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Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the VIIRS Imagery



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**Goddard Space Flight
Center Greenbelt, Maryland**

Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the VIIRS Imagery

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Preface

This document is under JPSS Ground 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.

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1 INTRODUCTION

1.1 Scope

The Joint Polar Satellite System (JPSS) Algorithm Specification for VIIRS Imagery - Volume II: Data Dictionary contains the specifications for the format of the VIIRS Imagery Intermediate Products (IPs) and Environmental Data Records (EDRs). 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 Vol 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 Intermediate Product associated with this algorithm grouping.
Section 5	Provides a description of the contents of each JPSS EDR associated with this algorithm grouping.
Section 6	Provides a description of the Ancillary and Auxiliary Data Inputs if applicable.
Section 7	Provides a description of relevant Look-Up Tables (LUTs) and Processing Coefficient Tables (PCTs) associated with this algorithm grouping.
Appendix A	Provides the Data Mnemonic to Interface Mapping for the data products in this volume.
Appendix B	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 C	Reference 470-00041, JPSS Program Lexicon.
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
474-00448-01-26	JPSS Algorithm Specification Volume I: Software Requirements Specification (SRS) for the VIIRS Imagery

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

The following paragraphs describe the structure and contents of the IP and EDR granules formed by the JPSS ground processing software.

3.1 Intermediate Products and Environmental Data Records HDF5 Details - Statically Sized

Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, depicts the HDF5 IP/EDR organization as a Unified Modeling Language (UML) class diagram. Each HDF5 IP/EDR 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_Agg) and Granule Datasets (Collection Short Name_Gran_n) - where n indicates the nth granule in a temporal aggregation of granules (1 .. n). A granule is a general term used to describe the minimum quanta of data collected per processing period, generally on the order of seconds. For the definition and organization of the metadata attributes contained in the HDF5 files, see the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms. Attributes that are specific to a particular IP/EDR are listed with the specific IP/EDR's data format definition. For the generalized formats and packaging options for the Geolocation data, see the JPSS CDFCB-X Vol. I - Overview.

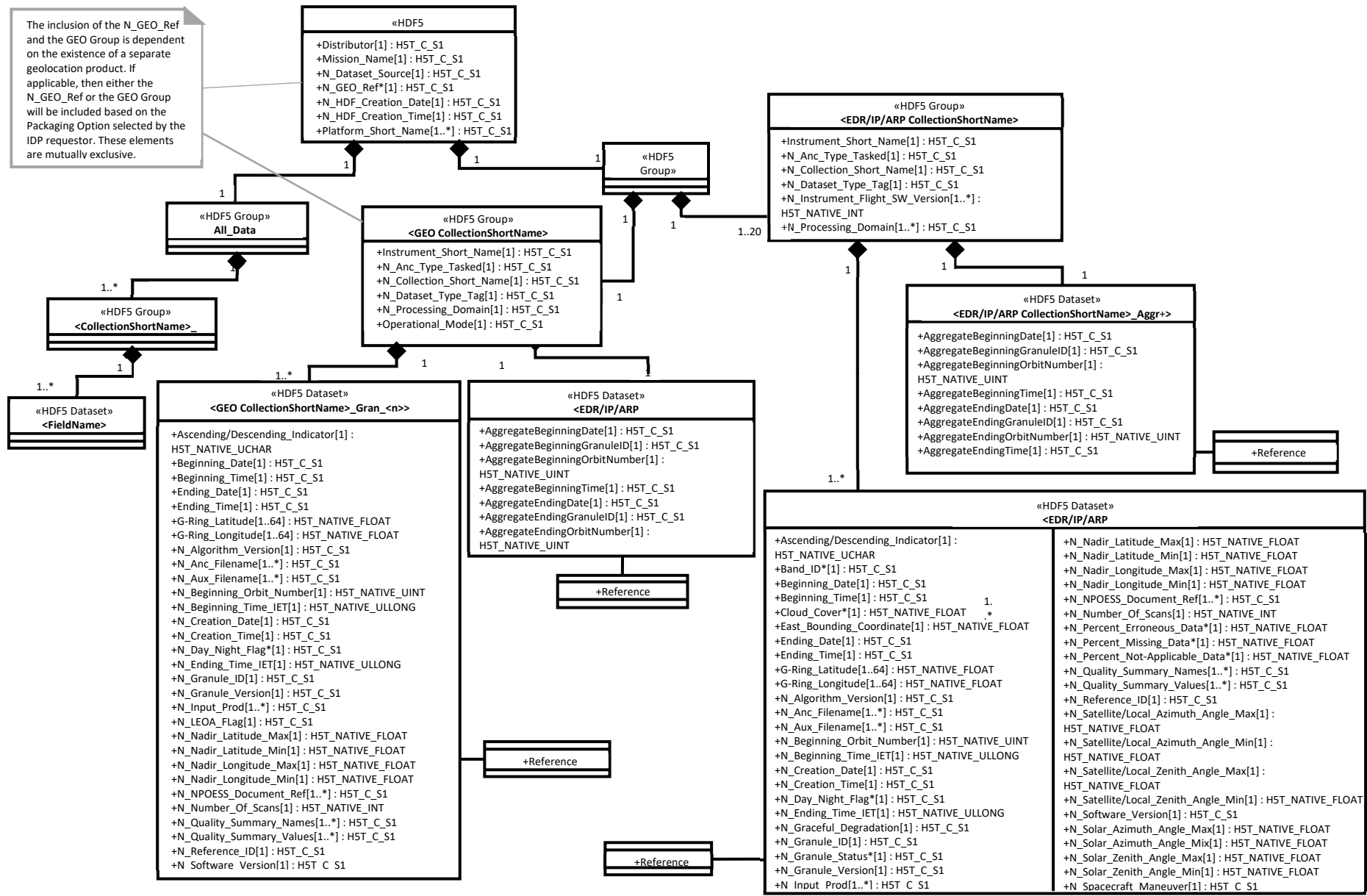


Figure: 3.1-1 Generalized UML Diagram for statically sized HDF5 IP/EDR Files

3.2 Intermediate Products, Application Related Products and Environmental Data Records HDF5 Details - Dynamically Sized

Figure 3.2-1, Generalized UML Diagram for dynamically sized HDF5 IP/EDR Files, depicts the HDF5 IP/EDR organization as a Unified Modeling Language (UML) class diagram for products that contain dynamically sized fields. Dynamically sized means that a field's length will vary from granule to granule. The organization of the HDF5 file is identical to the statically sized HDF5 file with the exception of the aggregation and corresponding All_Data group. For statically sized products, the object ID stored in the aggregation array points to a Dataset_Array under the All_Data group. This Dataset_Array is a single HDF5 dataset for each field. This single HDF5 dataset contains all the data for all granules in the file for a given field. However, for dynamically sized products, the object ID stored in the aggregation array points to an HDF5 group instead. This HDF5 group contains one or more datasets - a separate dataset for each granule for a given field. The dataset is named "Dataset_Array_Gran_n".



4 INTERMEDIATE PRODUCTS (IPS)

Not Applicable

5 VIIRS ENVIRONMENTAL DATA RECORDS (EDRS)

Environmental Data Records (EDRs) are data records that contain the environmental parameters or imagery generated by the JPSS system as products deliverable to the user. The JPSS and S-NPP required set of EDRs are defined in 474-01541, Joint Polar Satellite System (JPSS) Ground Segment Requirements Document (GSRD). An EDR is either an official EDR, which means that it is part of the set of official JPSS Data Products, or it is a substitute EDR. A substitute EDR is produced by substitute ancillary data, data defined by the IDP operator in order to create a data product using different input (specifically, different ancillary data) than that which is prescribed by JPSS. EDRs provide stable measurements useful for long-term trends. An EDR contains the following:

- EDR specific data (as described in each section)
- Appropriate geolocation values
- Quality Flags
- Metadata represented as Attributes in the HDF5 file that are provided at the granule and aggregation level
- The EDRs are separated by category and are presented alphabetically within each category. All S-NPP EDRs are also delivered during JPSS, thus only those EDRs which are JPSS-only are annotated as such within their respective Description/Purpose section of their interface definition.

Imagery products contain two primary data fields:

- A two-dimensional array of locally averaged absolute in-band radiances at the Top of the Atmosphere (TOA) measured in the direction of the viewing sensor
- The corresponding array of Brightness Temperatures (also referred to as Equivalent Black Body Temperatures - EBBTs) if the band is primarily emissive or the corresponding array TOA reflectance if the band is primarily reflective during the daytime

Notes:

All Imagery EDRs are produced in a Ground Track Mercator (GTM) projection.

There are multiple EDRs produced for Imagery products, depending on sensor data availability:

- VIIRS Imagery EDRs
 - I-Band Imagery EDRs
 - I1-Band Imagery EDR
 - I2-Band Imagery EDR
 - I3-Band Imagery EDR
 - I4-Band Imagery EDR
 - I5-Band Imagery EDR

- M-Band Imagery EDRs
 - M1-Band Imagery EDR
 - M2-Band Imagery EDR
 - M3-Band Imagery EDR
 - M4-Band Imagery EDR
 - M5-Band Imagery EDR
 - M6-Band Imagery EDR
 - M7-Band Imagery EDR
 - M8-Band Imagery EDR
 - M9-Band Imagery EDR
 - M10-Band Imagery EDR
 - M11-Band Imagery EDR
 - M12-Band Imagery EDR
 - M13-Band Imagery EDR
 - M14-Band Imagery EDR
 - M15-Band Imagery EDR
 - M16-Band Imagery EDR
- Near Constant Contrast Imagery EDR

Table: 5-1 VIIRS Imagery EDRs

Sensors	VIIRS
Effectivity	S-NPP and JPSS
EDR Contents	For each pixel, the I-Band Imagery EDRs (I1 - I5) contain: • Calibrated TOA radiances and reflectances (Reflective Bands: I1-I3) • Calibrated TOA reflectance's and EBBTs (Emissive Bands: I4-I5) • Quality flags For each pixel, the M-Band Imagery EDRs, (M1-M16) contain: • Calibrated TOA radiances and reflectance's (Reflective Bands: M1-M11) • Calibrated TOA radiances and EBBTs (Emissive Bands: M12-M16) For each pixel, the NCC Imagery EDR contains:

	• NCC Imagery Data - Albedo (Normalized TOA Reflectance ... no atmospheric correction applied) • Quality flags
--	---

5.1 VIIRS I-Band Imagery

Data Mnemonic	EDRE-IMAG-C0030 (Official)
Description/ Purpose	The VIIRS I-Band Imagery radiances, reflectances, and brightness temperatures are characterized by a 375m Horizontal Reporting Interval (HRI). These products are mapped from the 375m VIIRS SDR Imagery Resolution Geolocation to a GTM projection. The “PixelRowSDR” and “PixelColSDR” geolocation fields provide the SDR row and column coordinate for each GTM pixel mapping. The pixel level geolocation quality flag “QF1_VIIRSGTMGEO” provides a flag that indicates whether a pixel has crossed a granule boundary during the SDR to GTM mapping process. If a granule boundary was crossed, the original SDR pixel may be located using effectivity time or the N_Input_Prod standard metadata item may be used to obtain the N_Reference_ID for each SDR granule. The calibrated radiances at TOA for bands I1 - I3 are under daytime conditions. The calibrated radiances at TOA for bands I4 - I5 are under daytime and nighttime conditions. This data is reported in W/(m² sr um). The calibrated reflectances at TOA for bands I1 - I3 are under daytime conditions and are unitless. The calibrated EBBT for bands I4 - I5 are under daytime and nighttime conditions. This data is reported in Kelvin.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details.
File Size	Estimated Granule Size: See VIIRS I-Band Imagery EDR Data Content Summary - Bands I1-I3 and see VIIRS I-Band Data Content Summary – Bands I4-I5 for size. Geolocation Estimated Granule Size: See VIIRS I-Band Imagery GTM EDR Geolocation Data Content Summary for size.
File Format Type	HDF5
Data Content and Data Format	See VIIRS I-Band Imagery EDR Data Content Summaries, VIIRS I-Band Imagery EDR Product Profiles and VIIRS I-Band Imagery EDR HDF5 Details See VIIRS I-Band Imagery EDR GTM Geolocation Details See VIIRS I-Band Imagery EDR GTM Geolocation Data Summary See VIIRS I-Band Imagery EDR GTM Geolocation Product Profile See VIIRS I-Band Imagery EDR GTM Geolocation HDF5 Details See VIIRS I-Band Imagery EDR GTM Geolocation HDF5 Metadata Details

5.1.1 VIIRS I1-Band Imagery EDR

5.1.1.1 VIIRS I1-Band Imagery EDR Data Content Summary

VIIRS I1 - I3 Bands (daytime only) are reflective bands and contain calibrated TOA radiances and reflectances. Bands I4 and I5 (daytime and nighttime) are emissive bands and contain calibrated TOA radiances and EBBTs. See each band's product profile for full product details. VIIRS I-Band Data Content Summary lists the content of the I-Band granule. Note that only one of the five bands will appear in any single data product's granule.

Table: 5.1.1.1-1 VIIRS I1 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	W/(m2 sr um)
Reflectance	TOA reflectances (daytime only)	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	unitless
QF1_VIIRSIMGEDR	Pixel Level Quality Flags	unsigned 8-bit char	[N*1541, 8241]	[1541, 8241]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m2 sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	unitless
File Size	63,496,924 Bytes				

5.1.1.2 VIIRS I1-Band Imagery EDR Product Profile

VIIRS I1 Band Imagery EDR Product Profile lists product profile details. Note that only one of the five bands will appear in any single data product's granule.

Table: 5.1.1-2 VIIRS I1 Imagery EDR Product Profile**VIIRS I1-Band Imagery Product Profile**

Fields																	
Name	Data Size	Dimensions															
Radiance	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size										
		AlongTrack		Yes	No	1541	1541										
		CrossTrack		No	No	8241	8241										
		Datum															
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Top of Atmosphere radiances for the I1-Band				0	-0.41	861.60	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer					
													Name		Value	Name	Value
													NA_UINT16_FILL		65535		
													MISS_UINT16_FILL		65534		
													ONBOARD_PT_UINT16_FILL		65533		
											ONGROUND_PT_UINT16_FILL		65532				
											ERR_UINT16_FILL		65531				
											ELLIPSOID_UINT16_FILL		65530				
											VDNE_UINT16_FILL		65529				
											SOUB_UINT16_FILL		65528				

Reflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		AlongTrack	Yes	No	1541	1541								
		CrossTrack	No	No	8241	8241								
Datum														
Description					Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
Top of Atmosphere Reflectances (Daytime only) for the I1-Band					0	0.00	1.60	unitless	Yes	ReflectanceFactors	unsigned 16-bit integer	Name	Value	Name Value
												NA_UINT16_FILL	65535	
												MISS_UINT16_FILL	65534	
												ONBOARD_PT_UINT16_FILL	65533	
												ONGROUND_PT_UINT16_FILL	65532	
												ERR_UINT16_FILL	65531	
												ELLIPSOID_UINT16_FILL	65530	
												VDNE_UINT16_FILL	65529	
											SOUB_UINT16_FILL	65528		

VIIRS I1-Band Imagery Product Profile - Quality Flags

Fields													
Name	Data Size	Dimensions											
QF1_VIIRSIMGEDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	1541	1541							
		CrossTrack	No	No	8241	8241							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Imagery Quality (Pixel Quality as determined by the SDR Calibration Quality. Dead Pixel Replacement: Individual bad pixels caused by a bad detector are filled as an average of the two adjacent detector pixels. Bad edge-of-scan pixels use the adjacent pixel value. If two adjacent pixels are dead, a fill value is used for each pixel.)	0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name	Value	
										Good	0		
										Poor	1		
										No Calibration	2		
										Dead Pixel Replacement	3		
Pixel is Saturated	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value				
								False	0				
								True	1				
Missing Data (Data required for calibration processing is not available for processing)	3	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name	Value			
									All data present	0			
									Earth View RDR data missing	1			
									Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing	2			
									Thermistor Data Missing	3			
Out of Range	5	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name	Value			
									All data within range	0			
									Radiance out of range	1			
									Reflectance out of range	2			
									Both Radiance and Reflectance out of range	3			
Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value				
PadByte1	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	3	3							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Pad byte	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name Value	Name Value		

VIIRS I1-Band Imagery Product Profile - Scale Factors

Fields														
Name	Data Size	Dimensions												
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	2	2								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value			
ReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	2	2								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	unitless	No		32-bit floating point	Name Value	Name Value			

5.1.1.3 VIIRS I1 Imagery EDR HDF5 Details

Figure below provides the details on the content and data types of the I1 Imagery products. These UML diagrams provide details at the product level only. In addition to these UML diagrams, refer to Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

The I-Band Imagery products within the HDF5 files can be found within the Data_Products group with the group names of VIIRS-I1-EDR, VIIRS-I2-EDR, VIIRS-I3-EDR, VIIRS-I4-EDR, and VIIRS-I5-EDR, depending on the specific data product contained in the file. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

VIIRS-I1-IMG-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+QF1_VIIRSIMGEDR : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.1.1.3-1 VIIRS I1 Imagery EDR UML Diagram

5.1.1.3.1 VIIRS I1 Imagery EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the I-Band Imagery EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The I-Band Imagery metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for this product, VIIRS I1 Imagery EDR Quality Summary Metadata Values, provide the following items as name/value pairs. The listed name/value pair items in the table are the granule level quality flags for the VIIRS I-Band Imagery EDRs.

Note that there is a standard granule level metadata item that identifies the Imagery Band. This metadata item is the “Band_ID” and is set to “I1”, “I2”, “I3”, “I4” or “I5”.

Table: 5.1.1.3.1-1 VIIRS I1 Imagery EDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary Imagery Quality	0 – 100	Percent of good quality pixels in granule	
Summary Range Check	0 – 100	Percent of measured radiances in granule outside of required range	
Summary Saturated Pixel	0 – 100	Percent of saturated pixels in granule	

5.1.2 VIIRS I2 Imagery EDR

5.1.2.1 VIIRS I2 Imagery EDR Data Content Summary

VIIRS I1 - I3 Bands (daytime only) are reflective bands and contain calibrated TOA radiances and reflectances. VIIRS I2 Imagery EDR Data Content Summary lists the contents of the I2 Band.

Table: 5.1.2.1-1 VIIRS I2 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	W/(m ² sr um)
Reflectance	TOA reflectances (daytime only)	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	unitless
QF1_VIIRSIMGEDR	Pixel Level Quality Flags	unsigned 8-bit char	[N*1541, 8241]	[1541, 8241]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	unitless
File Size	63,496,924 Bytes				

5.1.2.2 VIIRS I2 Imagery EDR Product Profile

VIIRS I2 Imagery EDR Product Profile lists product profile details. Note that only one of the five bands will appear in any single data product's granule.

Table: 5.1.2.2-1 VIIRS I2 Imagery EDR Product Profile

VIIRS I2-Band Imagery Product Profile

Fields						
Name	Data Size	Dimensions				
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
		AlongTrack	Yes	No	1541	1541
		CrossTrack	No	No	8241	8241
		Datum				

		<table><tr><th>Description</th><th>Datum Offset</th><th>Unscaled Valid Range Min</th><th>Unscaled Valid Range Max</th><th>Measurement Units</th><th>Scaled</th><th>Scale Factor Name</th><th>Data Type</th><th colspan="2">Fill Values</th><th colspan="2">Legend Entries</th></tr><tr><td>Top of Atmosphere radiances for the I2-Band</td><td>0</td><td>-0.24</td><td>418.80</td><td>W/(m2 sr um)</td><td>Yes</td><td>RadianceFactors</td><td>unsigned 16-bit integer</td><td><table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table></td><td><table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td></td></tr></table></td></tr></table>	Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		Top of Atmosphere radiances for the I2-Band	0	-0.24	418.80	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td></td></tr></table>	Name	Value		
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																																				
Top of Atmosphere radiances for the I2-Band	0	-0.24	418.80	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td></td></tr></table>	Name	Value																	
Name	Value																																													
NA_UINT16_FILL	65535																																													
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ELLIPSOID_UINT16_FILL	65530																																													
VDNE_UINT16_FILL	65529																																													
SOUB_UINT16_FILL	65528																																													
Name	Value																																													

| Reflectance | 2byte(s) | | Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size | |------------|------------------|---------|----------------|----------------| | AlongTrack | Yes | No | 1541 | 1541 | | CrossTrack | No | No | 8241 | 8241 | | Datum | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |---|--------------|--------------------------|--------------------------|-------------------|--------|--------------------|-------------------------|--|------|----------------|----------------|-------|------------------|-------|------------------------|-------|-------------------------|-------|-----------------|-------|-----------------------|-------|------------------|-------|------------------|-------|--|------|-------|--|--| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | | | | | | | | | | | | | | | | | | | | | | | Top of Atmosphere Reflectances (Daytime only) for the I2-Band | 0 | 0.00 | 1.60 | unitless | Yes | ReflectanceFactors | unsigned 16-bit integer | <table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table> | Name | Value | NA_UINT16_FILL | 65535 | MISS_UINT16_FILL | 65534 | ONBOARD_PT_UINT16_FILL | 65533 | ONGROUND_PT_UINT16_FILL | 65532 | ERR_UINT16_FILL | 65531 | ELLIPSOID_UINT16_FILL | 65530 | VDNE_UINT16_FILL | 65529 | SOUB_UINT16_FILL | 65528 | <table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td></td></tr></table> | Name | Value | | | | Name | Value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | NA_UINT16_FILL | 65535 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | MISS_UINT16_FILL | 65534 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ONBOARD_PT_UINT16_FILL | 65533 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ONGROUND_PT_UINT16_FILL | 65532 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ERR_UINT16_FILL | 65531 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ELLIPSOID_UINT16_FILL | 65530 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | VDNE_UINT16_FILL | 65529 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | SOUB_UINT16_FILL | 65528 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Name | Value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

VIIRS I2-Band Imagery Product Profile - Quality Flags

		Fields													
Name	Data Size	Dimensions													
QF1_VIIRSIMGEDR	1byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		AlongTrack	Yes	No	1541	1541									
		CrossTrack	No	No	8241	8241									
		Datum													
		Description					Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Imagery Quality (Pixel Quality as determined by the SDR Calibration Quality. Dead Pixel Replacement: Individual bad pixels caused by a bad detector are filled as an average of the two adjacent detector pixels. Bad edge-of-scan pixels use the adjacent pixel value. If two adjacent pixels are dead, a fill value is used for each pixel.)					0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	NameValue	NameValue
														Good0	
														Poor1	
														No Calibration2	
														Dead Pixel Replacement3	
Pixel is Saturated					2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	NameValue	NameValue		
													False0		
													True1		
Missing Data (Data required for calibration processing is not available for processing)					3	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	NameValue	NameValue		
													All data present0		
													Earth View RDR data missing1		
													Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing2		
													Thermistor Data Missing3		
Out of Range					5	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	NameValue	NameValue		
													All data within range0		
													Radiance out of range1		
													Reflectance out of range2		

												Both Radiance and Reflectance out of range	3
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value		
PadByte1	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	3	3							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Pad byte	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name Value	Name Value		

VIIRS I2-Band Imagery Product Profile - Scale Factors

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

5.1.2.3 VIIRS I2 Imagery EDR HDF5 Details

Figure below details on the content and data types of the I2 Imagery products. These UML diagrams provide details at the product level only. In addition to these UML diagrams, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

The I-Band Imagery products within the HDF5 files can be found within the Data_Products group with the group names of VIIRS-I1-EDR, VIIRS-I2-EDR, VIIRS-I3-EDR, VIIRS-I4-EDR, and VIIRS-I5-EDR, depending on the specific data product contained in the file. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

VIIRS-I2-IMG-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+QF1_VIIRSIMGEDR : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.1.2.3-1 VIIRS I2 Imagery EDR UML Diagram

5.1.2.3.1 VIIRS I2 Imagery EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the I-Band Imagery EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The I-Band Imagery metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for this product, VIIRS I2 Imagery EDR Quality Summary Metadata Values, provide the following items as name/value pairs. The listed name/value pair items in the table are the granule level quality flags for the VIIRS I-Band Imagery EDRs.

Note that there is a standard granule level metadata item that identifies the Imagery Band. This metadata item is the “Band_ID” and is set to “I1”, “I2”, “I3”, “I4” or “I5”.

Table: 5.1.2.3.1-1 VIIRS I2 Imagery EDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary Imagery Quality	0 - 100	Percent of good quality pixels in granule	
Summary Range Check	0 - 100	Percent of measured radiances in granule outside of required range	
Summary Saturated Pixel	0 - 100	Percent of saturated pixels in granule	

5.1.3 VIIRS I3 Imagery EDR

5.1.3.1 VIIRS I3 Imagery EDR Data Content Summary

VIIRS I1 - I3 Bands (daytime only) are reflective bands and contain calibrated TOA radiances and reflectances. VIIRS I3 Data Content Summary lists the contents of the I3 Band.

Table: 5.1.3.1-1 VIIRS I3 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	W/(m ² *sr*micro-m)
Reflectance	TOA reflectances (daytime only)	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	unitless
QF1_VIIRSIMGEDR	Pixel Level Quality Flags	unsigned 8-bit char	[N*1541, 8241]	[1541, 8241]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² *sr*micro-m)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	unitless
File Size	63,496,924 Bytes				

5.1.3.2 VIIRS I3 Imagery EDR Product Profile

VIIRS I3 Imagery EDR Product Profile lists product profile details. Note that only one of the five bands will appear in any single data product's granule.

Table: 5.1.3.2-1 VIIRS I3 Imagery EDR Product Profile

VIIRS I3-Band Imagery Product Profile

Fields						
Name	Data Size	Dimensions				
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
		AlongTrack	Yes	No	1541	1541

		CrossTrack	No	No	8241	8241																											
		Datum																															
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																				
		Top of Atmosphere radiances for the I3-Band		0	-0.21	87.00	W/(m^2*sr*micro-m)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>		Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																														
		NA_UINT16_FILL	65535																														
		MISS_UINT16_FILL	65534																														
		ONBOARD_PT_UINT16_FILL	65533																														
		ONGROUND_PT_UINT16_FILL	65532																														
		ERR_UINT16_FILL	65531																														
		ELLIPSOID_UINT16_FILL	65530																														
		VDNE_UINT16_FILL	65529																														
		SOUB_UINT16_FILL	65528																														
		Name	Value																														
Reflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																											
		AlongTrack	Yes	No	1541	1541																											
		CrossTrack	No	No	8241	8241																											
		Datum																															
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																				
		Top of Atmosphere Reflectances (Daytime only) for the I3-Band		0	0.00	1.60	unitless	Yes	ReflectanceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>		Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																														
		NA_UINT16_FILL	65535																														
		MISS_UINT16_FILL	65534																														
		ONBOARD_PT_UINT16_FILL	65533																														
		ONGROUND_PT_UINT16_FILL	65532																														
		ERR_UINT16_FILL	65531																														
		ELLIPSOID_UINT16_FILL	65530																														
		VDNE_UINT16_FILL	65529																														
SOUB_UINT16_FILL	65528																																
Name	Value																																

VIIRS I3-Band Imagery Product Profile - Quality Flags

		Fields																									
Name	Data Size	Dimensions																									
QF1_VIIRSIMGEDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																					
		AlongTrack	Yes	No	1541	1541																					
		CrossTrack	No	No	8241	8241																					
		Datum																									
		Description					Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
		Imagery Quality (Pixel Quality as determined by the SDR Calibration Quality. Dead Pixel Replacement: Individual bad pixels caused by a bad detector are filled as an average of the two adjacent detector pixels. Bad edge-of-scan pixels use the adjacent pixel value. If two adjacent pixels are dead, a fill value is used for each pixel.)					0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value <table><tr><td></td><td>Good</td><td>0</td></tr><tr><td></td><td>Poor</td><td>1</td></tr><tr><td></td><td>No Calibration</td><td>2</td></tr><tr><td></td><td>Dead Pixel Replacement</td><td>3</td></tr></table>		Good	0		Poor	1		No Calibration	2		Dead Pixel Replacement	3	
			Good	0																							
			Poor	1																							
			No Calibration	2																							
			Dead Pixel Replacement	3																							
Pixel is Saturated					2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value <table><tr><td></td><td>False</td><td>0</td></tr><tr><td></td><td>True</td><td>1</td></tr></table>		False	0		True	1									
	False	0																									
	True	1																									
Missing Data (Data required for calibration processing is not available for processing)					3	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value <table><tr><td></td><td>Name</td><td>Value</td></tr><tr><td></td><td>All data present</td><td>0</td></tr><tr><td></td><td>Earth View RDR data missing</td><td>1</td></tr><tr><td></td><td>Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing</td><td>2</td></tr><tr><td></td><td>Thermistor Data Missing</td><td>3</td></tr></table>		Name	Value		All data present	0		Earth View RDR data missing	1		Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing	2		Thermistor Data Missing	3
	Name	Value																									
	All data present	0																									
	Earth View RDR data missing	1																									
	Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing	2																									
	Thermistor Data Missing	3																									
Out of Range					5	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value <table><tr><td></td><td>Name</td><td>Value</td></tr><tr><td></td><td>All data within range</td><td>0</td></tr></table>		Name	Value		All data within range	0									
	Name	Value																									
	All data within range	0																									

VIIRS I3-Band Imagery Product Profile - Scale Factors

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.

5.1.3.3 VIIRS I3 Imagery EDR HDF5 Details

Figure below provides the details on the content and data types of the I3 Imagery products. These UML diagrams provide details at the product level only. In addition to these UML diagrams, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

The I-Band Imagery products within the HDF5 files can be found within the Data_Products group with the group names of VIIRS-I1-EDR, VIIRS-I2-EDR, VIIRS-I3-EDR, VIIRS-I4-EDR, and VIIRS-I5-EDR, depending on the specific data product contained in the file. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

VIIRS-I3-IMG-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+QF1_VIIRSIMGEDR : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.1.3.3-1 VIIRS I3 Imagery EDR UML Diagram

5.1.3.3.1 VIIRS I3 Imagery EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the I-Band Imagery EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The I-Band Imagery metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for this product, VIIRS I3 Imagery EDR Quality Summary Level Metadata Values, provide the following items as name/value pairs. The listed name/value pair items in the table are the granule level quality flags for the VIIRS I-Band Imagery EDRs.

Note that there is a standard granule level metadata item that identifies the Imagery Band. This metadata item is the “Band_ID” and is set to “I1”, “I2”, “I3”, “I4” or “I5”.

Table: 5.1.3.3.1-1 VIIRS I3 Imagery EDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary Imagery Quality	0 - 100	Percent of good quality pixels in granule	
Summary Range Check	0 - 100	Percent of measured radiances in granule outside of required range	
Summary Saturated Pixel	0 - 100	Percent of saturated pixels in granule	

5.1.4 VIIRS I4 Imagery EDR

5.1.4.1 VIIRS I4 Imagery EDR Data Content Summary

VIIRS Bands I4 and I5 (daytime and nighttime) are emissive bands and contain calibrated TOA radiances and EBBTs. VIIRS I4 Imagery EDR Data Content Summary lists the contents of the I4 Band.

Table: 5.1.4.1-1 VIIRS I4 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	W/(m ² *sr*micro-m)
BrightnessTemperature	Top of Atmosphere Equivalent Blackbody Brightness Temperatures (daytime and nighttime)	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	Kelvin
QF1_VIIRSIMGEDR	Pixel Level Quality Flags	unsigned 8-bit char	[N*1541, 8241]	[1541, 8241]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² *sr*micro-m)
BrightnessFactors	Scale = 1st array element; Offset = 2nd array element for the Band brightness temperatures	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = Kelvin
File Size	63,496,924 Bytes				

5.1.4.2 VIIRS I4 Imagery EDR Product Profile

VIIRS I4 Imagery EDR Product Profile lists product profile details. Note that only one of the five bands will appear in any single data product's granule.

Table: 5.1.4.2-1 VIIRS I4 Imagery EDR Product Profile

VIIRS I4-Band Imagery Product Profile

Fields		
Name	Data Size	Dimensions

Radiance	2byte(s)	<table><tr><td>Name</td><td>Granule Boundary</td><td>Dynamic</td><td>Min Array Size</td><td>Max Array Size</td></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>1541</td><td>1541</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>8241</td><td>8241</td></tr></table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	1541	1541	CrossTrack	No	No	8241	8241														
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		AlongTrack	Yes	No	1541	1541																									
		CrossTrack	No	No	8241	8241																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Top of Atmosphere radiances for the I4-Band	0	-0.01	4.651	W/(m^2*sr*micro-m)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																												
		NA_UINT16_FILL	65535																												
		MISS_UINT16_FILL	65534																												
		ONBOARD_PT_UINT16_FILL	65533																												
		ONGROUND_PT_UINT16_FILL	65532																												
		ERR_UINT16_FILL	65531																												
		ELLIPSOID_UINT16_FILL	65530																												
VDNE_UINT16_FILL	65529																														
SOUB_UINT16_FILL	65528																														
Name	Value																														
Brightness Temperature	2byte(s)	<table><tr><td>Name</td><td>Granule Boundary</td><td>Dynamic</td><td>Min Array Size</td><td>Max Array Size</td></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>1541</td><td>1541</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>8241</td><td>8241</td></tr></table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	1541	1541	CrossTrack	No	No	8241	8241														
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		AlongTrack	Yes	No	1541	1541																									
		CrossTrack	No	No	8241	8241																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Top of Atmosphere Equivalent Blackbody Brightness Temperatures for the I4-Band	0	208.00	367.00	Kelvin	Yes	BrightnessFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																												
		NA_UINT16_FILL	65535																												
		MISS_UINT16_FILL	65534																												
		ONBOARD_PT_UINT16_FILL	65533																												
		ONGROUND_PT_UINT16_FILL	65532																												
		ERR_UINT16_FILL	65531																												
		ELLIPSOID_UINT16_FILL	65530																												
VDNE_UINT16_FILL	65529																														
SOUB_UINT16_FILL	65528																														
Name	Value																														

VIIRS I4-Band Imagery Product Profile - Quality Flags

Fields																									
Name	Data Size	Dimensions																							
QF1_VIIRSIMGEDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																			
		AlongTrack	Yes	No	1541	1541																			
		CrossTrack	No	No	8241	8241																			
		Datum																							
		Description					Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries										
		Imagery Quality (Pixel Quality as determined by the SDR Calibration Quality. Dead Pixel Replacement: Individual bad pixels caused by a bad detector are filled as an average of the two adjacent detector pixels. Bad edge-of-scan pixels use the adjacent pixel value. If two adjacent pixels are dead, a fill value is used for each pixel.)					0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	<table><tr><td>Name</td><td>Value</td></tr><tr><td>Good</td><td>0</td></tr><tr><td>Poor</td><td>1</td></tr><tr><td>No Calibration</td><td>2</td></tr><tr><td>Dead Pixel Replacement</td><td>3</td></tr></table>	Name	Value	Good	0	Poor	1	No Calibration	2	Dead Pixel Replacement	3
		Name	Value																						
		Good	0																						
		Poor	1																						
		No Calibration	2																						
		Dead Pixel Replacement	3																						
		Pixel is Saturated					2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	<table><tr><td>NameValue</td></tr><tr><td>False 0</td></tr><tr><td>True 1</td></tr></table>	Name Value	False 0	True 1							
		Name Value																							
		False 0																							
		True 1																							
		Missing Data (Data required for calibration processing is not available for processing)					3	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	<table><tr><td>Name</td><td>Value</td></tr><tr><td>All data present</td><td>0</td></tr><tr><td>Earth View RDR data missing</td><td>1</td></tr><tr><td>Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing</td><td>2</td></tr><tr><td>Thermistor Data Missing</td><td>3</td></tr></table>	Name	Value	All data present	0	Earth View RDR data missing	1	Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing	2	Thermistor Data Missing	3
		Name	Value																						
		All data present	0																						
		Earth View RDR data missing	1																						
Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing	2																								
Thermistor Data Missing	3																								

		Out of Range					5	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name	Value
															All data within range	0
															Radiance out of range	1
															EBBT out of range	2
			Both Radiance and EBBT out of range	3												
		Spare					7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value	

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

VIIRS I4-Band Imagery Product Profile - Scale Factors

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

5.1.4.3 VIIRS I4 Imagery EDR HDF5 Details

The Figure below provides the details on the content and data types of the I4 Imagery products. These UML diagrams provide details at the product level only. In addition to these UML diagrams, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

The I-Band Imagery products within the HDF5 files can be found within the Data_Products group with the group names of VIIRS-I1-EDR, VIIRS-I2-EDR, VIIRS-I3-EDR, VIIRS-I4-EDR, and VIIRS-I5-EDR, depending on the specific data product contained in the file. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

VIIRS-I4-IMG-EDR
+Radiance : H5T_NATIVE_USHORT
+BrightnessTemperature : H5T_NATIVE_USHORT
+QF1_VIIRSIMGEDR : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+BrightnessFactors : H5T_NATIVE_FLOAT

Figure: 5.1.4.3-1 VIIRS I4 Imagery EDR UML Diagram

5.1.4.3.1 VIIRS I4 Imagery EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the I-Band Imagery EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The I-Band Imagery metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for this product, VIIRS I4 Imagery EDR Quality Summary Metadata Values, provide the following items as name/value pairs. The listed name/value pair items in the table are the granule level quality flags for the VIIRS I-Band Imagery EDRs.

Note that there is a standard granule level metadata item that identifies the Imagery Band. This metadata item is the “Band_ID” and is set to “I1”, “I2”, “I3”, “I4” or “I5”.

Table: 5.1.4.3.1-1 VIIRS I4 Imagery EDR Quality Summary Metadata Values

N_Quality_Summary			
Name	Value	Description	Comments
Summary Imagery Quality	0 - 100	Percent of good quality pixels in granule	
Summary Range Check	0 - 100	Percent of measured radiances in granule outside of required range	
Summary Saturated Pixel	0 - 100	Percent of saturated pixels in granule	

5.1.5 VIIRS I5 Imagery EDR

5.1.5.1 VIIRS I5 Imagery EDR Data Content Summary

VIIRS Bands I4 and I5 (daytime and nighttime) are emissive bands and contain calibrated TOA radiances and EBBTs. VIIRS I5 Data Content Summary lists the contents of the I5 Band.

Table: 5.1.5.1-1 VIIRS I5 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	W/(m ² *sr*micro-m)
BrightnessTemperature	Top of Atmosphere Equivalent Blackbody Brightness Temperatures (daytime and nighttime)	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	Kelvin
QF1_VIIRSIMGEDR	Pixel Level Quality Flags	unsigned 8-bit char	[N*1541, 8241]	[1541, 8241]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
BrightnessFactors	Scale = 1st array element; Offset = 2nd array element for the Band brightness temperatures	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = Kelvin
File Size	63,496,924 Bytes				

5.1.5.2 VIIRS I5 Imagery EDR Product Profile

VIIRS I5 Imagery EDR Product Profile lists product profile details. Note that only one of the five bands will appear in any single data product's granule.

Table: 5.1.5.2-1 VIIRS I5 Imagery EDR Product Profile

VIIRS I5-Band Imagery Product Profile

Fields		
Name	Data Size	Dimensions

Radiance	2byte(s)	<table><tr><td>Name</td><td>Granule Boundary</td><td>Dynamic</td><td>Min Array Size</td><td>Max Array Size</td></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>1541</td><td>1541</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>8241</td><td>8241</td></tr></table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	1541	1541	CrossTrack	No	No	8241	8241														
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		AlongTrack	Yes	No	1541	1541																									
		CrossTrack	No	No	8241	8241																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Top of Atmosphere radiances for the I5-Band	0	-0.08	22.8967	W/(m^2*sr*micro-m)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																												
		NA_UINT16_FILL	65535																												
		MISS_UINT16_FILL	65534																												
ONBOARD_PT_UINT16_FILL	65533																														
ONGROUND_PT_UINT16_FILL	65532																														
ERR_UINT16_FILL	65531																														
ELLIPSOID_UINT16_FILL	65530																														
VDNE_UINT16_FILL	65529																														
SOUB_UINT16_FILL	65528																														
Name	Value																														
Brightness Temperature	2byte(s)	<table><tr><td>Name</td><td>Granule Boundary</td><td>Dynamic</td><td>Min Array Size</td><td>Max Array Size</td></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>1541</td><td>1541</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>8241</td><td>8241</td></tr></table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	1541	1541	CrossTrack	No	No	8241	8241														
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		AlongTrack	Yes	No	1541	1541																									
		CrossTrack	No	No	8241	8241																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Top of Atmosphere Equivalent Blackbody Brightness Temperatures for the I5-Band	0	150.00	380.00	Kelvin	Yes	BrightnessFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																												
		NA_UINT16_FILL	65535																												
		MISS_UINT16_FILL	65534																												
ONBOARD_PT_UINT16_FILL	65533																														
ONGROUND_PT_UINT16_FILL	65532																														
ERR_UINT16_FILL	65531																														
ELLIPSOID_UINT16_FILL	65530																														
VDNE_UINT16_FILL	65529																														
SOUB_UINT16_FILL	65528																														
Name	Value																														

VIIRS I5-Band Imagery Product Profile - Quality Flags

Fields																												
Name	Data Size	Dimensions																										
QF1_VIIRSIMGEDR	1byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>1541</td><td>1541</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>8241</td><td>8241</td></tr></table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	1541	1541	CrossTrack	No	No	8241	8241											
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																						
		AlongTrack	Yes	No	1541	1541																						
		CrossTrack	No	No	8241	8241																						
		Datum																										
		Description																										
			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																	
		Imagery Quality (Pixel Quality as determined by the SDR Calibration Quality. Dead Pixel Replacement: Individual bad pixels caused by a bad detector are filled as an average of the two adjacent detector pixels. Bad edge-of-scan pixels use the adjacent pixel value. If two adjacent pixels are dead, a fill value is used for each pixel.)	0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	<table><tr><th>Name</th><th>Value</th></tr><tr><td>Good</td><td>0</td></tr><tr><td>Poor</td><td>1</td></tr><tr><td>No Calibration</td><td>2</td></tr><tr><td>Dead Pixel Replacement</td><td>3</td></tr></table>	Name	Value	Good	0	Poor	1	No Calibration	2	Dead Pixel Replacement	3								
		Name	Value																									
		Good	0																									
Poor	1																											
No Calibration	2																											
Dead Pixel Replacement	3																											
Pixel is Saturated	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	<table><tr><th>Name</th><th>Value</th></tr><tr><td>False</td><td>0</td></tr><tr><td>True</td><td>1</td></tr></table>	Name	Value	False	0	True	1														
Name	Value																											
False	0																											
True	1																											
Missing Data (Data required for calibration processing is not available for processing)	3	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	<table><tr><th>Name</th><th>Value</th></tr><tr><td>All data present</td><td>0</td></tr><tr><td>Earth View RDR data missing</td><td>1</td></tr><tr><td>Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing</td><td>2</td></tr><tr><td>Thermistor Data Missing</td><td>3</td></tr></table>	Name	Value	All data present	0	Earth View RDR data missing	1	Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing	2	Thermistor Data Missing	3										
Name	Value																											
All data present	0																											
Earth View RDR data missing	1																											
Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing	2																											
Thermistor Data Missing	3																											

		Out of Range	5	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name	Value
											All data within range	0
											Radiance out of range	1
											EBBT out of range	2
											Both Radiance and EBBT out of range	3
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value	

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

VIIRS I5-Band Imagery Product Profile - Scale Factors

Fields														
Name	Data Size	Dimensions												
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	2	2								
		Datum												
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Scale = first array element; Offset = second array element				0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value
BrightnessFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	2	2								
		Datum												
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		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

5.1.5.3 VIIRS I5 Imagery EDR HDF5 Details

The Figure below provides the details on the content and data types of the I5 Imagery products. These UML diagrams provide details at the product level only. In addition to these UML diagrams, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

The I-Band Imagery products within the HDF5 files can be found within the Data_Products group with the group names of VIIRS-I1-EDR, VIIRS-I2-EDR, VIIRS-I3-EDR, VIIRS-I4-EDR, and VIIRS-I5-EDR, depending on the specific data product contained in the file. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

VIIRS-I5-IMG-EDR
+Radiance : H5T_NATIVE_USHORT
+BrightnessTemperature : H5T_NATIVE_USHORT
+QF1_VIIRSIMGEDR : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+RadianceFactors : H5T_NATIVE_FLOAT
+BrightnessFactors : H5T_NATIVE_FLOAT

Figure: 5.1.5.3-1 VIIRS I5 Imagery EDR UML Diagram

5.1.5.3.1 VIIRS I5 Imagery EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the I-Band Imagery EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The I-Band Imagery metadata includes all common metadata at the root, product, aggregation, and granule level.

In addition to the common metadata items for this product, VIIRS I5 Imagery EDR Quality Summary Metadata Values, provide the following items as name/value pairs. The listed name/value pair items in the table are the granule level quality flags for the VIIRS I-Band Imagery EDRs.

Note that there is a standard granule level metadata item that identifies the Imagery Band. This metadata item is the “Band_ID” and is set to “I1”, “I2”, “I3”, “I4” or “I5”.

Table: 5.1.5.3.1-1 VIIRS I5 Imagery Quality Summary Metadata Values

N Quality Summary			
Name	Value	Description	Comments
Summary Imagery Quality	0 - 100	Percent of good quality pixels in granule	
Summary Range Check	0 - 100	Percent of measured radiances in granule outside of required range	
Summary Saturated Pixel	0 - 100	Percent of saturated pixels in granule	

5.1.6 VIIRS I-Band Imagery GTM Geolocation

Data Mnemonic	None
Description/ Purpose	The VIIRS I-Band Imagery GTM Geolocation is mapped to a GTM grid from the Imagery Resolution SDR Geolocation. The original SDR pixel row and column (i,j)th value is provided in the fields “PixelRowSDR” and “PixelColSDR”. Details for each field of the geolocation are provided below, see VIIRS I-Band Imagery GTM EDR Geolocation Data Content Summary.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details.
File Size	See VIIRS I-Band Imagery GTM EDR Geolocation Data Content Summary for size.
File Format Type	HDF5
Data Content and Data Format	The VIIRS I-Band Imagery GTM Geolocation contains: - Time Field - Geolocation Angular Fields - Height and Satellite Range - Geolocation Quality Flags - SDR pixel mapping field (for SDR row and column) - Pad bytes See VIIRS I-Band Imagery GTM Geolocation Data Summary See VIIRS I-Band Imagery GTM Geolocation Product Profiles See VIIRS I-Band Imagery GTM Geolocation HDF5 Details See VIIRS I-Band Imagery GTM Geolocation HDF5 Metadata Details

5.1.6.1 VIIRS I-Band Imagery GTM EDR Geolocation Data Content Summary

Table: 5.1.6.1-1 VIIRS I-Band Imagery GTM EDR Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Time	Time of the nadir point of the GTM row in IET (1/1/1958). Represents the time of the nadir point of the GTM row	64-bit integer	[N*1541]	[1541]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*1541, 8241]	[1541, 8241]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*1541, 8241]	[1541, 8241]	degree
SolarZenithAngle	Zenith angle of sun at each pixel position	32-bit floating point	[N*1541, 8241]	[1541, 8241]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*1541, 8241]	[1541, 8241]	degree
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*1541, 8241]	[1541, 8241]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*1541, 8241]	[1541, 8241]	degree
Height	Ellipsoid-Geoid separation	16-bit integer	[N*1541, 8241]	[1541, 8241]	meter
PadByte1	Pad byte	unsigned 8-bit char	[N*2]	[2]	unitless
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*1541, 8241]	[1541, 8241]	meter
QF1_VIIRSGTMGEO	Pixel Level Geolocation Quality Flags	unsigned 8-bit char	[N*1541, 8241]	[1541, 8241]	unitless
QF2_VIIRSGTMGEO	Scan Level Geolocation Quality Flags	unsigned 8-bit char	[N*48]	[48]	unitless
PadByte2	Pad byte	unsigned 8-bit char	[N*1]	[1]	unitless

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
PixelRowSDR	Imagery SDR pixel row index number that was remapped to this GTM pixel (row numbering begins with zero)	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	unitless
PixelColSDR	Imagery SDR pixel column index number that was remapped to this GTM pixel (column numbering begins with zero)	unsigned 16-bit integer	[N*1541, 8241]	[1541, 8241]	unitless
PadByte3	Pad byte	unsigned 8-bit char	[N*6]	[6]	unitless
File Size	444,490,720 Bytes				

5.1.6.2 VIIRS I-Band Imagery GTM Geolocation Product Profile EDR Product Profile

Table: 5.1.6.2-1 VIIRS I-Band Imagery GTM Geolocation Product Profile

I-Band Imagery GTM Geolocation Product Profile

Fields																							
Name	Data Size	Dimensions																					
Time	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		AlongTrack	Yes	No	1541	1541																	
		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 of the nadir point of the GTM row in IET (1/1/1958). Represents the time of the nadir point of the GTM row	0	MIN_VAL	MAX_VAL	microsecond	No		64-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA INT64 FILL</td><td>-999</td></tr><tr><td>MISS INT64 FILL</td><td>-998</td></tr><tr><td>ERR INT64 FILL</td><td>-995</td></tr><tr><td>ELLIPSOID INT64 FILL</td><td>-994</td></tr><tr><td>VDNE INT64 FILL</td><td>-993</td></tr></table>	Name	Value	NA INT64 FILL	-999	MISS INT64 FILL	-998	ERR INT64 FILL	-995	ELLIPSOID INT64 FILL	-994	VDNE INT64 FILL	-993	<table><tr><td>Name</td><td>Value</td></tr></table>
Name	Value																						
NA INT64 FILL	-999																						
MISS INT64 FILL	-998																						
ERR INT64 FILL	-995																						
ELLIPSOID INT64 FILL	-994																						
VDNE INT64 FILL	-993																						
Name	Value																						
Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																	
		AlongTrack	Yes	No	1541	1541																	
		CrossTrack	No	No	8241	8241																	
		Datum																					
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries												
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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.

		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Solar Eclipse	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
PadByte2	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Granule	Yes	No	1	1					
Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Pad byte	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name Value	Name Value
PixelRowSDR	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		AlongTrack	Yes	No	1541	1541					
		CrossTrack	No	No	8241	8241					
Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Imagery SDR pixel row index number that was remapped to this GTM pixel (row numbering begins with zero)	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 16-bit integer	Name Value	Name Value
										NA_UINT16_FILL	65535
										MISS_UINT16_FILL	65534
										ERR_UINT16_FILL	65531
										ELLIPSOID_UINT16_FILL	65530
										VDNE_UINT16_FILL	65529
PixelColSDR	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		AlongTrack	Yes	No	1541	1541					
		CrossTrack	No	No	8241	8241					
Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Imagery SDR pixel column index number that was remapped to this GTM pixel (column numbering begins with zero)	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 16-bit integer	Name Value	Name Value
										NA_UINT16_FILL	65535
										MISS_UINT16_FILL	65534
										ERR_UINT16_FILL	65531
										ELLIPSOID_UINT16_FILL	65530
										VDNE_UINT16_FILL	65529
PadByte3	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		Granule	Yes	No	6	6					
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

5.1.6.3 VIIRS I-Band Imagery EDR GTM Geolocation HDF5 Details

The VIIRS I-Band Imagery GTM Geolocation is mapped to a GTM grid from the Imagery Resolution SDR Geolocation. The original SDR pixel row and column (i, j) value is provided in the fields “PixelRowSDR” and “PixelColSDR”. VIIRS I-Band Imagery GTM Geolocation UML Diagram provides details on the contents and data types of the I-Band Imagery geolocation.

VIIRS-IMG-GTM-EDR-GEO
+Time : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_SHORT
+PadByte1 : H5T_NATIVE_UCHAR
+SatelliteRange : H5T_NATIVE_FLOAT
+QF1_VIIRSGTMGEO : H5T_NATIVE_UCHAR
+QF2_VIIRSGTMGEO : H5T_NATIVE_UCHAR
+PadByte2 : H5T_NATIVE_UCHAR
+PixelRowSDR : H5T_NATIVE_USHORT
+PixelColSDR : H5T_NATIVE_USHORT
+PadByte3 : H5T_NATIVE_UCHAR

Figure: 5.1.6.3-1 VIIRS I-Band Imagery GTM EDR Geolocation UML Diagram

5.1.6.3.1 VIIRS I-Band Imagery EDR GTM Geolocation HDF5 Metadata Details

The HDF5 metadata elements associated with the I-Band Imagery GTM Geolocation are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms. The I-Band Imagery GTM Geolocation metadata includes all common metadata at the root, product, aggregation, and granule level. There are no additional metadata elements or granule level quality flags for this geolocation.

5.2 VIIRS M-Band Imagery

Data Mnemonic	EDRE-VMOD-C0030 (Official)
Description/ Purpose	The VIIRS Moderate Band Imagery EDRs are characterized by a 750m Horizontal Reporting Interval (HRI). All M-Band imagery products are re-sampled from the VIIRS moderate resolution SDR geolocation to a GTM projection. The “PixelRowSDR” and “PixelColSDR” geolocation fields provide the SDR row and column coordinate for each GTM pixel mapping. The pixel level geolocation quality flag “QF1_VIIRSGTMGEO” provides a flag that indicates whether a pixel has crossed a granule boundary during the SDR to GTM mapping process. If a granule boundary was crossed, the original SDR pixel may be located using effectivity time or the

	N_Input_Prod standard metadata item may be used to obtain the N_Reference_ID for each SDR granule. All 16 VIIRS M-Band EDRs are created and made available for delivery.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details.
File Size	Estimated Granule Size: See VIIRS M-Band Imagery EDR Data Content Summary tables below. Geolocation Granule Size: VIIRS M-Band Imagery EDR GTM Geolocation Data Content Summary tables below.
File Format Type	HDF5
Data Content and Data Format	See VIIRS M-Band Imagery EDR Data Content Summaries, VIIRS M-Band Imagery EDR Product Profiles and VIIRS M-Band Imagery EDR HDF5 Details See VIIRS M-Band Imagery EDR HDF5 Metadata Details See VIIRS M-Band Imagery EDR GTM Geolocation Data Content Summary See VIIRS M-Band Imagery EDR GTM Geolocation Product Profile See VIIRS M-Band Imagery EDR GTM Geolocation HDF5 Details See VIIRS M-Band Imagery EDR GTM Geolocation

5.2.1 VIIRS M1-Band Imagery EDR

5.2.1.1 VIIRS M1-Band Imagery EDR Data Content Summary

Table: 5.2.1.1-1 VIIRS M1-Band Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.1.2 VIIRS M1-Band Imagery Product Profile

The following table represents the Product Profiles representative of the M1 EDR.

Table: 5.2.1.2-1 VIIRS M1-Band Imagery EDR Product Profile

VIIRS M1-Band Imagery Product Profile

Fields													
Name	Data Size	Dimensions											
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	771	771							
		CrossTrack	No	No	4121	4121							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Top of Atmosphere radiances for the M-Band selected	0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	Name	Value	Name Value	
										NA_UINT16_FILL	65535		
										MISS_UINT16_FILL	65534		
										ONBOARD_PT_UINT16_FILL	65533		
										ONGROUND_PT_UINT16_FILL	65532		
								ERR_UINT16_FILL	65531				
								ELLIPSOID_UINT16_FILL	65530				
								VDNE_UINT16_FILL	65529				
								SOUB_UINT16_FILL	65528				
BrightnessTemperatureOrReflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		AlongTrack	Yes	No	771	771							
		CrossTrack	No	No	4121	4121							

Datum											
Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band	0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)	Varies (for BrightnessTemp) or 1.60 (for Reflectance)	Kelvin (for BrightnessTemp) or unitless (for Reflectance)	Yes	BrightnessTemperatureOrReflectanceFactors	unsigned 16-bit integer	Name	Value	Name Value	
								NA_UINT16_FILL	65535		
								MISS_UINT16_FILL	65534		
								ONBOARD_PT_UINT16_FILL	65533		
								ONGROUND_PT_UINT16_FILL	65532		
								ERR_UINT16_FILL	65531		
								ELLIPSOID_UINT16_FILL	65530		
								VDNE_UINT16_FILL	65529		
								SOUB_UINT16_FILL	65528		

VIIRS M1-Band Imagery Product Profile - Scale Factors

Fields													
Name	Data Size	Dimensions											
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureOrReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = Kelvin (for BrightnessTemp) or unitless (for Reflectance)	No		32-bit floating point	Name Value	Name Value		

5.2.1.3 VIIRS M1 Band Imagery EDR HDF5 Details

M1 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M1-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.1.3-1 VIIRS M1 Imagery EDR UML Diagram

5.2.2 VIIRS M2 Imagery EDR

5.2.2.1 VIIRS M2 Imagery EDR Data Content Summary

Table: 5.2.2.1-1 VIIRS M2 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.2.2 VIIRS M2 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M2 EDR.

Table: 5.2.2.2-1 VIIRS M2 Imagery EDR Product Profile**VIIRS M2-Band Imagery Product Profile**

Fields															
Name	Data Size	Dimensions													
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		AlongTrack	Yes	No	771	771									
		CrossTrack	No	No	4121	4121									
		Datum													
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Top of Atmosphere radiances for the M-Band selected				0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	Name	Value	NameValue
													NA_UINT16_FILL	65535	
													MISS_UINT16_FILL	65534	
													ONBOARD_PT_UINT16_FILL	65533	
													ONGROUND_PT_UINT16_FILL	65532	
													ERR_UINT16_FILL	65531	
													ELLIPSOID_UINT16_FILL	65530	
											VDNE_UINT16_FILL	65529			
											SOUB_UINT16_FILL	65528			

BrightnessTemperatureOrReflectanceFactors	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		AlongTrack	Yes	No	771	771								
		CrossTrack	No	No	4121	4121								
		Datum												
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band	0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)		Varies (for BrightnessTemp) or 1.60 (for Reflectance)	Kelvin (for BrightnessTemp) or unitless (for Reflectance)	Yes	BrightnessTemperatureOrReflectanceFactors	unsigned 16-bit integer	Name	Value	Name Value	
											NA_UINT16_FILL	65535		
											MISS_UINT16_FILL	65534		
											ONBOARD_PT_UINT16_FILL	65533		
											ONGROUND_PT_UINT16_FILL	65532		
ERR_UINT16_FILL	65531													
ELLIPSOID_UINT16_FILL	65530													
VDNE_UINT16_FILL	65529													
SOUB_UINT16_FILL	65528													

VIIRS M2-Band Imagery Product Profile - Scale Factors

Fields													
Name	Data Size	Dimensions											
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureOrReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = Kelvin (for BrightnessTemp) or unitless (for Reflectance)	No		32-bit floating point	Name Value	Name Value		

5.2.2.3 VIIRS M2 Imagery EDR HDF5 Details

M2 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M2-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.2.3-1 VIIRS M2 Imagery EDR UML Diagram

5.2.3 VIIRS M3 Imagery EDR

5.2.3.1 VIIRS M3 Imagery EDR Data Content Summary

Table: 5.2.3.1-1 VIIRS M3 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.3.2 VIIRS M3 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M3 EDR.

Table: 5.2.3.2-1 VIIRS M3 Imagery EDR Product Profile

VIIRS M3-Band Imagery Product Profile

Fields														
Name	Data Size	Dimensions												
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		AlongTrack	Yes	No	771	771								
		CrossTrack	No	No	4121	4121								
		Datum												
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Top of Atmosphere radiances for the M-Band selected	0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	Name	Value	Name	Value	
										NA_UINT16_FILL	65535			
										MISS_UINT16_FILL	65534			
										ONBOARD_PT_UINT16_FILL	65533			
										ONGROUND_PT_UINT16_FILL	65532			
								ERR_UINT16_FILL	65531					
								ELLIPSOID_UINT16_FILL	65530					
								VDNE_UINT16_FILL	65529					
								SOUB_UINT16_FILL	65528					
Reflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		AlongTrack	Yes	No	771	771								
		CrossTrack	No	No	4121	4121								
		Datum												

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VIIRS M3-Band Imagery Product Profile - Scale Factors

Fields												
Name	Data Size	Dimensions										
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	2	2						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value	
ReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size						
		Granule	Yes	No	2	2						
		Datum										
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; unitles	No		32-bit floating point	Name Value	Name Value	

5.2.3.3 VIIRS M3 Imagery EDR HDF5 Details

M3 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M3-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.3.3-1 VIIRS M3 Imagery EDR UML Diagram

5.2.4 VIIRS M4 Imagery EDR

5.2.4.1 VIIRS M4 Imagery EDR Data Content Summary

Table: 5.2.4.1-1 VIIRS M4 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.4.2 VIIRS M4 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M4 EDRs.

Table: 5.2.4.2-1 VIIRS M4 Imagery EDR Product Profile

VIIRS M4-Band Imagery Product Profile

Fields																																		
Name	Data Size	Dimensions																																
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																												
		AlongTrack	Yes	No	771	771																												
		CrossTrack	No	No	4121	4121																												
		Datum																																
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Top of Atmosphere radiances for the M-Band selected				0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																															
		NA_UINT16_FILL	65535																															
		MISS_UINT16_FILL	65534																															
		ONBOARD_PT_UINT16_FILL	65533																															
ONGROUND_PT_UINT16_FILL	65532																																	
ERR_UINT16_FILL	65531																																	
ELLIPSOID_UINT16_FILL	65530																																	
VDNE_UINT16_FILL	65529																																	
SOUB_UINT16_FILL	65528																																	
Name	Value																																	

	AlongTrack	Yes	No	771	771						
	CrossTrack	No	No	4121	4121						
Datum											
	Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
	Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band	0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)	Varies (for BrightnessTemp) or 1.60 (for Reflectance)	Kelvin (for BrightnessTemp) or unitless (for Reflectance)	Yes	BrightnessTemperatureOrReflectanceFactors	unsigned 16-bit integer	Name	Value	Name Value
									NA_UINT16_FILL	65535	
									MISS_UINT16_FILL	65534	
									ONBOARD_PT_UINT16_FILL	65533	
									ONGROUND_PT_UINT16_FILL	65532	
									ERR_UINT16_FILL	65531	
									ELLIPSOID_UINT16_FILL	65530	
									VDNE_UINT16_FILL	65529	
									SOUB_UINT16_FILL	65528	

VIIRS M4-Band Imagery Product Profile - Scale Factors

Fields													
Name	Data Size	Dimensions											
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureOrReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = Kelvin (for BrightnessTemp) or unitless (for Reflectance)	No		32-bit floating point	Name Value	Name Value		

5.2.4.3 VIIRS M4 Imagery EDR HDF5 Details

M4 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M4-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.4.3-1 VIIRS M4 Imagery EDR UML Diagram

5.2.5 VIIRS M5 Imagery EDR

5.2.5.1 VIIRS M5 Imagery EDR Data Content Summary

Table: 5.2.5.1-1 VIIRS M5 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.5.2 VIIRS M5 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M5 EDRs.

Table: 5.2.5.2-1 VIIRS M5 Imagery EDR Product Profile

VIIRS M5-Band Imagery Product Profile

Fields																											
Name	Data Size	Dimensions																									
Radiance	2byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																					
		AlongTrack	Yes	No	771	771																					
		CrossTrack	No	No	4121	4121																					
		Datum																									
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries														
		Top of Atmosphere radiances for the M-Band selected		0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	<table><tr><th>Name</th><th>Value</th></tr></table>	Name
Name	Value																										
NA_UINT16_FILL	65535																										
MISS_UINT16_FILL	65534																										
ONBOARD_PT_UINT16_FILL	65533																										
ONGROUND_PT_UINT16_FILL	65532																										
ERR_UINT16_FILL	65531																										
ELLIPSOID_UINT16_FILL	65530																										
Name	Value																										

VIIRS M5-Band Imagery Product Profile - Scale Factors

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.

5.2.5.3 VIIRS M5 Imagery EDR HDF5 Details

M5 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M5-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.5.3-1 VIIRS M5 Imagery EDR UML Diagram

5.2.6 VIIRS M6 Imagery EDR

5.2.6.1 VIIRS M6 Imagery EDR Data Content Summary

Table: 5.2.6.1-1 VIIRS M6 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.6.2 VIIRS M6 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M6 EDRs.

Table: 5.2.6.2-1 VIIRS M6 Imagery EDR Product Profile

VIIRS M6-Band Imagery Product Profile

Fields																
Name	Data Size	Dimensions														
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size										
		AlongTrack	Yes	No	771	771										
		CrossTrack	No	No	4121	4121										
		Datum														
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Top of Atmosphere radiances for the M-Band selected				0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	Name	Value	Name	Value
													NA_UINT16_FILL	65535		
													MISS_UINT16_FILL	65534		
													ONBOARD_PT_UINT16_FILL	65533		
													ONGROUND_PT_UINT16_FILL	65532		
											ERR_UINT16_FILL	65531				
											ELLIPSOID_UINT16_FILL	65530				
											VDNE_UINT16_FILL	65529				
											SOUB_UINT16_FILL	65528				
BrightnessTemperatureOrReflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size										

VIIRS M6-Band Imagery Product Profile - Scale Factors

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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.

5.2.6.3 VIIRS M6 Imagery EDR HDF5 Details

M6 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M6-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.6.3-1 VIIRS M6 Imagery EDR UML Diagram

5.2.7 VIIRS M7 Imagery EDR

5.2.7.1 VIIRS M7 Imagery EDR Data Content Summary

Table: 5.2.7.1-1 VIIRS M7 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.7.2 VIIRS M7 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M7 EDRs.

Table: 5.2.7.2-1 VIIRS M7 Imagery EDR Product Profile

VIIRS M7-Band Imagery Product Profile

Fields																																		
Name	Data Size	Dimensions																																
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																												
		AlongTrack	Yes	No	771	771																												
		CrossTrack	No	No	4121	4121																												
		Datum																																
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																			
		Top of Atmosphere radiances for the M-Band selected				0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value
		Name	Value																															
		NA_UINT16_FILL	65535																															
		MISS_UINT16_FILL	65534																															
		ONBOARD_PT_UINT16_FILL	65533																															
ONGROUND_PT_UINT16_FILL	65532																																	
ERR_UINT16_FILL	65531																																	
ELLIPSOID_UINT16_FILL	65530																																	
VDNE_UINT16_FILL	65529																																	
SOUB_UINT16_FILL	65528																																	
Name	Value																																	
BrightnessTemperatureOrReflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																												

	AlongTrack		Yes	No	771	771							
	CrossTrack		No	No	4121	4121							
Datum													
Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band			0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)	Varies (for BrightnessTemp) or 1.60 (for Reflectance)	Kelvin (for BrightnessTemp) or unitless (for Reflectance)	Yes	BrightnessTemperatureOrReflectanceFactors	unsigned 16-bit integer	Name	Value	Name	Value
										NA_UINT16_FILL	65535		
										MISS_UINT16_FILL	65534		
										ONBOARD_PT_UINT16_FILL	65533		
										ONGROUND_PT_UINT16_FILL	65532		
										ERR_UINT16_FILL	65531		
										ELLIPSOID_UINT16_FILL	65530		
										VDNE_UINT16_FILL	65529		
										SOUB_UINT16_FILL	65528		

VIIRS M7-Band Imagery Product Profile - Scale Factors

Fields													
Name	Data Size	Dimensions											
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureOrReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = Kelvin (for BrightnessTemp) or unitless (for Reflectance)	No		32-bit floating point	Name Value	Name Value		

5.2.7.3 VIIRS M7 Imagery EDR HDF5 Details

M7 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M7-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.7.3-1 VIIRS M7 Imagery EDR UML Diagram

5.2.8 VIIRS M8 Imagery EDR

5.2.8.1 VIIRS M8 Imagery EDR Data Content Summary

Table: 5.2.8.1-1 VIIRS M8 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.8.2 VIIRS M8 Imagery EDR Product Profile

Table: 5.2.8.2-1 VIIRS M8 Imagery EDR Product Profile

VIIRS M8-Band Imagery Product Profile

Fields																																		
Name	Data Size	Dimensions																																
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																												
		AlongTrack	Yes	No	771	771																												
		CrossTrack	No	No	4121	4121																												
		Datum																																
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Top of Atmosphere radiances for the M-Band selected				0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																															
		NA_UINT16_FILL	65535																															
		MISS_UINT16_FILL	65534																															
		ONBOARD_PT_UINT16_FILL	65533																															
ONGROUND_PT_UINT16_FILL	65532																																	
ERR_UINT16_FILL	65531																																	
ELLIPSOID_UINT16_FILL	65530																																	
VDNE_UINT16_FILL	65529																																	
SOUB_UINT16_FILL	65528																																	
Name	Value																																	

CrossTrack		No	No	4121	4121					
Datum										
Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band	0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)	Varies (for BrightnessTemp) or 1.60 (for Reflectance)	Kelvin (for BrightnessTemp) or unitless (for Reflectance)	Yes	BrightnessTemperatureOrReflectanceFactors	unsigned 16-bit integer	Name	Value	NameValue
								NA_UINT16_FILL	65535	
								MISS_UINT16_FILL	65534	
								ONBOARD_PT_UINT16_FILL	65533	
								ONGROUND_PT_UINT16_FILL	65532	
								ERR_UINT16_FILL	65531	
								ELLIPSOID_UINT16_FILL	65530	
								VDNE_UINT16_FILL	65529	
SOUB_UINT16_FILL	65528									

VIIRS M8-Band Imagery Product Profile - Scale Factors

Fields													
Name	Data Size	Dimensions											
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureOrReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = Kelvin (for BrightnessTemp) or unitless (for Reflectance)	No		32-bit floating point	Name Value	Name Value		

5.2.8.3 VIIRS M8 Imagery EDR HDF5 Details

M8 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M8-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.8.3-1 VIIRS M8 Imagery EDR UML Diagram

5.2.9 VIIRS M9 Imagery EDR

5.2.9.1 VIIRS M9 Imagery EDR Data Content Summary

Table: 5.2.9.1-1 VIIRS M9 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.9.2 VIIRS M9 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M9 EDRs.

Table: 5.2.9.2-1 VIIRS M9 Imagery EDR Product Profile

VIIRS M9-Band Imagery Product Profile

Fields																																			
Name	Data Size	Dimensions																																	
Radiance	2byte(s)	Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																												
		AlongTrack	Yes	No	771	771																													
		CrossTrack	No	No	4121	4121																													
		Datum																																	
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																				
		Top of Atmosphere radiances for the M-Band selected				0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>		Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																																
		NA_UINT16_FILL	65535																																
		MISS_UINT16_FILL	65534																																
		ONBOARD_PT_UINT16_FILL	65533																																
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ELLIPSOID_UINT16_FILL	65530																																		
VDNE_UINT16_FILL	65529																																		
SOUB_UINT16_FILL	65528																																		
Name	Value																																		

BrightnessTemperatureOrReflectance	2byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121										
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																					
		AlongTrack	Yes	No	771	771																					
		CrossTrack	No	No	4121	4121																					
		Datum																									
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries														
		Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band		0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)	Varies (for BrightnessTemp) or 1.60 (for Reflectance)	Kelvin (for BrightnessTemp) or unitless (for Reflectance)	Yes	BrightnessTemperatureOrReflectanceFactors	unsigned 16-bit integer	Name	Value	NameValue														
											NA_UINT16_FILL	65535															
											MISS_UINT16_FILL	65534															
											ONBOARD_PT_UINT16_FILL	65533															
ONGROUND_PT_UINT16_FILL	65532																										
ERR_UINT16_FILL	65531																										
ELLIPSOID_UINT16_FILL	65530																										
VDNE_UINT16_FILL	65529																										
SOUB_UINT16_FILL	65528																										

VIIRS M9-Band Imagery Product Profile - Scale Factors

Fields													
Name	Data Size	Dimensions											
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureOrReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = Kelvin (for BrightnessTemp) or unitless (for Reflectance)	No		32-bit floating point	Name Value	Name Value		

5.2.9.3 VIIRS M9 Imagery EDR HDF5 Details

M9 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M9-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.1.6.3.1-1 VIIRS M9 Imagery EDR UML Diagram

5.2.10 VIIRS M10 Imagery EDR**5.2.10.1 VIIRS M10 Imagery EDR Data Content Summary****Table: 5.2.10.1-1 VIIRS M10 Imagery EDR Data Content Summary**

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless (for Reflectance)
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.10.2 VIIRS M10 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M10 EDRs.

Table: 5.2.10.2-1 VIIRS M10 Imagery EDR Product Profile**VIIRS M10-Band Imagery Product Profile**

Fields																																	
Name	Data Size	Dimensions																															
Radiance	2byte(s)																																
		Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																										
		AlongTrack	Yes	No	771	771																											
		CrossTrack	No	No	4121	4121																											
		Datum																															
		Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Top of Atmosphere radiances for the M-Band selected			0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
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		NA_UINT16_FILL	65535																														
MISS_UINT16_FILL	65534																																
ONBOARD_PT_UINT16_FILL	65533																																
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ELLIPSOID_UINT16_FILL	65530																																
VDNE_UINT16_FILL	65529																																
SOUB_UINT16_FILL	65528																																
Name	Value																																

BrightnessTemperatureOrReflectance	2byte(s)	<table><tr><td>Name</td><td>Granule Boundary</td><td>Dynamic</td><td>Min Array Size</td><td>Max Array Size</td></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table>	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121														
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		AlongTrack	Yes	No	771	771																									
		CrossTrack	No	No	4121	4121																									
		Datum																													
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																				
		Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band	0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)	Varies (for BrightnessTemp) or 1.60 (for Reflectance)	Kelvin (for BrightnessTemp) or unitless (for Reflectance)	Yes	BrightnessTemperatureOrReflectanceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr><tr><td>SOUB_UINT16_FILL</td><td>65528</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	SOUB_UINT16_FILL	65528	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
										Name	Value																				
										NA_UINT16_FILL	65535																				
										MISS_UINT16_FILL	65534																				
ONBOARD_PT_UINT16_FILL	65533																														
ONGROUND_PT_UINT16_FILL	65532																														
ERR_UINT16_FILL	65531																														
ELLIPSOID_UINT16_FILL	65530																														
VDNE_UINT16_FILL	65529																														
SOUB_UINT16_FILL	65528																														
Name	Value																														

VIIRS M10-Band Imagery Product Profile - Scale Factors

Fields														
Name	Data Size	Dimensions												
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	2	2								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value			
BrightnessTemperatureOrReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size								
		Granule	Yes	No	2	2								
		Datum												
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries			
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = Kelvin (for BrightnessTemp) or unitless (for Reflectance)	No		32-bit floating point	Name Value	Name Value			

5.2.10.3 VIIRS M10 Imagery EDR HDF5 Details

M10 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M10-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.10.3-1 VIIRS M10 Imagery EDR UML Diagram

5.2.11 VIIRS M11 Imagery EDR

5.2.11.1 VIIRS M11 Imagery EDR Data Content Summary

Table: 5.2.11.1-1 VIIRS M11 Imagery EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
Reflectance	TOA reflectances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
ReflectanceFactors	Scale = 1st array element; Offset = 2nd array element for the Band reflectances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = unitless
File Size	12,709,180 Bytes				

5.2.11.2 VIIRS M11 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M11 EDRs.

Table: 5.2.11.2-1 VIIRS M11 Imagery EDR Product Profile

VIIRS M11-Band Imagery Product Profile

Fields																													
Name	Data Size	Dimensions																											
Radiance	2byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121								
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																							
		AlongTrack	Yes	No	771	771																							
		CrossTrack	No	No	4121	4121																							
		Datum																											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																	
Top of Atmosphere radiances for the M-Band selected		0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value			
Name	Value																												
NA_UINT16_FILL	65535																												
MISS_UINT16_FILL	65534																												
ONBOARD_PT_UINT16_FILL	65533																												
ONGROUND_PT_UINT16_FILL	65532																												
ERR_UINT16_FILL	65531																												
ELLIPSOID_UINT16_FILL	65530																												
Name	Value																												

VIIRS M11-Band Imagery Product Profile - Scale Factors

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.

5.2.11.3 VIIRS M11 Imagery EDR HDF5 Details

M11 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M11-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+Reflectance : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+ReflectanceFactors : H5T_NATIVE_FLOAT

Figure: 5.2.11.3-1 VIIRS M11 Imagery EDR UML Diagram

5.2.12 VIIRS M12 Imagery EDR**5.2.12.1 VIIRS M12 Imagery EDR Data Content Summary****Table: 5.2.12.1-1 VIIRS M12 Imagery EDR Data Content Summary**

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
BrightnessTemperature	Top of Atmosphere Equivalent Blackbody Brightness Temperatures	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	Kelvin
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
BrightnessTemperatureFactors	Scale = 1st array element; Offset = 2nd array element for the Band brightness temperatures	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = Kelvin
File Size	12,709,180 Bytes				

5.2.12.2 VIIRS M12 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M12 EDRs.

Table: 5.2.12.2-1 VIIRS M12 Imagery EDR Product Profile**VIIRS M12-Band Imagery Product Profile**

Fields																													
Name	Data Size	Dimensions																											
Radiance	2byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121								
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																							
		AlongTrack	Yes	No	771	771																							
		CrossTrack	No	No	4121	4121																							
		Datum																											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																
		Top of Atmosphere radiances for the M-Band selected		0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value	
		Name	Value																										
		NA_UINT16_FILL	65535																										
		MISS_UINT16_FILL	65534																										
		ONBOARD_PT_UINT16_FILL	65533																										
		ONGROUND_PT_UINT16_FILL	65532																										
ERR_UINT16_FILL	65531																												
ELLIPSOID_UINT16_FILL	65530																												
Name	Value																												

VIIRS M12-Band Imagery Product Profile - Scale Factors

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5.2.12.3 VIIRS M12 Imagery EDR HDF5 Details

M12 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M12-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+BrightnessTemperature : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+BrightnessTemperature : H5T_NATIVE_FLOAT

Figure: 5.2.12.3-1 VIIRS M12 Imagery EDR UML Diagram

5.2.13 VIIRS M13 Imagery EDR**5.2.13.1 VIIRS M13 Imagery EDR Data Content Summary****Table: 5.2.13.1-1 VIIRS M13 Imagery EDR Data Content Summary**

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
BrightnessTemperature	Top of Atmosphere Equivalent Blackbody Brightness Temperatures	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	Kelvin
File Size	25,418,328 BYTES				

5.2.13.2 VIIRS M13 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M13 EDRs.

Table: 5.2.13.2-1 VIIRS M13 Imagery EDR Product Profile**VIIRS M13-Band Imagery Product Profile**

Fields															
Name	Data Size	Dimensions													
Radiance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		AlongTrack	Yes	No	771	771									
		CrossTrack	No	No	4121	4121									
		Datum													
		Description				Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Top of Atmosphere radiances for the M-Band selected				0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	Name	Value	
												NA_UINT16_FILL	65535		
												MISS_UINT16_FILL	65534		
												ONBOARD_PT_UINT16_FILL	65533		
												ONGROUND_PT_UINT16_FILL	65532		
										ERR_UINT16_FILL	65531				
										ELLIPSOID_UINT16_FILL	65530				
										VDNE_UINT16_FILL	65529				
											SOUB_UINT16_FILL	65528			
BrightnessTemperatureOrReflectance	2byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		AlongTrack	Yes	No	771	771									
		CrossTrack	No	No	4121	4121									
		Datum													

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries
		Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band	0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)	Varies (for BrightnessTemp) or 1.60 (for Reflectance)	Kelvin (for BrightnessTemp) or unitless (for Reflectance)	Yes	BrightnessTemperatureOrReflectanceFactors	unsigned 16-bit integer	Name	Value	Name Value
										NA_UINT16_FILL	65535	
										MISS_UINT16_FILL	65534	
										ONBOARD_PT_UINT16_FILL	65533	
										ONGROUND_PT_UINT16_FILL	65532	
										ERR_UINT16_FILL	65531	
										ELLIPSOID_UINT16_FILL	65530	
										VDNE_UINT16_FILL	65529	
										SOUB_UINT16_FILL	65528	

5.2.13.3 VIIRS M13 Imagery EDR HDF5 Details

M13 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M13-MOD-EDR
+Radiance : H5T_NATIVE_FLOAT
+BrightnessTemperature : H5T_NATIVE_FLOAT

Figure: 5.2.13.3-1 VIIRS M13 Imagery EDR UML Diagram

5.2.14 VIIRS M14 Imagery EDR**5.2.14.1 VIIRS M14 Imagery EDR Data Content Summary****Table: 5.2.14.1-1 VIIRS M14 Imagery EDR Data Content Summary**

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
BrightnessTemperature	Top of Atmosphere Equivalent Blackbody Brightness Temperatures	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	Kelvin
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
BrightnessFactors	Scale = 1st array element; Offset = 2nd array element for the Band brightness temperatures	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = Kelvin
File Size	12,709,180 Bytes				

5.2.14.2 VIIRS M14 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M14 EDRs.

Table: 5.2.14.2-1 VIIRS M14 Imagery EDR Product Profile**VIIRS M14-Band Imagery Product Profile**

Fields																													
Name	Data Size	Dimensions																											
Radiance	2byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table>					Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121								
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																							
		AlongTrack	Yes	No	771	771																							
		CrossTrack	No	No	4121	4121																							
		Datum																											
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																
		Top of Atmosphere radiances for the M-Band selected		0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value	
		Name	Value																										
		NA_UINT16_FILL	65535																										
		MISS_UINT16_FILL	65534																										
		ONBOARD_PT_UINT16_FILL	65533																										
		ONGROUND_PT_UINT16_FILL	65532																										
ERR_UINT16_FILL	65531																												
ELLIPSOID_UINT16_FILL	65530																												
Name	Value																												

VIIRS M14-Band Imagery Product Profile - Scale Factors

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5.2.14.3 VIIRS M14 Imagery EDR HDF5 Details

Figure below provides M14 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M14-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+BrightnessTemperature : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+BrightnessFactors : H5T_NATIVE_FLOAT

Figure: 5.2.14.3-1 VIIRS M14 Imagery EDR UML Diagram

5.2.15 VIIRS M15 Imagery EDR**5.2.15.1 VIIRS M15 Imagery EDR Data Content Summary****Table: 5.2.15.1-1 VIIRS M15 Imagery EDR Data Content Summary**

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
BrightnessTemperature	Top of Atmosphere Equivalent Blackbody Brightness Temperatures	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	Kelvin
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
BrightnessFactors	Scale = 1st array element; Offset = 2nd array element for the Band brightness temperatures	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = Kelvin
File Size	12,709,180 Bytes				

5.2.15.2 VIIRS M15 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M15 EDRs.

Table: 5.2.15.2-1 VIIRS M15 Imagery EDR Product Profile**VIIRS M15-Band Imagery Product Profile**

Fields																															
Name	Data Size	Dimensions																													
Radiance	2byte(s)																														
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		AlongTrack	Yes	No	771	771																									
		CrossTrack	No	No	4121	4121																									
		Datum																													
		Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																		
		Top of Atmosphere radiances for the M-Band selected			0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	VDNE_UINT16_FILL	65529	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																												
		NA_UINT16_FILL	65535																												
		MISS_UINT16_FILL	65534																												
ONBOARD_PT_UINT16_FILL	65533																														
ONGROUND_PT_UINT16_FILL	65532																														
ERR_UINT16_FILL	65531																														
ELLIPSOID_UINT16_FILL	65530																														
VDNE_UINT16_FILL	65529																														
Name	Value																														

BrightnessTemperatureOrReflectance	2byte(s)											SOUB_UINT16_FILL		65528						
		Name		Granule Boundary		Dynamic		Min Array Size		Max Array Size										
		AlongTrack		Yes		No		771		771										
		CrossTrack		No		No		4121		4121										
		Datum																		
		Description				Datum Offset	Unscaled Valid Range Min		Unscaled Valid Range Max		Measurement Units		Scaled	Scale Factor Name		Data Type	Fill Values		Legend Entries	
		Brightness Temperatures (for an emissive M-Band) or Top of Atmosphere Reflectances (for a reflective M-Band) for the selected M-Band				0	Varies (for BrightnessTemp) or 0.00 (for Reflectance)		Varies (for BrightnessTemp) or 1.60 (for Reflectance)		Kelvin (for BrightnessTemp) or unitless (for Reflectance)		Yes	BrightnessTemperatureOrReflectanceFactors		unsigned 16-bit integer	Name		Value	
																	NA_UINT16_FILL		65535	
																	MISS_UINT16_FILL		65534	

VIIRS M15-Band Imagery Product Profile - Scale Factors

Fields													
Name	Data Size	Dimensions											
RadianceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = W/(m2 sr um)	No		32-bit floating point	Name Value	Name Value		
BrightnessTemperatureOrReflectanceFactors	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size							
		Granule	Yes	No	2	2							
		Datum											
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries		
		Scale = first array element; Offset = second array element	0	MIN_VAL	MAX_VAL	Scale = unitless; Offset = Kelvin (for BrightnessTemp) or unitless (for Reflectance)	No		32-bit floating point	Name Value	Name Value		

5.2.15.3 VIIRS M15 Imagery EDR HDF5 Details

Figure below provides M15 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M15-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+BrightnessTemperature : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+BrightnessFactors : H5T_NATIVE_FLOAT

Figure: 5.2.15.3-1 VIIRS M15 Imagery EDR UML Diagram

5.2.16 VIIRS M16 Imagery EDR**5.2.16.1 VIIRS M16 Imagery EDR Data Content Summary****Table: 5.2.16.1-1 VIIRS M16 Imagery EDR Data Content Summary**

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	TOA radiances	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	W/(m ² sr um)
BrightnessTemperature	Top of Atmosphere Equivalent Blackbody Brightness Temperatures	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	Kelvin
RadianceFactors	Scale = 1st array element; Offset = 2nd array element for the Band radiances	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = W/(m ² sr um)
BrightnessFactors	Scale = 1st array element; Offset = 2nd array element for the Band brightness temperatures	32-bit floating point	[N*2]	[2]	Scale = unitless; Offset = Kelvin
File Size	12,709,180 Bytes				

5.2.16.2 VIIRS M16 Imagery EDR Product Profile

The following table represents the Product Profiles representative of the M16 EDRs.

Table: 5.2.16.2-1 VIIRS M16 Imagery EDR Product Profile**VIIRS M16-Band Imagery Product Profile**

Fields																															
Name	Data Size	Dimensions																													
Radiance	2byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table>											Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121				
		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																									
		AlongTrack	Yes	No	771	771																									
		CrossTrack	No	No	4121	4121																									
		Datum																													
		Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries																		
		Top of Atmosphere radiances for the M-Band selected			0	Varies	Varies	W/(m2 sr um)	Yes	RadianceFactors	unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>NA_UINT16_FILL</td><td>65535</td></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ONBOARD_PT_UINT16_FILL</td><td>65533</td></tr><tr><td>ONGROUND_PT_UINT16_FILL</td><td>65532</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>ELLIPSOID_UINT16_FILL</td><td>65530</td></tr></table>	Name	Value	NA_UINT16_FILL	65535	MISS_UINT16_FILL	65534	ONBOARD_PT_UINT16_FILL	65533	ONGROUND_PT_UINT16_FILL	65532	ERR_UINT16_FILL	65531	ELLIPSOID_UINT16_FILL	65530	<table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td></td></tr></table>	Name	Value		
		Name	Value																												
		NA_UINT16_FILL	65535																												
		MISS_UINT16_FILL	65534																												
ONBOARD_PT_UINT16_FILL	65533																														
ONGROUND_PT_UINT16_FILL	65532																														
ERR_UINT16_FILL	65531																														
ELLIPSOID_UINT16_FILL	65530																														
Name	Value																														

VIIRS M16-Band Imagery Product Profile - Scale Factors

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.

5.2.16.3 VIIRS M16 Imagery EDR HDF5 Details

M16 Imagery EDR UML Diagram provides details on the content and data types of the M-Band Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The M-Band Imagery product within the HDF5 file can be found within the Data_Products group. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-M16-MOD-EDR
+Radiance : H5T_NATIVE_USHORT
+BrightnessTemperature : H5T_NATIVE_USHORT
+RadianceFactors : H5T_NATIVE_FLOAT
+BrightnessFactors : H5T_NATIVE_FLOAT

Figure: 5.2.16.3-1 VIIRS M16 Imagery EDR UML Diagram

5.2.17 VIIRS M-Band Imagery EDR GTM Geolocation

The HDF5 metadata elements associated with the M-Band Imagery EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The M-Band Imagery metadata includes all common metadata at the root, product, aggregation, and granule level. Note that one standard Imagery Metadata item at the granule level, Band_ID, is used to indicate the M-Band name (M1, M2, etc.) for the M-Band EDR. There are no additional granule level metadata elements for the M-Band Imagery.

Table: 5.2.17-1 VIIRS M-Band Imagery EDR GTM Geolocation Details

Data Mnemonic	None
Description/ Purpose	The M-Band GTM Geolocation is mapped to a GTM grid from the M-Band Resolution SDR Geolocation. The M-Band Imagery GTM Geolocation Data Content Summary provides geolocation details.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details.
File Size	Estimated Granule Size: See VIIRS M-Band Imagery EDR GTM Geolocation Data Content Summary for size.
File Format Type	HDF5
Data Content and Data Format	The VIIRS M-Band Imagery GTM Geolocation contains: - Time Field - Geolocation Angular Fields - Height and Satellite Range - Geolocation Quality Flags - SDR pixel mapping field (for SDR row and column) - Pad bytes See VIIRS M-Band Imagery EDR GTM Geolocation Data Content Summary See VIIRS M-Band Imagery EDR GTM Geolocation Product Profiles

	See VIIRS M-Band Imagery EDR GTM Geolocation HDF5 Details See VIIRS M-Band Imagery EDR GTM Geolocation HDF5 Metadata Details
--	--

5.2.17.1 VIIRS M-Band Imagery EDR GTM Geolocation Data Content Summary

Table: 5.2.17.1-1 VIIRS M-Band Imagery EDR GTM Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Time	Time of the nadir point of the GTM row in IET (1/1/1958). Represents the time of the nadir point of the GTM row	64-bit integer	[N*771]	[771]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
SolarZenithAngle	Zenith angle of sun at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
Height	Ellipsoid-Geoid separation	16-bit integer	[N*771, 4121]	[771, 4121]	meter
PadByte1	Pad byte	unsigned 8-bit char	[N*2]	[2]	unitless
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*771, 4121]	[771, 4121]	meter
QF1_VIIRSGTMGEO	Pixel Level Geolocation Quality Flags	unsigned 8-bit char	[N*771, 4121]	[771, 4121]	unitless
QF2_VIIRSGTMGEO	Granule Level Geolocation Quality Flags	unsigned 8-bit char	[N*1]	[1]	unitless

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
PixelRowSDR	Moderate SDR pixel row index number that was remapped to this GTM pixel (row numbering begins with zero)	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
PixelColSDR	Moderate SDR pixel column index number that was remapped to this GTM pixel (column numbering begins with zero)	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
PadByte2	Pad byte	unsigned 8-bit char	[N*4]	[4]	unitless
File Size	111,211,360 Bytes				

5.2.17.2 VIIRS M-Band Imagery EDR GTM Geolocation Product Profile

Table: 5.2.17.2-1 VIIRS M-Band Imagery EDR GTM Geolocation Product Profile**VIIRS M-Band Imagery GTM Geolocation Product Profile**

Fields																											
Name	Data Size	Dimensions																									
Time	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																					
		AlongTrack	Yes	No	771	771																					
		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 of the nadir point of the GTM row in IET (1/1/1958). Represents the time of the nadir point of the GTM row					0	MIN_VAL	MAX_VAL	microsecond	No		64-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA INT64 FILL</td><td>-999</td></tr><tr><td>MISS INT64 FILL</td><td>-998</td></tr><tr><td>ERR INT64 FILL</td><td>-995</td></tr><tr><td>VDNE INT64 FILL</td><td>-993</td></tr></table>	Name	Value	NA INT64 FILL	-999	MISS INT64 FILL	-998	ERR INT64 FILL	-995	VDNE INT64 FILL	-993	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
		Name	Value																								
NA INT64 FILL	-999																										
MISS INT64 FILL	-998																										
ERR INT64 FILL	-995																										
VDNE INT64 FILL	-993																										
Name	Value																										
Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size																					
		AlongTrack	Yes	No	771	771																					
		CrossTrack	No	No	4121	4121																					
		Datum																									
		Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries														
		Latitude of each pixel (positive North)			0	MIN_VAL	MAX_VAL	degree	No		32-bit floating point	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_FLOAT32_FILL</td><td>-999.9</td></tr><tr><td>MISS_FLOAT32_FILL</td><td>-999.8</td></tr><tr><td>ERR_FLOAT32_FILL</td><td>-999.5</td></tr><tr><td>ELLIPSOID_FLOAT32_FILL</td><td>-999.4</td></tr><tr><td>VDNE_FLOAT32_FILL</td><td>-999.3</td></tr></table>	Name	Value	NA_FLOAT32_FILL	-999.9	MISS_FLOAT32_FILL	-999.8	ERR_FLOAT32_FILL	-999.5	ELLIPSOID_FLOAT32_FILL	-999.4	VDNE_FLOAT32_FILL	-999.3	<table><tr><td>Name</td><td>Value</td></tr></table>	Name	Value
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		AlongTrack	Yes	No	771	771																					
		CrossTrack	No	No	4121	4121																					

		Datum													
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		
		Longitude of each pixel (positive East)		0	MIN_VAL	MAX_VAL	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			
SolarZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		AlongTrack	Yes	No	771	771									
		CrossTrack	No	No	4121	4121									
		Datum													
		Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Zenith angle of sun at each pixel position			0	MIN_VAL	MAX_VAL	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		
SolarAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		AlongTrack	Yes	No	771	771									
		CrossTrack	No	No	4121	4121									
		Datum													
		Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Azimuth angle of sun (measured clockwise positive from North) at each pixel position			0	MIN_VAL	MAX_VAL	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		
SatelliteZenithAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		AlongTrack	Yes	No	771	771									
		CrossTrack	No	No	4121	4121									
		Datum													
		Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Zenith angle to Satellite at each pixel position			0	MIN_VAL	MAX_VAL	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		
SatelliteAzimuthAngle	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size									
		AlongTrack	Yes	No	771	771									
		CrossTrack	No	No	4121	4121									
		Datum													
		Description			Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
		Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position			0	MIN_VAL	MAX_VAL	degree	No		32-bit floating point	Name	Value	Name	Value
												NA_FLOAT32_FILL	-999.9		

92
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.

		<table><tr><th>Description</th><th>Datum Offset</th><th>Unscaled Valid Range Min</th><th>Unscaled Valid Range Max</th><th>Measurement Units</th><th>Scaled</th><th>Scale Factor Name</th><th>Data Type</th><th>Fill Values</th><th>Legend Entries</th></tr><tr><td>Solar Eclipse</td><td>0</td><td>MIN_VAL</td><td>MAX_VAL</td><td>unitless</td><td>No</td><td></td><td>1 bit(s)</td><td><table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td>False</td></tr><tr><td></td><td>True</td></tr></table></td><td><table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td>0</td></tr><tr><td></td><td>1</td></tr></table></td></tr><tr><td>Spare</td><td>1</td><td>MIN_VAL</td><td>MAX_VAL</td><td>unitless</td><td>No</td><td></td><td>7 bit(s)</td><td><table><tr><th>Name</th><th>Value</th></tr></table></td><td><table><tr><th>Name</th><th>Value</th></tr></table></td></tr></table>	Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	Solar Eclipse	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	<table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td>False</td></tr><tr><td></td><td>True</td></tr></table>	Name	Value		False		True	<table><tr><th>Name</th><th>Value</th></tr><tr><td></td><td>0</td></tr><tr><td></td><td>1</td></tr></table>	Name	Value		0		1	Spare	1	MIN_VAL	MAX_VAL	unitless	No		7 bit(s)	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value																
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PixelRowSDR	2byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table> <table><tr><th colspan="10">Datum</th></tr><tr><th>Description</th><th>Datum Offset</th><th>Unscaled Valid Range Min</th><th>Unscaled Valid Range Max</th><th>Measurement Units</th><th>Scaled</th><th>Scale Factor Name</th><th>Data Type</th><th>Fill Values</th><th>Legend Entries</th></tr><tr><td>Moderate SDR pixel row index number that was remapped to this GTM pixel (row numbering begins with zero)</td><td>0</td><td>MIN_VAL</td><td>MAX_VAL</td><td>unitless</td><td>No</td><td></td><td>unsigned 16-bit integer</td><td><table><tr><th>Name</th><th>Value</th></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr></table></td><td><table><tr><th>Name</th><th>Value</th></tr></table></td></tr></table>								Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121	Datum										Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries	Moderate SDR pixel row index number that was remapped to this GTM pixel (row numbering begins with zero)	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 16-bit integer	<table><tr><th>Name</th><th>Value</th></tr><tr><td>MISS_UINT16_FILL</td><td>65534</td></tr><tr><td>ERR_UINT16_FILL</td><td>65531</td></tr><tr><td>VDNE_UINT16_FILL</td><td>65529</td></tr></table>	Name	Value	MISS_UINT16_FILL	65534	ERR_UINT16_FILL	65531	VDNE_UINT16_FILL	65529	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value
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Name	Value																																																															
PadByte2	1byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>Granule</td><td>Yes</td><td>No</td><td>4</td><td>4</td></tr></table> <table><tr><th colspan="10">Datum</th></tr><tr><th>Description</th><th>Datum Offset</th><th>Unscaled Valid Range Min</th><th>Unscaled Valid Range Max</th><th>Measurement Units</th><th>Scaled</th><th>Scale Factor Name</th><th>Data Type</th><th>Fill Values</th><th>Legend Entries</th></tr><tr><td>Pad byte</td><td>0</td><td>MIN_VAL</td><td>MAX_VAL</td><td>unitless</td><td>No</td><td></td><td>unsigned 8-bit char</td><td><table><tr><th>Name</th><th>Value</th></tr></table></td><td><table><tr><th>Name</th><th>Value</th></tr></table></td></tr></table>								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	Legend Entries	Pad byte	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value	<table><tr><th>Name</th><th>Value</th></tr></table>	Name	Value											
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5.2.17.3 VIIRS M-Band Imagery EDR GTM Geolocation HDF5 Details

The M-Band Imagery GTM Geolocation is mapped to a GTM grid from the VIIRS M-Band Resolution SDR Geolocation. Figure below provides M-Band Imagery GTM Geolocation UML Diagram provides details on the contents and data types of the M-Band Imagery geolocation.

VIIRS-MOD-GTM-EDR-GEO
+Time : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_SHORT
+PadByte1 : H5T_NATIVE_UCHAR
+SatelliteRange : H5T_NATIVE_FLOAT
+QF1_VIIRSGTMGEO : H5T_NATIVE_UCHAR
+QF2_VIIRSGTMGEO : H5T_NATIVE_UCHAR
+PixelRowSDR : H5T_NATIVE_USHORT
+PixelColSDR : H5T_NATIVE_USHORT
+PadByte2 : H5T_NATIVE_UCHAR

Figure: 5.2.17.3-1 VIIRS M-Band Imagery EDR GTM Geolocation UML Diagram

5.2.17.3.1 VIIRS M-Band Imagery EDR GTM Geolocation

The HDF5 metadata elements associated with the M-Band Imagery GTM Geolocation EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The M-Band Imagery GTM Geolocation metadata includes all common metadata at the root, product, aggregation, and granule level. Note that M-Band Imagery is delivered with no quality flags. Therefore, there are no granule level summary quality flags in the M-Band's N_Quality_Summary_Name/Value metadata attributes.

5.3 VIIRS Near Constant Contrast (NCC) Imagery

Data Mnemonic	EDRE-IMAG-C1030 (Official)
Description/ Purpose	The VIIRS Near Constant Contrast (NCC) imagery EDR includes a daytime/nighttime visible imagery product that maintains apparent contrast under daytime, nighttime, and terminator region illumination conditions. This product is derived from the daytime/nighttime visible band (DNB) and mapped onto the same GTM Grid as the VIIRS M-Band Resolution Imagery. The “PixelRowSDR” and “PixelColSDR” geolocation fields provide the SDR row and column coordinate for each GTM pixel mapping. The pixel level geolocation quality flag “QF1_VIIRSGTMGEO” provides a flag that indicates whether a pixel has crossed a granule boundary during the SDR to GTM mapping process. If a granule boundary was crossed, the original SDR pixel may be located using effectivity time or the

	N_Input_Prod standard metadata item may be used to obtain the N_Reference_ID for each SDR granule. The NCC visible imagery minimizes the apparent transition across the terminator when it is viewed on a graphical display system so that apparent image contrast is maintained across the imagery. NCC Visible Imagery is derived from the broad DNB measured in regions with solar illumination in daytime, with lunar illumination at night, and near the terminator (twilight) region.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details.
File Size	Estimated Granule Size: See VIIRS NCC Imagery Data Content Summary for size.
File Format Type	HDF5
Data Content and Data Format	See NCC Imagery Data Content Summary See NCC Imagery Product Profile See NCC Imagery HDF5 Details See NCC Imagery HDF5 Metadata Details See NCC Imagery GTM Geolocation Details See NCC Imagery GTM Geolocation Product Profile See NCC Imagery GTM Geolocation HDF5 Details See NCC Imagery GTM Geolocation HDF5 Metadata Details

5.3.1 VIIRS NCC Imagery EDR

5.3.1.1 VIIRS NCC Imagery Data Content Summary

Table: 5.3.1.1-1 VIIRS NCC Imagery Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Albedo	Normalized Top of Atmosphere Reflectance (no atmospheric correction applied)	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
QF1 VIIRSNCCEDR	Pixel Level Quality Flags	unsigned 8-bit char	[N*771, 4121]	[771, 4121]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
AlbedoFactors	Scale = 1 st array element; Offset = 2 nd array element for the NCC Albedo	32-bit floating point	[N*2]	[2]	unitless
File Size	9,531,884 Bytes				

5.3.1.2 VIIRS NCC Imagery EDR Product Profile

Table: 5.3.1.2-1 VIIRS NCC Imagery EDR Product Profile

VIIRS NCC Imagery Product Profile

Fields																																			
Name	Data Size	Dimensions																																	
Albedo	2byte(s)																																		
		Name		Granule Boundary	Dynamic	Min Array Size	Max Array Size																												
		AlongTrack	Yes	No	771	771																													
		CrossTrack	No	No	4121	4121																													
		Datum																																	
		Description		Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries																						
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VDNE_UINT16_FILL	65529																																		
SOUB_UINT16_FILL	65528																																		
Name	Value																																		

VIIRS NCC Imagery Product Profile - Quality Flags

Fields												
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Name	Data Size	Dimensions									
QF1_VIIRSNCCEDR	1byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size					
		AlongTrack	Yes	No	771	771					
		CrossTrack	No	No	4121	4121					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Imagery Quality (Pixel Quality as determined by the SDR Calibration Quality.)	0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name Value
											Good 0
											Poor 1
											No Calibration 2
		Pixel is Saturated	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value
											False 0
											True 1
		Missing Data (Data required for calibration processing is not available for processing)	3	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name Value	Name Value
											All data present 0
									Earth View RDR data missing 1		
									Cal data (Space View, Earth View, Cal View, Solar Diffuser) missing 2		
									Thermistor Data Missing 3		
Out of Range - Calibrated pixel value outside of LUT threshold limits	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value		
									All Data Within Range 0		
									DNB Radiance Out of Range 1		
Spare	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value		
NCC Error (Processing error occurred while trying to produce NCC pixel)	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	3	3					
		Datum									
		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Pad byte	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name Value	Name Value

VIIRS NCC Imagery Product Profile - Scale Factors

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

5.3.1.3 VIIRS NCC Imagery EDR HDF5 Details

Figure below provides the, NCC Imagery UML Diagram provides details on the content and data types of the NCC Imagery product. This UML provides details at the product level only. In addition to this UML, refer to figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product. The NCC Imagery product within the HDF5 file can be found within the Data_Products group with the group name of VIIRS-NCC-EDR. The aggregation and granule(s) contain the data fields listed in the UML. The corresponding HDF5 data type for each field is also provided.

VIIRS-NCC-EDR
+Albedo : H5T_NATIVE_USHORT
+QF1_VIIRSNCCEDR : H5T_NATIVE_UCHAR
+PadByte1 : H5T_NATIVE_UCHAR
+AlbedoFactors : H5T_NATIVE_FLOAT

Figure: 5.3.1.3-1 VIIRS NCC Imagery UML Diagram

5.3.1.3.1 VIIRS NCC Imagery EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the NCC Imagery EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The NCC Imagery metadata includes all common metadata at the root, product, aggregation, and granule level. In addition, NCC Imagery HDF5 Metadata includes granule level Quality Flags stored as metadata in the N_Quality_Summary_Name and N_Quality_Summary Value metadata attributes. The NCC content and format is identical to the I-Band. See Section 5.1.1.4, I-Band Imagery HDF5 Metadata Details for content and format. Also note that there is a standard granule level metadata item that identifies the NCC Band. This metadata item is the “Band_ID” and is set to “DNB” since the NCC Imagery is created from the Day-Night Band SDR product.

5.3.2 VIIRS NCC Imagery GTM Geolocation

Data Mnemonic	None.
Description/ Purpose	The NCC Geolocation is mapped to a GTM grid from the Day-Night Band (DNB) SDR Geolocation. VIIRS NCC Imagery GTM EDR Geolocation Data Content Summary provides geolocation details.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details.
File Size	Estimated Granule Size: See VIIRS NCC Imagery EDR GTM Geolocation Data Content Summary for size.
File Format Type	HDF5
Data Content and Data Format	The VIIRS NCC Imagery GTM Geolocation contains: Time Field Geolocation Angular Fields Height and Satellite Range Geolocation Quality Flags

	SDR pixel mapping field (for SDR row and column) Pad bytes See VIIRS NCC Imagery GTM Geolocation Content Summary See VIIRS NCC Imagery GTM Geolocation Product Profiles See VIIRS NCC Imagery GTM Geolocation HDF5 Details See VIIRS NCC Imagery GTM Geolocation HDF5 Metadata Details
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5.3.2.1 VIIRS NCC Imagery EDR GTM Geolocation Data Content Summary

Table: 5.3.2-1 VIIRS NCC Imagery EDR GTM Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Time	Time of the nadir point of the GTM row in IET (1/1/1958). Represents the time of the nadir point of the GTM row	64-bit integer	[N*771]	[771]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
SolarZenithAngle	Zenith angle of sun at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*771, 4121]	[771, 4121]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*771, 4121]	[771, 4121]	meter
QF1_VIIRSGTMGEO	Pixel Level Geolocation Quality Flags	unsigned 8-bit char	[N*771, 4121]	[771, 4121]	unitless
QF2_VIIRSGTMGEO	Granule Level Quality Flag	unsigned 8-bit char	[N*1]	[1]	unitless

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
PixelRowSDR	Day-Night Band SDR pixel row index number that was remapped to this GTM pixel (row numbering begins with zero)	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
PixelColSDR	Day-Night Band SDR pixel column index number that was remapped to this GTM pixel (column numbering begins with zero)	unsigned 16-bit integer	[N*771, 4121]	[771, 4121]	unitless
MoonIllumFraction	Fraction of the moon illuminated	32-bit floating point	[N*1]	[1]	percent
LunarZenithAngle	Zenith angle of moon at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
LunarAzimuthAngle	Azimuth angle of moon (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*771, 4121]	[771, 4121]	degree
PadByte1	Pad byte	unsigned 8-bit char	[N*4]	[4]	unitless
File Size	142,984,272 Bytes				

5.3.2.2 VIIRS NCC Imagery EDR GTM Geolocation Product Profiles

Table: 5.3.2.2-1 VIIRS NCC Imagery EDR GTM Geolocation Product Profile**VIIRS NCC Imagery GTM Geolocation Product Profile**

Fields																					
Name	Data Size	Dimensions																			
Time	8byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size															
		AlongTrack	Yes	No	771	771															
		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 of the nadir point of the GTM row in IET (1/1/1958). Represents the time of the nadir point of the GTM row	0	MIN_VAL	MAX_VAL	microsecond	No		64-bit integer	<table><tr><td>Name</td><td>Value</td></tr><tr><td>NA_INT64_FILL</td><td>-999</td></tr><tr><td>MISS_INT64_FILL</td><td>-998</td></tr><tr><td>ERR_INT64_FILL</td><td>-995</td></tr><tr><td>VDNE_INT64_FILL</td><td>-993</td></tr></table>	Name	Value	NA_INT64_FILL	-999	MISS_INT64_FILL	-998	ERR_INT64_FILL	-995	VDNE_INT64_FILL	-993	<table><tr><td>Name</td><td>Value</td></tr></table>
Name	Value																				
NA_INT64_FILL	-999																				
MISS_INT64_FILL	-998																				
ERR_INT64_FILL	-995																				
VDNE_INT64_FILL	-993																				
Name	Value																				
Latitude	4byte(s)	Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size															
		AlongTrack	Yes	No	771	771															
		CrossTrack	No	No	4121	4121															

		<table><tr><th colspan="12">Datum</th></tr><tr><th>Description</th><th>Datum Offset</th><th>Unscaled Valid Range Min</th><th>Unscaled Valid Range Max</th><th>Measurement Units</th><th>Scaled</th><th>Scale Factor Name</th><th>Data Type</th><th colspan="2">Fill Values</th><th colspan="2">Legend Entries</th></tr><tr><td>Latitude of each pixel (positive North)</td><td>0</td><td>MIN_VAL</td><td>MAX_VAL</td><td>degree</td><td>No</td><td></td><td>32-bit floating point</td><td>Name</td><td>Value</td><td>Name</td><td>Value</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>NA_FLOAT32_FILL</td><td>-999.9</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>MISS_FLOAT32_FILL</td><td>-999.8</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>ERR_FLOAT32_FILL</td><td>-999.5</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>ELLIPSOID_FLOAT32_FILL</td><td>-999.4</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>VDNE_FLOAT32_FILL</td><td>-999.3</td><td></td><td></td></tr></table>												Datum												Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		Latitude of each pixel (positive North)	0	MIN_VAL	MAX_VAL	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																	
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SatelliteZenithAngle	4byte(s)	<table><tr><th>Name</th><th>Granule Boundary</th><th>Dynamic</th><th>Min Array Size</th><th>Max Array Size</th></tr><tr><td>AlongTrack</td><td>Yes</td><td>No</td><td>771</td><td>771</td></tr><tr><td>CrossTrack</td><td>No</td><td>No</td><td>4121</td><td>4121</td></tr></table> <table><tr><th colspan="12">Datum</th></tr><tr><th>Description</th><th>Datum Offset</th><th>Unscaled Valid Range Min</th><th>Unscaled Valid Range Max</th><th>Measurement Units</th><th>Scaled</th><th>Scale Factor Name</th><th>Data Type</th><th colspan="2">Fill Values</th><th colspan="2">Legend Entries</th></tr><tr><td>Zenith angle to Satellite at each pixel position</td><td>0</td><td>MIN_VAL</td><td>MAX_VAL</td><td>degree</td><td>No</td><td></td><td>32-bit floating point</td><td>Name</td><td>Value</td><td>Name</td><td>Value</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>NA_FLOAT32_FILL</td><td>-999.9</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>MISS_FLOAT32_FILL</td><td>-999.8</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>ERR_FLOAT32_FILL</td><td>-999.5</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>ELLIPSOID_FLOAT32_FILL</td><td>-999.4</td><td></td><td></td></tr></table>												Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size	AlongTrack	Yes	No	771	771	CrossTrack	No	No	4121	4121	Datum												Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries		Zenith angle to Satellite at each pixel position	0	MIN_VAL	MAX_VAL	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														
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								ELLIPSOID_FLOAT32_FILL	-999.4																																																																																																																			

103
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.

104
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.

105
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.

5.3.2.3 VIIRS NCC Imagery EDR GTM Geolocation HDF5 Details

The NCC Imagery Geolocation is mapped to a GTM grid from the Day-Night Band SDR Geolocation. Figure below provides NCC Imagery GTM Geolocation UML Diagram provides details on the contents and data types of the NCC Imagery geolocation.

VIIRS-NCC-EDR-GEO
+Time : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_FLOAT
+SatelliteRange : H5T_NATIVE_FLOAT
+QF1_VIIRSGTMGEO : H5T_NATIVE_UCHAR
+QF2_VIIRSGTMGEO : H5T_NATIVE_UCHAR
+PixelRowSDR : H5T_NATIVE_USHORT
+PixelColSDR : H5T_NATIVE_USHORT
+MoonIllumFraction : H5T_NATIVE_FLOAT
+LunarZenithAngle : H5T_NATIVE_FLOAT
+LunarAzimuthAngle : H5T_NATIVE_FLOAT
+PadByte1 : H5T_NATIVE_UCHAR

Figure: 5.3.2.3-1 VIIRS NCC Imagery GTM Geolocation UML Diagram

5.3.2.3.1 VIIRS NCC Imagery EDR GTM Geolocation HDF5 Metadata Details

The HDF5 metadata elements associated with the NCC Imagery GTM Geolocation EDR are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. The NCC Imagery GTM Geolocation metadata includes all common metadata at the root, product, aggregation, and granule level. There are no additional metadata elements or granule level quality flags for this geolocation.

6 ANCILLARY AND AUXILIARY DATA INPUTS

Not Applicable

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 VIIRS Imagery LUTs**7.1.1.1 VIIRS NCC Gain Value Versus Scene Lunar Zenith LUT**

Data Mnemonic	NP_NU-LM0233-013
Description/ Purpose	The VIIRS NCC Gain Value Versus Scene Lunar Zenith LUT file contains the gain values for the lunar illuminated scene signal for the Day/Night Band (DNB) for various lunar zenith angles. Note: It is not a function of elevation angle, despite the word “elevation” in the name (a heritage artifact). It is, however, indirectly a function, since the elevation angle is the complement of the zenith angle. This file is used in the VIIRS Near Constant Contrast (NCC) algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. 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.
File Size	See Table 7.1.1.1-1, VIIRS NCC Gain Value Versus Scene Lunar Zenith LUT Data Format for size.
File Format Type	Little Endian Binary
Production Frequency	One time per instrument during intensive Cal/Val using the Algorithm Support Function (ASF).
Data Content and Data Format	For details see Table 7.1.1.1-1, VIIRS NCC Gain Value Versus Scene Lunar Zenith LUT Data Format

Table: 7.1.1.1-1 VIIRS NCC Gain Value Versus Scene Lunar Zenith LUT Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
angle	4204	32-bit floating point	0 - 180	Degrees	1 Dimensional Array: ZENITH_ANGLE_GAIN_BINS Size of Dimension(s): 1051
gain	4204	32-bit floating point	1 - 1e+12	unitless	1 Dimensional Array: ZENITH_ANGLE_GAIN_BINS Size of Dimension(s): 1051
File Size	8,408 Bytes				

7.1.1.2 VIIRS NCC Gain Value Versus Scene Solar Elevation LUT

Data Mnemonic	NP_NU-LM0233-014
Description/ Purpose	The VIIRS NCC Gain Value Versus Scene Solar Elevation (GVVSSE) LUT file contains gain values for the solar illuminated scene signal from the DNB for various solar zenith angles. Note: It is not a function of elevation angle, despite the word “elevation” in the name (a heritage artifact). It is, however, indirectly a function, since the elevation angle is the complement of the zenith angle. This file is used in the VIIRS NCC algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. 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.
File Size	See Table 7.1.1.2-1, VIIRS NCC Gain Value Versus Scene Solar Elevation LUT Data Format for size
File Format Type	Little Endian Binary
Production Frequency	Once per instrument during intensive Cal/Val
Data Content and Data Format	For details see Table 7.1.1.2-1, VIIRS NCC Gain Value Versus Scene Solar Elevation LUT Data Format

Table: 7.1.1.2-1 VIIRS NCC Gain Value Versus Scene Solar elevation LUT Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
angle	4204	32-bit floating point	0 - 180	Degrees	1 Dimensional Array: ZENITH_ANGLE_GAIN_BINS Size of Dimension(s): 1051
gain	4204	32-bit floating point	1 - 7e+7	Unitless	1 Dimensional Array: ZENITH_ANGLE_GAIN_BINS Size of Dimension(s): 1051
File Size	8,408 Bytes				

7.1.1.3 VIIRS NCC Lunar BRDF LUT

Data Mnemonic	NP_NU-LM0233-015
Description/ Purpose	The VIIRS NCC Lunar BRDF LUT file contains the anisotropic reflectance factors for the lunar scene signal from the VIIRS DNB. Note: This is not truly a Bidirectional Reflectance Distribution Function (BRDF) since it is not in units of sr^{-1}, though dividing the values in the file by pi steradians produces a true BRDF. This file is used in the VIIRS NCC algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. 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.
File Size	See Table 7.1.1.3-1, VIIRS NCC Lunar BRDF LUT Data Format for size
File Format Type	Little Endian Binary
Production Frequency	Once before launch
Data Content and Data Format	For details see Table 7.1.1.3-1, VIIRS NCC Lunar BRDF LUT Data Format

Table: 7.1.1.3-1 VIIRS NCC Lunar BRDF PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
zenith_angle	28	32-bit floating point	0 - 105	Degrees	1 Dimensional Array: ZENITH Size of Dimension(s): 7
view_angle	24	32-bit floating point	0 - 57	Degrees	1 Dimensional Array: VIEW Size of Dimension(s): 6
relative_azimuth	36	32-bit floating point	-180 - 180	Degrees	1 Dimensional Array: RELA Size of Dimension(s): 9
brdf	1512	32-bit floating point	0.5 - 1.5	unitless	Anisotropic reflectance factors 3 Dimensional Array: ZENITH x VIEW x RELA Size of Dimension(s): 7 x 6 x 9
File Size	1,600 Bytes				

7.1.1.4 VIIRS NCC Lunar Phase LUT

Data Mnemonic	NP_NU-LM0233-016
Description/ Purpose	The VIIRS NCC Lunar Phase LUT file contains values used in calculation of the lunar irradiance as a function of the phase angle of the moon. Note: The lunar radiance as defined here as the radiance that would be observed from a 100% albedo surface where the lunar zenith angle is zero. This file is used in the VIIRS NCC algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. 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.
File Size	See Table 7.1.1.4-1, VIIRS NCC Lunar Phase LUT Data Format for size.
File Format Type	Little Endian Binary
Production Frequency	Once before launch
Data Content and Data Format	For details see Table 7.1.1.4-1, VIIRS NCC Lunar Phase LUT Data Format

Table: 7.1.1.4-1 VIIRS NCC Lunar Phase LUT Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
Lunar_phase_bins	20	32-bit floating point	0 - 180	degrees	1 Dimensional Array: LPHASE (lunar phase angle) Size of Dimension(s): 5
Lunar_source	20	32-bit floating point	-1e10 - 1e-07	W/(cm ² sr)	1 Dimensional Array: LSRC (Lunar Source Irradiance) Size of Dimension(s): 5
File Size	40 Bytes				

7.1.1.5 VIIRS NCC Solar BRDF LUT

Data Mnemonic	NP_NU-LM0233-017
Description/ Purpose	The VIIRS NCC Solar BRDF LUT file contains the anisotropic reflectance factors for the solar scene signal from the DNB. Note: This is not truly a Bidirectional Reflectance Distribution Function (BRDF) since it is not in units of sr^{-1}, though dividing the values in the file by pi steradians produces a true BRDF. This file is used in the VIIRS NCC and Bright Pixel algorithms.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. 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.
File Size	See Table 7.1.1.5-1, VIIRS NCC Solar BRDF LUT Data Format for size.
File Format Type	Little Endian Binary
Production Frequency	Once before launch
Data Content and Data Format	For details see Table 7.1.1.5-1, VIIRS NCC Solar BRDF LUT Data Format

Table: 7.1.1.5-1 VIIRS NCC Solar BRDF LUT Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
zenith_angle	28	32-bit floating point	0 - 105	Degrees	1 Dimensional Array: ZENITH Size of Dimension(s): 7
view_angle	24	32-bit floating point	0 - 57	Degrees	1 Dimensional Array: VIEW Size of Dimension(s): 6
relative_azimuth	36	32-bit floating point	-180 - 180	Degrees	1 Dimensional Array: RELA Size of Dimension(s): 9
brdf	1512	32-bit floating point	0.5 - 1.5	unitless	Anisotropic reflectance factors 3 Dimensional Array: ZENITH x VIEW x RELA Size of Dimension(s): 7 x 6 x 9
File Size	1,600 Bytes				

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 VIIRS Imagery Automated PCs

The VIIRS Imagery EDR currently uses 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 VIIRS Imagery Initialization PCs

The VIIRS Imagery EDR currently uses no Initialization PCs.

7.2.2.2 VIIRS NCC Imagery Ephemeral PCTs

Data Mnemonic	DP NU-LM2020-023
Description/ Purpose	The VIIRS Near Constant Contrast (NCC) Imagery EDR Ephemeral PC provides tunable processing coefficients for use by the algorithm during execution. The coefficients can be modified (tuned) through a configuration control process in response to algorithm, performance, inputs, sensitivity, etc. changes.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, Table B-1 for the applicable Collection Short Names
File Size	See Table 7.2.2.2-1 VIIRS NCC Imagery EDR Ephemeral PCT
File Format Type	Little Endian Binary
Production Frequency	As needed

Data Content and Data Format	For details see Table 7.2.2.2-1 VIIRS NCC Imagery EDR Ephemeral PCT
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Table: 7.2-1 VIIRS NCC Imagery EDR Ephemeral PCT

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
solar_irradiance	4	32-bit floating point	Initially set to 0.01695	W/(cm ² *sr)	Constant used to compute the solar radiance from the anisotropic reflectance factor and the gain
lza_threshold	4	32-bit floating point	Initially set to 180	degrees	Maximum lunar zenith angle threshold (values greater than this threshold result in a gain of 0)
sza_threshold	4	32-bit floating point	Initially set to 180	degrees	Maximum solar zenith angle threshold (values greater than this threshold result in a gain of 0)
max_lunar_arf	4	32-bit floating point	Initially set to 1.5	unitless	Maximum lunar anisotropic reflectance factor threshold (values greater than this threshold result in lunar radiance FILL)
min_lunar_arf	4	32-bit floating point	Initially set to 0.5	unitless	Minimum lunar anisotropic reflectance factor threshold (values less than this threshold result in lunar radiance FILL)
max_solar_arf	4	32-bit floating point	Initially set to 1.5	unitless	Maximum solar anisotropic reflectance factor threshold (values greater than this threshold result in solar radiance FILL)
min_solar_arf	4	32-bit floating point	Initially set to 0.5	unitless	Minimum solar anisotropic reflectance factor threshold (values less than this threshold result in solar radiance FILL)
min_ncc_radiance	4	32-bit floating point	Initially set to -1.0e-8	W/(cm ² *sr)	Minimum solar radiance threshold (values less than this threshold result in NCC albedo FILL)
File Size	32 Bytes				

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. 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: B-1 DQTT Quality Flag Mapping

Algorithm	Product	Test ID	Quality Flag
VIIRS I-Band Imagery	VIIRS-I1-IMG-EDR	4100	Summary Imagery Quality
VIIRS I-Band Imagery	VIIRS-I1-IMG-EDR	4101	Summary Range check
VIIRS I-Band Imagery	VIIRS-I1-IMG-EDR	4102	Summary Saturated Pixel
VIIRS I-Band Imagery	VIIRS-I2-IMG-EDR	4200	Summary Imagery Quality
VIIRS I-Band Imagery	VIIRS-I2-IMG-EDR	4201	Summary Range check
VIIRS I-Band Imagery	VIIRS-I2-IMG-EDR	4202	Summary Saturated Pixel
VIIRS I-Band Imagery	VIIRS-I3-IMG-EDR	4300	Summary Imagery Quality
VIIRS I-Band Imagery	VIIRS-I3-IMG-EDR	4301	Summary Range check
VIIRS I-Band Imagery	VIIRS-I3-IMG-EDR	4302	Summary Saturated Pixel
VIIRS I-Band Imagery	VIIRS-I4-IMG-EDR	4400	Summary Imagery Quality
VIIRS I-Band Imagery	VIIRS-I4-IMG-EDR	4401	Summary Range check
VIIRS I-Band Imagery	VIIRS-I4-IMG-EDR	4402	Summary Saturated Pixel
VIIRS I-Band Imagery	VIIRS-I5-IMG-EDR	4500	Summary Imagery Quality
VIIRS I-Band Imagery	VIIRS-I5-IMG-EDR	4501	Summary Range check
VIIRS I-Band Imagery	VIIRS-I5-IMG-EDR	4502	Summary Saturated Pixel
VIIRS NCC Imagery	VIIRS-NCC-EDR	4600	Summary Imagery Quality
VIIRS NCC Imagery	VIIRS-NCC-EDR	4601	Summary Range check
VIIRS NCC Imagery	VIIRS-NCC-EDR	4602	Summary Saturated Pixel

Appendix C. 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	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-I1-IMG-EDR-PP.xml
2	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-I2-IMG-EDR-PP.xml
3	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-I3-IMG-EDR-PP.xml
4	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-I4-IMG-EDR-PP.xml
5	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-I5-IMG-EDR-PP.xml
6	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-IMG-GTM-EDR-GEO-PP.xml
7	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M1-MOD-EDR-PP.xml
8	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M2-MOD-EDR-PP.xml
9	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M3-MOD-EDR-PP.xml
10	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M4-MOD-EDR-PP.xml
11	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M5-MOD-EDR-PP.xml
12	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M6-MOD-EDR-PP.xml
13	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M7-MOD-EDR-PP.xml
14	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M8-MOD-EDR-PP.xml
15	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M9-MOD-EDR-PP.xml
16	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M10-MOD-EDR-PP.xml
17	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M11-MOD-EDR-PP.xml
18	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M12-MOD-EDR-PP.xml
19	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M13-MOD-EDR-PP.xml
20	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M14-MOD-EDR-PP.xml
21	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M15-MOD-EDR-PP.xml
22	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-M16-MOD-EDR-PP.xml
23	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-MOD-GTM-EDR-GEO-PP.xml
24	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-NCC-EDR-PP.xml
25	474-00448-02-26 JPSS-VIIRS-Imagery-DD-Part-26 I VIIRS-NCC-EDR-GEO-PP.xml