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Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirement Specification (SRS) for AMSR-3 RDR

NOAA / NASA

Goddard Space Flight Center Greenbelt, Maryland

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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:

JPSS Configuration Management Office
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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-	Jan 06, 2022	This version incorporates **474-CCR-21-5395** which was approved by JPSS Ground ERB on the effective date shown.
A	Mar 31, 2022	This version incorporates **474-CCR-22-5924** which was approved by JPSS Ground ERB on March 23, 2022 and approved by JPSS Ground CCB on the effective date shown.
B	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.

Table of Contents

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

This volume documents the software used in the generation of Raw Data Record (RDR) algorithms for the Advanced Microwave Scanning Radiometer-3 (AMSR-3). It also documents the AMSR-3 RDRs.

1.2 Algorithm Overview

The AMSR-3 instrument is flown on the GOSAT-GW satellite operated by the Japanese Aerospace Exploration Agency (JAXA). It will not fly on any JPSS satellite but is part of the JPSS mission through an MOU between JAXA and NOAA. The GOSAT space segment is operated by JAXA, but the JPSS Ground System retrieves the data from AMSR-3 instrument on the GOSAT satellite and relays it to NOAA/NESDIS for processing. The JPSS ground processing software produces RDRs for AMSR-3 instrument from the application packets received.

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)
474-00448-01-01	Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirements Specification (SRS) for the Common Algorithms

2.2 Applicable Documents

The following document is the Applicable Document 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
474-00448-04-31	Joint Polar Satellite System (JPSS) Algorithm Specification Volume IV: Software Requirements Specification Parameter File (SRSPF) for the AMSR-3 RDR

3 ALGORITHM REQUIREMENTS

3.1 States and Modes

Not applicable

3.1.1 Normal Mode Performance

Not applicable

3.1.2 Graceful Degradation Mode Performance

Not applicable

3.2 Algorithm Functional Requirements

Not applicable

3.2.1 Product Production Requirements

Not applicable

3.2.2 Algorithm Science Requirements

Not applicable

3.2.3 Algorithm Exception Handling

Not applicable

3.3 External Interfaces

3.3.1 Inputs

Not applicable

3.3.2 Outputs

SRS.01.31_144 The AMSR3 RDR software shall generate the AMSR3 Mission Data RDR from mission data packet APID specified in the JPSS Algorithm Specification Vol IV: SRSPF for AMSR3 RDR (474-00448-04-31) <RDR><Mission>.

Rationale: The AMSR Mission Data (Science) RDR is generated from the specified mission data packet APIDs.

Block Start: 2.5.0 *Block End:* 3.0.0

SRS.01.31_145 The AMSR3 RDR software shall generate the AMSR3 Telemetry Data RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for AMSR3 RDR (474-00448-04-31) <RDR><Telemetry>.

Rationale: The AMSR Housekeeping Telemetry RDR is generated from the specified mission data packet APIDs.

Block Start: 2.5.0 *Block End:* 3.0.0

3.4 Science Standards

Not applicable

3.5 Metadata Output

Not applicable

3.6 Quality Flag Content Requirements

Not applicable

3.7 Data Quality Notification Requirements

Not applicable

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

Not applicable

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