Joint Polar Satellite System (JPSS) Ground Project
Code 474
474-00448-01-04-B0200


Block 2.0.0

Goddard Space Flight Center
Greenbelt, Maryland

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Joint Polar Satellite System (JPSS) Algorithm Specification
Volume I:
Software Requirement Specification (SRS) for the OMPS
TC RDR/SDR
JPSS Review/Approval Page

Prepared By:

JPSS Ground System
(Electronic Approvals available online at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm)

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Goddard Space Flight Center
Greenbelt, Maryland

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Preface

This document is under JPSS Ground Project 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

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## Change History Log

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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. The first JPSS satellite mission, the Suomi National Polar-orbiting Partnership (S-NPP) satellite, successfully launched in October 2011. S-NPP, along with the legacy NOAA Polar Operational Environmental Satellites (POES), provides continuous environmental observations. Two JPSS satellites will follow S-NPP: JPSS-1, planned for launch in fiscal year (FY) 2017, with JPSS-2 to follow in FY2021. In the future, the JPSS Polar Follow-On (PFO) provides for two additional missions, JPSS-3 and JPSS-4, as follow-on to the JPSS-2 mission to extend the JPSS Program lifecycle out to 2038.

In addition to the JPSS Program's own satellites operating in the 1330 (±10) Local Time of the Ascending Node (LTAN) orbit, NOAA also leverages mission partner assets for complete global coverage. These partner assets include the Department of Defense (DoD) Defense Meteorological Satellite Program (DMSP) operational weather satellites (in the 1730 - 1930 LTAN orbit), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) Meteorological Operational (Metop) satellites (in the 2130 LTAN orbit) and the Japanese Aerospace Exploration Agency (JAXA) Global Change Observation Mission-Water (GCOM-W) satellite (in the 1330 LTAN orbit). JPSS routes Metop data from McMurdo Station, Antarctica to the EUMETSAT facility in Darmstadt, Germany and EUMETSAT, in turn, provides Metop data to NOAA. For GCOM, JPSS routes the GCOM-W data from Svalbard, Norway to the NOAA Satellite Operations Facility (NSOF) in Suitland, MD, processes GCOM-W data and delivers GCOM-W products to the JPSS users who have JAXA permissions.

Additionally, the JPSS Program provides data acquisition and routing support to the DMSP and the WindSat Coriolis Program. JPSS routes DMSP data from McMurdo Station to the 557th Weather Wing at Offutt Air Force Base in Omaha, NE. After processing, the 557th releases the DMSP data for public consumption over the Internet via the National Centers for Environment Information (NCEI) in Boulder, CO. The JPSS Program provides data routing support to the National Science Foundation (NSF), as well as the National Aeronautics and Space Administration (NASA) Space Communications and Navigation (SCaN)-supported missions, which include the Earth Observing System (EOS). As part of the agreements for the use of McMurdo Station, JPSS provides communications/network services for the NSF between McMurdo Station, Antarctica and Centennial, Colorado.

As a multi-mission ground infrastructure, the JPSS Ground System supports the heterogeneous constellation of the before-mentioned polar-orbiting satellites both within and outside the JPSS Program through a comprehensive set of services as listed in Table 1-1.
1.1 Identification

This SRS provides requirements for OMPS (Ozone Mapping and Profiler Suite) Nadir Total Column (NTC) Raw Data Records (RDRs) and Sensor Data Records (SDRs). OMPS measures stratospheric ozone through the measurement of backscattered ultraviolet (UV) radiances. OMPS Nadir (OMPS-N) system consists of two instruments, a Nadir Total Column Mapper (NM) and a Nadir Profiler (NP). The nadir total column sensor has a focal plane UV grating spectrometer that provides measurements between 300 to 420 nm (300 to 380 nm for S-NPP), with a spectral resolution of 0.45 nm. The total cross-track field of view is 110 degrees.

1.2 Algorithm Overview

The Nadir Total Column (NTC or TC) ozone SDR is generated from the RDR for the total column focal plane of the OMPS instrument. The SDR processing produces an earth-scene SDR from the backscatter of solar radiation. The nadir total column earth scene SDR provides raw counts, count corrections, and calibrated earth and sun radiances for subsequent EDR processing into a measurement of total column ozone. The OMPS system will produce two JPSS EDRs, Ozone Total Column (TC) and Ozone Nadir Profile (NP).

The OMPS algorithms include the following:

1. The Nadir Total Column Ozone SDR algorithm
2. The Nadir Profile Ozone SDR algorithm
3. The Nadir Total Column Ozone Algorithm
4. The Nadir Profile Ozone Algorithm

1.3 Document Overview

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<tr>
<th>Section</th>
<th>Description</th>
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<tr>
<td>Section 1</td>
<td>Introduction - Provides a brief overview of the JPSS Ground System and the relevant algorithm, as reference material only.</td>
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<tr>
<td>Section 2</td>
<td>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.</td>
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Section | Description
---|---
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 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.

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<tr>
<td>470-00067</td>
<td>Joint Polar Satellite System (JPSS) Ground System Requirements Document (GSRD)</td>
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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.

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<td>474-00029</td>
<td>Joint Polar Satellite System (JPSS) OMPS NADIR Total Column Ozone Algorithm Theoretical Basis Document (ATBD)</td>
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2.3 Information Documents

The following documents are referenced herein and amplify or clarify the information presented in this document. These documents are not binding on the content of this document.

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3 Algorithm Requirements

3.1 States and Modes

3.1.1 Normal Mode Performance

SRS.01.04_487 The OMPS Nadir Total Column algorithm shall calculate the earth view radiance with an albedo calibration accuracy of 2%.

Rationale: The accuracy values of the earth view radiance with an albedo calibration were flowed down from the Level 1 and Level 2 documents.

Mission Effectivity: S-NPP, JPSS-1, JPSS-2

SRS.01.04_488 The OMPS Nadir Total Column algorithm shall calculate the earth view radiance with spectral pixel-to-pixel calibration accuracy of 0.5%.

Rationale: The accuracy values of the pixel-to-pixel calibration were flowed down from the Level 1 and Level 2 documents.

Mission Effectivity: JPSS-1, JPSS-2

SRS.01.04_489 The OMPS Nadir Total Column algorithm shall calculate the earth view radiance holding the out-of-band stray light to less than 1% at all wavelengths.

Rationale: The limiting values of the out-of-band stray light were flowed down from the Level 1 and Level 2 documents.

Mission Effectivity: JPSS-1, JPSS-2

SRS.01.04_658 The OMPS Nadir Total Column algorithm shall calculate the earth view radiance over the wavelength range of 302 to 382 nm.

Rationale: The wavelength range of the earth view radiance was flowed down from the Level 1 and Level 2 documents.

Mission Effectivity: S-NPP

SRS.01.04_490 The OMPS Nadir Total Column algorithm shall calculate the earth view radiance over the wavelength range of 300 to 420 nm.

Rationale: The wavelength range of the earth view radiance was flowed down from the Level 1 and Level 2 documents.

Mission Effectivity: JPSS-1, JPSS-2

SRS.01.04_659 The OMPS Nadir Total Column algorithm shall calculate the earth view radiance with a horizontal cell size of 50 km at nadir.

Rationale: The horizontal cell size of the earth view radiance was flowed down from the Level 1 and Level 2 documents.

Mission Effectivity: S-NPP
SRS.01.04_491 The OMPS Nadir Total Column algorithm shall calculate and/or aggregate the earth view radiance with a horizontal cell size of 50 km or less at nadir.

Rationale: The horizontal cell size of the earth view radiance was flowed down from the Level 1 and Level 2 documents.

Mission Effectivity: JPSS-1, JPSS-2

SRS.01.04_661 The OMPS Nadir Total Column SDR Geolocation algorithm computation shall have a one-sigma mapping uncertainty of 5 km.

Rationale: The requirement is derived from L1RD requirements for Ozone NTC EDR.

Mission Effectivity: S-NPP, JPSS-1, JPSS-2

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

SRS.01.04_492 The OMPS Nadir Total Column SDR software shall incorporate a computing algorithm provided for earth-view radiances.

Rationale: The Nadir TC earth-view radiance data is one of OMPS TC SDR products. The SDR software through its computing algorithm must produce the Total Column earth view radiance data. The OMPS NADIR Total Column Ozone ATBD (474-00029) provides details on the algorithm science.

Mission Effectivity: S-NPP, JPSS-1, JPSS-2

3.2.3 Algorithm Exception Handling

SRS.01.04_107 The OMPS Nadir Total Column SDR software shall set the <FillField> values to <FillValue> for <FillCondition> specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04) <NTC_Science_SDR><fill>.

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

Mission Effectivity: S-NPP, JPSS-1, JPSS-2
3.3 External Interfaces

3.3.1 Inputs

SRS.01.04_100 The OMPS Nadir Total Column SDR software shall incorporate inputs specified in Table 3-1.

*Rationale:* The SDR generation software must be able to receive and process the resource interaction items shown in Table 3-1 in order to produce the intended OMPS TC SDR products.

*Mission Effectivity:* S-NPP, JPSS-1, JPSS-2

SRS.01.04_119 The OMPS Nadir Total Column SDR Geolocation software shall incorporate inputs specified in Table 3-1.

*Rationale:* The SDR generation software must be able to receive and process the resource interaction items shown in Table 3-1 in order to produce the intended OMPS TC SDR geolocation products.

*Mission Effectivity:* S-NPP, JPSS-1, JPSS-2

SRS.01.04_662 The OMPS Nadir Total Column SDR software shall ingest input tables and coefficients formatted in accordance with Section 7 of the JPSS Algorithm Specification Vol II: Data Dictionary for OMPS NP RDR/SDR (474-00448-02-04).

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

*Mission Effectivity:* S-NPP, JPSS-1, JPSS-2

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 column includes the mnemonic or short name for the data. Blanks indicate there is no mnemonic. The third and fourth 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: 3-1 OMPS TC RDR/SDR Data Flows

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Table: 3-1  SV-6 Systems Resource Flow Matrix: OMPS TC RDR/SDR

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5  •GIP_SIC_TILE •GridIP-VIIRS-Snow-Ice-Cover-Rolling-Tile •IMPI_VGSC_R010 0 Static Ancillary Data ProGipOmpsTc GridToGranSnowIceFraction Anc and Aux Data OMPS TC RDR/SDR

6  •GIP_QST_TILE •GridIP-VIIRS-Qst-Quarterly-Tile •IMPI_QSIP_R0010 Static Ancillary Data ProGipOmpsTc GridToGranSunGlint Anc and Aux Data OMPS TC RDR/SDR

7  •Common Geo Outputs •None •None ProSdrCmnGeo ProSdrOmpsTc Earth Geolocation and S/C OMPS TC RDR/SDR

8  •OMPS-TC-RGEO •OMPS-TC-GEO •None | ProSdrOmpsTc Earth | ProGipOmpsTc GridToGranMapping | OMPS TC RDR/SDR | OMPS TC RDR/SDR

9  •OMPS_TC_GLINTLES_S_SDR •OMPS_TC-RGEO | OMPS-TC-Glintless-SDR •OMPS-TC-GEO | None | None ProSdrOmpsTc Earth ProGipOmpsTc GridToGranMapping | OMPS TC RDR/SDR | OMPS TC RDR/SDR

10 •OMPS_TC_Mapping_Gran •OMPS-TC-Grid-To-Gran-GridIP-Mapping-IP •None | ProGipOmpsTc GridToGranMapping | ProGipOmpsTc GridToGranSnowIceFraction | OMPS TC RDR/SDR | OMPS TC RDR/SDR

11 •OMPS_TC_Mapping_Gran •OMPS-TC-Grid-To-Gran-GridIP-Mapping-IP •None | ProGipOmpsTc GridToGranMapping | ProGipOmpsTc GridToGranSnowIceFraction | OMPS TC RDR/SDR | OMPS TC RDR/SDR

12 •OMPS_TC_Mapping_Gran •OMPS-TC-Grid-To-Gran-GridIP-Mapping-IP •None | ProGipOmpsTc GridToGranMapping | Store Products to DMS | OMPS TC RDR/SDR | Store/Retrieve

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<th>Mnemonic</th>
<th>Sending Function</th>
<th>Receiving Function</th>
<th>Sending SRS</th>
<th>Receiving SRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 •OMPS_TC_GIP_SNOW_W_ICE_FRACTION_G Ran</td>
<td>•OMPS-TC-GridIP-VIIRS-Snow-Ice-Fraction-Gran</td>
<td>•None</td>
<td>ProGipOmpsTc GridToGranSnowIceFraction</td>
<td>Store Products to DMS</td>
<td>OMPS TC RDR/SDR</td>
<td>Store/Retrieve</td>
</tr>
<tr>
<td>14 •OMPS_TC_SDR</td>
<td>•OMPS-TC-SDR</td>
<td>•SDRE-OMTC-C0030</td>
<td>ProGipOmpsTc GridToGranSunGlint</td>
<td>Store Products to DMS</td>
<td>OMPS TC RDR/SDR</td>
<td>Store/Retrieve</td>
</tr>
<tr>
<td>15 •OMPS Nadir Total Column Calibration RDR •OMPS TC Science RDR •OMPS Nadir Total Column Diagnostic Earth View RDR •OMPS Nadir Total Column Diagnostic Calibration RDR</td>
<td>•OMPS-TCCALIBRATION-RDR •OMPS-TCSCIENCE-RDR •OMPS-TCDIAGNOSTIC-RDR •OMPS-TCDIAGCAL-RDR</td>
<td>•RDRE-OMPS-C0051 •RDRE-OMPS-C0031 •RDRE-OMPS-C0050 •RDRE-OMPS-C0038</td>
<td>Passthrough OMPS TC RDRs</td>
<td>Store Products to DMS</td>
<td>OMPS TC RDR/SDR</td>
<td>Store/Retrieve</td>
</tr>
<tr>
<td>16 •OMPS_TC_GEO •OMPS-TC-RGEO</td>
<td>•OMPS-TC-GEO •OMPS-TC-GEO</td>
<td>•None •None</td>
<td>ProSdrOmpsTc Earth</td>
<td>Store Products to DMS</td>
<td>OMPS TC RDR/SDR</td>
<td>Store/Retrieve</td>
</tr>
<tr>
<td>17 •OMPS_TC_GLINTLESS_S_SDR</td>
<td>•OMPS-TC-Glintless-SDR</td>
<td>•None</td>
<td>ProSdrOmpsTc Earth</td>
<td>Store Products to Heap</td>
<td>OMPS TC RDR/SDR</td>
<td>Store/Retrieve</td>
</tr>
</tbody>
</table>

Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.
3.3.2 Outputs

SRS.01.04_67 The OMPS RDR software shall generate the OMPS Nadir Total Column Diagnostic Calibration RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04)<NTC_RDR><DiagCal>.

Rationale: The Diagnostic Calibration RDR is one of OMPS Nadir Total Column RDR products and 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.

Mission Effectivity: S-NPP, JPSS-1, JPSS-2

SRS.01.04_68 The OMPS RDR software shall generate the OMPS Nadir Total Column Diagnostic Earth View RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04)<NTC_RDR><DiagEarthView>.

Rationale: The Diagnostic Earth View RDR is one of OMPS Nadir Total Column RDR products and 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.

Mission Effectivity: S-NPP, JPSS-1, JPSS-2

SRS.01.04_69 The OMPS RDR software shall generate the OMPS Science Nadir Total Column Calibration RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04)<NTC_RDR><Cal>.

Rationale: The Calibration RDR is one of OMPS Nadir Total Column RDR products and 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.

Mission Effectivity: S-NPP, JPSS-1, JPSS-2

SRS.01.04_70 The OMPS RDR software shall generate the OMPS Science Nadir Total Column Earth View RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04)<NTC_RDR><Science>.

Rationale: The Science Earth View RDR is one of OMPS Nadir Total Column RDR products and is generated from the specified mission data packet APIDs. APIDs 0, 8, and 11 are part of the Spacecraft Diary which is included in the deliverable RDR.

Mission Effectivity: S-NPP, JPSS-1, JPSS-2
SRS.01.04_99 The OMPS Nadir Total Column SDR software shall generate the OMPS Nadir Total Column Science SDR, conforming to the XML format file in Attachment A.4 of the JPSS Algorithm Specification Vol II: Data Dictionary for OMPS Total Column RDR/SDR (474-00448-02-04).

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

**Mission Effectivity:** S-NPP, JPSS-1, JPSS-2

SRS.01.04_118 The OMPS Nadir Total Column SDR software shall generate the OMPS Nadir Total Column Science SDR geolocation in conformance with the XML format file in Attachment A.3 of the JPSS Algorithm Specification Vol II: Data Dictionary for OMPS Total Column RDR/SDR (474-00448-02-04).

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

**Mission Effectivity:** S-NPP, JPSS-1, JPSS-2

### 3.4 Science Standards

Not applicable.

### 3.5 Metadata Output

Not applicable.

### 3.6 Quality Flag Content Requirements

SRS.01.04_116 The OMPS Nadir Total Column SDR software shall report for each `<FlagScope>` quality flags using `<FlagLogic>` as specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04) `<NTC_Science_SDR><QF>`.

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

**Mission Effectivity:** S-NPP, JPSS-1, JPSS-2

SRS.01.04_499 The OMPS Nadir Total Column SDR GEO software shall report for each `<FlagScope>` quality flags using `<FlagLogic>` as specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04) `<NTC_Sci_GEO><QF>`.

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

**Mission Effectivity:** S-NPP, JPSS-1, JPSS-2

### 3.7 Reserved

### 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.01.04_495 The JPSS Common Ground System shall execute the OMPS Nadir Total Column earth view radiance algorithm.

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

*Mission Effectivity:* S-NPP, JPSS-1, JPSS-2

SRS.01.04_496 The JPSS Common Ground System shall execute the OMPS Nadir Total Column science SDR geolocation algorithm.

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

*Mission Effectivity:* S-NPP, JPSS-1, JPSS-2

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.

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**Appendix A. Requirements Attributes**

The Requirements Attributes Table lists each requirement with CM-controlled attributes including requirement type, mission effectivity, requirement allocation(s), block start and end, method(s) for verifying each requirement, etc.

<table>
<thead>
<tr>
<th>Req ID</th>
<th>SRS 04 - Ozone Mapping and Profiler Suite-Total Column</th>
<th>Level 3 Type</th>
<th>Product Type</th>
<th>Mission Effectivity</th>
<th>Allocated To</th>
<th>Block Start</th>
<th>Block End</th>
<th>Block 2.0.0 VM</th>
<th>Block 2.1.0 VM</th>
<th>Block 2.2.0 VM</th>
<th>Test</th>
<th>NA</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRS.01.04_487</td>
<td>The OMPS Nadir Total Column algorithm shall calculate the earth view radiance with an albedo calibration accuracy of 2%.</td>
<td>P</td>
<td>SDR</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Test</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>SRS.01.04_488</td>
<td>The OMPS Nadir Total Column algorithm shall calculate the earth view radiance with spectral pixel-to-pixel calibration accuracy of 0.5%.</td>
<td>P</td>
<td>SDR</td>
<td>JPSS-1 JPSS-2</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Test</td>
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<td>NA</td>
<td></td>
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<tr>
<td>SRS.01.04_489</td>
<td>The OMPS Nadir Total Column algorithm shall calculate the earth view radiance holding the out-of-band stray light to less than 1% at all wavelengths.</td>
<td>P</td>
<td>SDR</td>
<td>JPSS-1 JPSS-2</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Test</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td></td>
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<tr>
<td>SRS.01.04_658</td>
<td>The OMPS Nadir Total Column algorithm shall calculate the earth view radiance over the wavelength range of 302 to 382 nm.</td>
<td>P</td>
<td>SDR</td>
<td>S-NPP</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Test</td>
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<tr>
<td>SRS.01.04_490</td>
<td>The OMPS Nadir Total Column algorithm shall calculate the earth view radiance over the wavelength range of 300 to 420 nm.</td>
<td>P</td>
<td>SDR</td>
<td>JPSS-1 JPSS-2</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Test</td>
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<tr>
<td>SRS.01.04_659</td>
<td>The OMPS Nadir Total Column algorithm shall calculate the earth view radiance with a</td>
<td>P</td>
<td>SDR</td>
<td>S-NPP</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Test</td>
<td>NA</td>
<td>NA</td>
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<th>Product Type</th>
<th>Mission Effectivity</th>
<th>Allocated To</th>
<th>Block Start</th>
<th>Block End</th>
<th>Block 2.0.0 VM</th>
<th>Block 2.1.0 VM</th>
<th>Block 2.2.0 VM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The OMPS Nadir Total Column algorithm shall calculate and/or aggregate the earth view radiance with a horizontal cell size of 50 km or less at nadir.</td>
<td>P</td>
<td>SDR</td>
<td>JPSS-1</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Test</td>
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<td>NA</td>
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<tr>
<td>SRS.01.04_661</td>
<td>The OMPS Nadir Total Column SDR Geolocation algorithm computation shall have a one-sigma mapping uncertainty of 5 km.</td>
<td>P</td>
<td>GEO</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Test</td>
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<tr>
<td>SRS.01.04_492</td>
<td>The OMPS Nadir Total Column SDR software shall incorporate a computing algorithm provided for earth-view radiances.</td>
<td>Ap</td>
<td>SDR</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>algorithm provider</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>SRS.01.04_107</td>
<td>The OMPS Nadir Total Column SDR software shall set the &lt;FillField&gt; values to &lt;FillValue&gt; for &lt;FillCondition&gt; specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04) &lt;NTC_Science_SDR&gt;&lt;fill&gt;.</td>
<td>E</td>
<td>SDR</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SRS.01.04_100</td>
<td>The OMPS Nadir Total Column SDR software shall incorporate inputs specified in Table 3-1.</td>
<td>I</td>
<td>SDR</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SRS.01.04_119</td>
<td>The OMPS Nadir Total Column SDR Geolocation software shall</td>
<td>I</td>
<td>GEO</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
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<table>
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<th>Req ID</th>
<th>SRS 04 - Ozone Mapping and Profiler Suite-Total Column</th>
<th>Level 3 Type</th>
<th>Product Type</th>
<th>Mission Effectivity</th>
<th>Allocated To</th>
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<th>Block End</th>
<th>Block 2.0.0 VM</th>
<th>Block 2.1.0 VM</th>
<th>Block 2.2.0 VM</th>
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<tbody>
<tr>
<td></td>
<td>incorporate inputs specified in Table 3-1.</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>SRS.01.04_662</td>
<td>The OMPS Nadir Total Column</td>
<td>Ft</td>
<td>SDR</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
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<tr>
<td></td>
<td>SDR software shall ingest input tables and coefficients formatted in accordance with Section 7 of the JPSS Algorithm Specification Vol II: Data Dictionary for OMPS NP RDR/SDR (474-00448-02-04).</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>SRS.01.04_67</td>
<td>The OMPS RDR software shall generate the OMPS Nadir Total Column Diagnostic Calibration RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04)&lt;NTC_RDR&gt;&lt;DiagCal&gt;.</td>
<td>F</td>
<td>RDR</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SRS.01.04_68</td>
<td>The OMPS RDR software shall generate the OMPS Nadir Total Column Diagnostic Earth View RDR from mission data packet APIDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04)&lt;NTC_RDR&gt;&lt;DiagEarthView&gt;.</td>
<td>F</td>
<td>RDR</td>
<td>S-NPP JPSS-1 JPSS-2</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
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</tbody>
</table>

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<p>| Req ID     | SRS 04 - Ozone Mapping and Profiler Suite-Total Column                                                                                           | Level 3 Type | Product Type | Mission Effectivity | Allocated To   | Block Start | Block End | Block 2.0.0 VM | Block 2.1.0 VM | Block 2.2.0 VM | Inspection | |-------|-------------------------------------------------------------------------------------------------|----------------|---------------|-------------------|--------------|-------------|-----------|----------------|----------------|----------------|-------------|
| SRS.01.04_69 | The OMPS RDR software shall generate the OMPS Science Nadir Total Column Calibration RDR from mission data packet API IDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04)&lt;NTC_RDR&gt;&lt;Cal&gt;.  | F             | RDR           | S-NPP           | CGS               | 2.0.0        | 3.0.0     | Inspection   | NA             | NA             |             | | SRS.01.04_70 | The OMPS RDR software shall generate the OMPS Science Nadir Total Column Earth View RDR from mission data packet API IDs specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04)&lt;NTC_RDR&gt;&lt;Science&gt;. | F             | RDR           | S-NPP           | CGS               | 2.0.0        | 3.0.0     | Inspection   | NA             | NA             |             | | SRS.01.04_99 | The OMPS Nadir Total Column SDR software shall generate the OMPS Nadir Total Column Science SDR, conforming to the XML format file in Attachment A.4 of the JPSS Algorithm Specification Vol II: Data Dictionary for OMPS Total Column RDR/SDR (474-00448-02-04). | F             | SDR           | S-NPP           | CGS               | 2.0.0        | 3.0.0     | Inspection   | NA             | NA             |             | | SRS.01.04_118| The OMPS Nadir Total Column SDR software shall generate the OMPS Nadir Total Column Science SDR geolocation in | Fg            | GEO           | S-NPP           | CGS               | 2.0.0        | 3.0.0     | Inspection   | NA             | NA             |             |</p>
<table>
<thead>
<tr>
<th>Req ID</th>
<th>SRS 04 - Ozone Mapping and Profiler Suite-Total Column</th>
<th>Level 3 Type</th>
<th>Product Type</th>
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<th>Block 2.2.0 VM</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>conformance with the XML format file in Attachment A.3 of the JPSS Algorithm Specification Vol II: Data Dictionary for OMPS Total Column RDR/SDR (474-00448-02-04).</td>
<td>Q</td>
<td>SDR</td>
<td>S-NPP</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SRS.01.04_116</td>
<td>The OMPS Nadir Total Column SDR software shall report for each &lt;FlagScope&gt; quality flags using &lt;FlagLogic&gt; as specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04) &lt;NTC_Science_SDR&gt;&lt;QF&gt;.</td>
<td>Q</td>
<td>GEO</td>
<td>S-NPP</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SRS.01.04_499</td>
<td>The OMPS Nadir Total Column SDR GEO software shall report for each &lt;FlagScope&gt; quality flags using &lt;FlagLogic&gt; as specified in the JPSS Algorithm Specification Vol IV: SRSPF for OMPS Total Column RDR/SDR (474-00448-04-04) &lt;NTC_Sci_GEO&gt;&lt;QF&gt;.</td>
<td>Ai</td>
<td>SDR</td>
<td>S-NPP</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SRS.01.04_495</td>
<td>The JPSS Common Ground System shall execute the OMPS Nadir Total Column earth view radiance algorithm.</td>
<td>Ai</td>
<td>GEO</td>
<td>S-NPP</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>SRS.01.04_496</td>
<td>The JPSS Common Ground System shall execute the OMPS</td>
<td>Ai</td>
<td>GEO</td>
<td>S-NPP</td>
<td>CGS</td>
<td>2.0.0</td>
<td>3.0.0</td>
<td>Inspection</td>
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</tbody>
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<th>Block 2.0.0 VM</th>
<th>Block 2.1.0 VM</th>
<th>Block 2.2.0 VM</th>
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<tbody>
<tr>
<td></td>
<td>Nadir Total Column science SDR geolocation algorithm.</td>
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