIDs. APIDs associated with the Spacecraft Diary, as defined in the JPSS Algorithm Specification Vol IV: SRS Parameter File for Geolocation and Spacecraft Orientation (474-00448-04-08), are included in the deliverable RDR.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_140 The ATMS RDR software shall generate the ATMS Dwell RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) <RDR><Dwell>.

Rationale: The Dwell RDR is generated from the specified mission data packet APIDs. APIDs associated with the Spacecraft Diary, as defined in the JPSS Algorithm Specification Vol IV: SRS Parameter File for Geolocation and Spacecraft Orientation (474-00448-04-08), are included in the deliverable RDR.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_141 The ATMS RDR software shall generate the ATMS Telemetry RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) <RDR><Telemetry>.

Rationale: The Telemetry RDR is generated from the specified mission data packet APIDs. APIDs associated with the Spacecraft Diary, as defined in the JPSS Algorithm Specification Vol IV: SRS Parameter File for Geolocation and Spacecraft Orientation (474-00448-04-08), are included in the deliverable RDR.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_142 The ATMS RDR software shall generate the ATMS Memory Dump RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) <RDR><MemoryDump>.

Rationale: The Memory Dump RDR is generated from the specified mission data packet APIDs. APIDs associated with the Spacecraft Diary, as defined in the JPSS Algorithm Specification Vol IV: SRS Parameter File for Geolocation and Spacecraft Orientation (474-00448-04-08), are included in the deliverable RDR.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_153 The ATMS TDR software shall use the ATMS SDR geolocation.

Rationale: The geolocation product must be generated with the TDR product.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_155 The ATMS SDR software shall generate the SDR geolocation product in conformance with the XML format file in Attachment A.3 of the JPSS Algorithm Specification Vol II: Data Dictionary for ATMS RDR/TDR/SDR (474-00448-02-02).

Rationale: The product profile must conform to the XML format file.

Block Start: 2.0.0 *Block End:* 3.0.0

3.4 Science Standards

Not applicable

3.5 Metadata Output

Not applicable

3.6 Quality Flag Content Requirements

SRS.01.02_54 The ATMS TDR software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) <TDR><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_105 The ATMS SDR software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the JPSS Algorithm Specification Vol IV, SRSPF for ATMS RDR/TDR/SDR, (474-00448-04-02) <SDR><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_161 The ATMS SDR geolocation software shall report for each <FlagScope> quality flags using <FlagLogic> as specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) <SDR_GEO><QF>.

Rationale: Quality Flags must be generated based on the established flag conditions, logic, and format.

Block Start: 2.0.0 *Block End:* 3.0.0

3.7 Data Quality Notification Requirements

SRS.01.02_50 The ATMS TDR software shall send data quality notifications to the operator according to logic specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) for <TDR> <Notifications>.

Rationale: Notifications must be generated and sent based on the established logic and conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_101 The ATMS SDR software shall send data quality notifications to the operator according to logic specified in the JPSS Algorithm Specification Vol IV: SRSPF for ATMS RDR/TDR/SDR (474-00448-04-02) for <SDR> <Notifications>.

Rationale: Notifications must be generated and sent based on the established logic and conditions.

Block Start: 2.0.0 *Block End:* 3.0.0

3.8 Adaptation

Not applicable

3.9 Provenance Requirements

Not applicable

3.10 Computer Software Requirements

Not applicable

3.11 Software Quality Characteristics

Not applicable

3.12 Design and Implementation Constraints

SRS.01.02_731 The JPSS Common Ground System shall execute the ATMS TDR algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_732 The JPSS Common Ground System shall execute the ATMS SDR algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

SRS.01.02_735 The JPSS Common Ground System shall execute the ATMS SDR geolocation algorithm.

Rationale: The CGS must incorporate algorithm changes that are supplied by the algorithm vendor.

Block Start: 2.0.0 *Block End:* 3.0.0

3.13 Personnel Related Requirements

Not applicable

3.14 Training Requirements

Not applicable

3.15 Logistics Related Requirements

Not applicable

3.16 Other Requirements

Not applicable

3.17 Packaging Requirements

Not applicable

3.18 Precedence and Criticality

Not applicable

Appendix A. Requirements Attributes

The Requirements Attributes can be found in the VCRMs at Ground > Mission System Engineering > Ground SEIT Unrestricted > VCRM

https://jpss.gsfc.nasa.gov/sites/ground/MSE/9/Forms/AllItems.aspx?RootFolder=%2Fsites%2Fground%2FMSE%2F9%2FVCRM&FolderCTID=0x012000D0555EA1A211E64A9A7DE7CBCE72DE8B&View=%7B4267AEFE%2D7E8B%2D402D%2D919D%2D41BED55BA4E7%7D