Appendix A – SDR Data Contents and Related Information

VIIRS M-Band Data Content Summary

The VIIRS M-Band SDR HDF5 data array structures are summarized below.

VIIRS M-Band SDRs Data Content Summary

Name	Description	Data Type	Bands	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS pixel	32-bit floating point	M3-M5, M7, M13	[N*768, 3200]	[768,3200]	W/(m^2 sr μm)
		unsigned 16-bit integer	M1, M2, M6, M8-M12, M14-M16			
Reflectance	Calibrated TOA Reflectance for each VIIRS pixel	unsigned 16-bit integer	M1 – M11	[N*768, 3200]	[768,3200]	unitless
BrightnessTemperature	Calibrated TOA Brightness Temperature for each VIIRS pixel	32-bit floating point	M13	[N*768, 3200]	[768,3200]	kelvin
		unsigned 16-bit integer	M12, M14 – M16			

Name	Description	Data Type	Bands	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
ModeScan	The VIIRS operational mode, reported at the scan level.	unsigned 8-bit char	M1 – M16	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level.	unsigned 8-bit char	M1 – M16	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	M1 – M16	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule.	32-bit integer	M1 – M16	[N]	[1]	unitless
NumberOfMissingPkts	Number of missing packets in scan	32-bit integer	M1 – M16	[N*48]	[48]	unitless
NumberOfBadChecksums	Number of packets with bad checksum in scan	32-bit integer	M1 – M16	[N*48]	[48]	unitless
NumberOfDiscardedPkts	Number of discarded packets in scan	32-bit integer	M1 – M16	[N*48]	[48]	unitless
QF1_VIIRSMBANDSDR	Quality Flag for each pixel	unsigned 8-bit char	M1 – M16	[N*768, 3200]	[768,3200]	unitless
QF2_SCAN_SDR	Quality Flag for each Scan (indicates general SDR information)	unsigned 8-bit char	M1 – M16	[N*48]	[48]	unitless
QF3_SCAN_RDR	Quality Flag for each Scan (indicates general RDR information)	unsigned 8-bit char	M1 – M16	[N*48]	[48]	unitless
QF4_SCAN_SDR	Reduced Quality Indication	unsigned 8-bit char	M1 – M16	[N*768]	[768]	unitless

Name	Description	Data Type	Bands	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
QF5_GRAN_BADDETECTOR	Quality Flag – Bad detector	unsigned 8-bit char	M1 – M16	[N*16]	[16]	unitless
RadianceFactors	Radiance scale and offset: first array element = scale second array element = offset	32-bit floating point	M1, M2, M6, M8-M12, M14-M16	[N]	[2]	unitless, $W/(m^2\ sr\ \mu m)$
ReflectanceFactors	Reflectance scale and offset: first array element = scale second array element = offset	32-bit floating point	M1-M11	[N]	[2]	unitless, unitless
BrightnessTemperatureFactors	Brightness Temperature scale and offset: first array element = scale second array element = offset	32-bit floating point	M12, M14 – M16	[N]	[2]	unitless, kelvin

VIIRS M-Band Geolocation Content Summary

The VIIRS M-Band SDR geolocation data arrays structures are summarized below:

VIIRS M-Band SDR Geolocation Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime	Starting Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
MidTime	Mid-Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
SolarZenithAngle	Zenith angle of sun at each pixel position	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*768, 3200]	[768, 3200]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*768, 3200]	[768, 3200]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*768, 3200]	[768, 3200]	meter

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	32-bit floating point	[N*48, 3]	[48, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid- time of scan	32-bit floating point	[N*48, 3]	[48, 3]	m/s
SCAttitude	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the midtime of scan	32-bit floating point	[N*48, 3]	[48, 3]	arcsecond
SCSolarZenithAngle	The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector	32-bit floating point	[N*48]	[48]	degree
SCSolarAzimuthAngle	The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface)	32-bit floating point	[N*48]	[48]	degree
ModeScan	The VIIRS operational mode, reported at the scan level.	unsigned 8-bit char	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level.	unsigned 8-bit char	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
NumberOfScans	Actual number of VIIRS scans that were used to create this granule.	32-bit integer	[N]	[1]	unitless
QF1_SCAN_VIIRSSDRGEO	Scan-level quality flag	unsigned 8-bit char	[N*48]	[48]	unitless
QF2_VIIRSSDRGEO	Pixel-level quality flag	unsigned 8-bit char	[N*768, 3200]	[768,3200]	unitless

VIIRS I-Band SDRs

The Visible/Infrared Imager/Radiometer Suite (VIIRS) collects visible/infrared imagery and radiometric data. The five image bands are described in this section. The table below summarizes the image band channels and their respective data mnemonics for the VIIRS Imagery Resolution Band SDRs. The SDRs are available separately, but they are presented in this section grouped together in order to minimize the repeated information.

VIIRS Imagery Resolution Band SDRs

Data Mnemonic	Description/Purpose
SDRE-VI01-C0030	Band I1 –radiance & reflectance at nominal center wavelength 640 nm.
SDRE-VI02-C0030	Band I2 – radiance & reflectance at nominal center wavelength 865 nm.
SDRE-VI03-C0030	Band I3 – radiance & reflectance at nominal center wavelength 1610 nm.
SDRE-VI04-C0030	Band I4 – radiance & emittance at nominal center wavelength 3740 nm.
SDRE-VI05-C0030	Band I5 – radiance & emittance at nominal center wavelength 11450 nm.

The VIIRS I-Band SDR HDF5 data array structures are summarized below, followed by presentation of the UML diagrams for each designated band.

VIIRS I-Band SDR Data Content Summary

Name	Description	Data Type	Bands	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS pixel	unsigned 16-bit integer	I1-I5	[N*1536, 6400]	[1536, 6400]	$W/(m^2$ sr $\mu m)$
Reflectance	Calibrated Top of Atmosphere (TOA) Reflectance for each VIIRS pixel	unsigned 16-bit integer	I1-I3	[N*1536, 6400]	[1536, 6400]	unitless
BrightnessTemperature	Calibrated Top of Atmosphere (TOA) Brightness Temperature for each VIIRS pixel	unsigned 16-bit integer	I4, I5	[N*1536, 6400]	[1536, 6400]	K
ModeScan	The VIIRS operational mode, reported at the scan level	unsigned 8-bit char	I1-I5	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level	unsigned 8-bit char	I1-I5	[N]	[1]	unitless

Name	Description	Data Type	Bands	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
PadByte1	Pad byte	unsigned 8-bit char	I1-I5	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule	32-bit integer	I1-I5	[N]	[1]	unitless
NumberOfMissingPkts	Number of missing packets in scan	32-bit integer	I1-I5	[N*48]	[48]	unitless
NumberOfBadChecksums	Number of packets with bad checksum in scan	32-bit integer	I1-I5	[N*48]	[48]	unitless
NumberOfDiscardedPkts	Number of discarded packets in scan	32-bit integer	I1-I5	[N*48]	[48]	unitless
QF1_VIIRSIBANDSDR	Quality Flag for each pixel	unsigned 8-bit char	I1-I5	[N*1536, 6400]	[1536, 6400]	unitless
QF2_SCAN_SDR	Quality Flag for each Scan (indicates general SDR information)	unsigned 8-bit char	I1-I5	[N*48]	[48]	unitless
QF3_SCAN_RDR	Quality Flag for each Scan (indicates general RDR information)	unsigned 8-bit char	I1-I5	[N*48]	[48]	unitless
QF4_SCAN_SDR	Reduced Quality Indicator	unsigned 8-bit char	I1-I5	[N*1536]	[1536]	unitless

Name	Description	Data Type	Bands	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
QF5_GRAN_BADDETECTOR	Quality Flag – Bad detector	unsigned 8-bit char	I1-I5	[N*32]	[32]	unitless
RadianceFactors	Radiance scale and offset: 1st array element = scale 2nd array element = offset	32-bit floating point	I1-I5	[N*2]	[2]	unitless, $W/(m^2$ sr $\mu m)$
ReflectanceFactors	Reflectance scale and offset: 1st array element = scale 2nd array element = offset	32-bit floating point	I1-I3	[N*2]	[2]	unitless, unitless
BrightnessTemperatureFactors	Brightness Temperature scale and offset: 1st array element = scale 2nd array element = offset	32-bit floating point	I4, I5	[N*2]	[2]	unitless, kelvin

VIIRS I-Band Geolocation Content Summary

The VIIRS I-Band SDR Geolocation arrays structures are summarized in the table below.

VIIRS I-Band SDR Geolocation Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime	Starting Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
MidTime	Mid-Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
SolarZenithAngle	Zenith angle of sun at each pixel position	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*1536, 6400]	[1536, 6400]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*1536, 6400]	[1536, 6400]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*1536, 6400]	[1536, 6400]	meter

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	32-bit floating point	[N*48, 3]	[48, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	32-bit floating point	[N*48, 3]	[48, 3]	m/s
SCAttitude	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the mid-time of scan	32-bit floating point	[N*48, 3]	[48, 3]	arcsecond
SCSolarZenithAngle	The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector	32-bit floating point	[N*48]	[48]	degree
SCSolarAzimuthAngle	The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface)	32-bit floating point	[N*48]	[48]	degree

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
ModeScan	The VIIRS operational mode, reported at the scan level	unsigned 8-bit char	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level	unsigned 8-bit char	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule	32-bit integer	[N]	[1]	unitless
QF1_SCAN_VIIRSSDRGEO	Scan-level quality flag	unsigned 8-bit char	[N*48]	[48]	unitless
QF2_VIIRSSDRGEO	Pixel-level quality flag	unsigned 8-bit char	[N*1536, 6400]	[1536,6400]	unitless

VIIRS DNB SDRs

The Visible/Infrared Imaging/Radiometer Suite (VIIRS) collects visible/infrared imagery and radiometric data. The Day-night Band (DNB) is described in this section. The VIIRS DNB measures radiance over a panchromatic band at wavelengths between 500 nm and 900 nm. The VIIRS DNB SDR HDF5 data array structures are summarized below, followed by presentation of the UML diagram for this band.

VIIRS DNB SDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
Radiance	Calibrated Top of Atmosphere (TOA) Radiance for each VIIRS DNB pixel	32-bit floating point	[N*768,4064]	[768, 4064]	W/(cm^2 sr)
ModeScan	The VIIRS operational mode, reported at the scan level	unsigned 8-bit char	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level	unsigned 8-bit char	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans in granule.	32-bit integer	[N]	[1]	unitless
NumberOfMissingPkts	Number of missing packets in scan	32-bit integer	[N*48]	[48]	unitless
NumberOfBadChecksums	Number of packets with bad checksum in scan	32-bit integer	[N*48]	[48]	unitless
NumberOfDiscardedPkts	Number of discarded packets in scan	32-bit integer	[N*48]	[48]	unitless
QF1_VIIRSDNBSDR	Pixel-level Quality Flag	unsigned 8-bit char	[N*768,4064]	[768, 4064]	unitless
QF2_SCAN_SDR	Quality Flag for each Scan (indicates general SDR information)	unsigned 8-bit char	[N*48]	[48]	unitless

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
QF3_SCAN_RDR	Quality Flag for each Scan (indicates general RDR information)	unsigned 8-bit char	[N*48]	[48]	unitless

VIIRS DNB Geolocation Content Summary

The VIIRS DNB SDR geolocation arrays structures are summarized below.

VIIRS DNB SDR Geolocation Content Summary

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
StartTime	Starting Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
MidTime	Mid-Time of each scan in IET (1/1/1958)	64-bit integer	[N*48]	[48]	microsecond
Latitude	Latitude of each pixel (positive North)	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
Longitude	Longitude of each pixel (positive East)	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
SolarZenithAngle	Zenith angle of sun at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SatelliteZenithAngle	Zenith angle to Satellite at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
LunarZenithAngle	Zenith angle of moon at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
LunarAzimuthAngle	Azimuth angle of moon (measured clockwise positive from North) at each pixel position	32-bit floating point	[N*768, 4064]	[768, 4064]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*768, 4064]	[768, 4064]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*768, 4064]	[768, 4064]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan	32-bit floating point	[N*48,3]	[48, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan	32-bit floating point	[N*48,3]	[48, 3]	m/s
SCAttitude	Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw)	32-bit floating point	[N*48, 3]	[48, 3]	arcsecond
SCSolarZenithAngle	The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector	32-bit floating point	[N*48]	[48]	degree

Name	Description	Data Type	Aggregate Dimensions	Granule Dimensions	Units
SCSolarAzimuthAngle	The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface)	32-bit floating point	[N*48]	[48]	degree
MoonPhaseAngle	Angle between ray vector to moon from earth and ray vector of satellite to earth	32-bit floating point	[N]	[1]	degree
MoonIllumFraction	Fraction of the moon illuminated (expressed as percent)	32-bit floating point	[N]	[1]	unitless
ModeScan	The VIIRS operational mode, reported at the scan level	unsigned 8-bit char	[N*48]	[48]	unitless
ModeGran	The VIIRS operational mode, reported at the granule level	unsigned 8-bit char	[N]	[1]	unitless
PadByte1	Pad byte	unsigned 8-bit char	[N*3]	[3]	unitless
NumberOfScans	Actual number of VIIRS scans that were used to create this granule	32-bit integer	[N]	[1]	unitless
QF1_SCAN_VIIRSSDRGEO	Scan-level quality flag	unsigned 8-bit char	[N*48]	[48]	unitless
QF2_VIIRSSDRGEO	Pixel-level quality flag	unsigned 8-bit char	[N*768, 4064]	[768,4064]	unitless

APPENDIX B: Data Quality Flags

Data Product or Flag	Descriptions	Bits in Granule (Assumes 12 scans per Granule) 'M' indicates a metadata flag	Bits in Cell	Values	Granule QFs	Cell	DQN	Comments
VIIRS SDR								
SDR Flags common to all Bands								
Summary VIIRS SDR Quality	Percent of Good Quality pixels in Granule	8 (M)		0-100%	X		Yes	Set if any detailed flags are set (below); one/scan
Scan Quality Exclusion	Indicates the number of scans that SDR product could not be produced (including partial scans)	5		0-16	X		Yes	# of scans that SDR product could not be produced (including partial scans)
Moon in keep-out-box	Indicated that the moon has corrupted the space view. 1 bit/band/scan.	352		Moon in Space View Moon not in Space View	X		No	1 bit/per scan
Bad Detector - M-Bands	M-bands - 1 bits/detector/granule (16 detectors).	16		Good Bad	X		No	M-bands - 1 byte/scan (16 detectors)

Bad Detector - I-Bands	I-bands - 1 bits/detector/granule (32 detectors).	32		Good Bad	X		No	I-bands - 2 bytes/scan (32 detectors)
Ham side	Flag indicates which side of the HAM was valid for each VIIRS scan	16		A B	X		No	1 bit/per scan. This flag was added here as but was previously in the VIIRS SDR product description.
VIIRS 375m (Imagery) Scan-line quality flag	This contains quality flags for every detector for every band. A value of 0 indicates good quality for the scan line. A value of >0 indicates reduced quality. The actual value is determined by the combined number of steps required to find a replacement for thermistor or calibration source data.	128		0-255	8 bits/scan		No	

VIIRS 750m (Moderate) Scan-line quality flag	This contains quality flags for every detector for every band. A value of 0 indicates good quality for the scan line. A value of >0 indicates reduced quality. The actual value is determined by the combined number of steps required to find a replacement for thermistor or calibration source data.	128		0-255	8 bits/scan		No	
SDR Quality	Indicates calibration quality due to bad space view offsets, OBC view offsets, etc or use of a previous calibration view.		2	Good Poor No Calibration		X	No	
Saturated Pixel	Indicates the level of pixel saturation		2	None Saturated Some Saturated All Saturated		X	No	
Missing data	Data required for calibration processing is not available for processing		2	1) All data present 2) EV RDR data missing 3) Cal data (SV, CV, SD, etc)		X	No	

				missing or bad 4) Thermistor data missing or bad				
Out of Range	Calibrated pixel value outside of LUT threshold limits		2	1) All data within range 2) Radiance out of range 3) Reflectance or EBBT out of range 4) Both Radiance and Reflectance or EBBT out of range		X	No	
Out of Range - DNB	Calibrated pixel value outside of LUT threshold limits		1	1) All data within range 2) Radiance out of range		X	No	Updated DNB out-of-range flag. Matches DFCB - D34862-03 Rev B

Verified RDR Flags (passed through to all SDRs)								
RDR Pixel/Sample Quality Exclusion	Indication that the checksums that are imbedded in the instrument's science data did	96			Number of zones per scan*number of		No	

	not verify during ground processing				scans			
VIIRS RDR Scan Quality	1) Scan Data Presence 2) Missing packets in Scan 3) Packets with bad Checksum in Scan 4) Discarded packets in Scan	1552		1) Some Valid Data/No valid Data 2) Number is missing packets (32 bits) 3) Number of packets with bad Checksum (32 bits) 4) Number of discarded packets (32 bits)	int32/[nscans x 4]		No	Scan Data Quality
Geolocation								
Automatic Quality Flag	Granule level quality flag indicating whether or not the retrieval successful or not	1		Retrieval sucessful Retrieval not sucessful	X		No	Set to 0 if granule level quality assurance metadata retrieval successful otherwise set to 1
QA Percent Missing Data	8 bit scaled integer containing the percentage of missing data. Internally, code keeps # of pixels in granule and number of pixels with missing data	8		0-100%	X		No	8 bit scaled integer containing the percentage of missing data. Internally, code keeps # of pixels in granule and number of pixels with missing data (I.e., insufficient data for geolocation), both as integers. The quotient is computed in one of the write routines and output to the

	(I.e., insufficient data for geolocation), both as integers. The quotient is computed in one of the write routines and output to the metadata.							metadata.
QA Percent Out Of Bounds Data	8 bit scaled integer containing the percentage of out of bounds data. Internally, code keeps # of pixels in granule and number of out of bounds pixels (I.e., pixels than can not be geolocated), both as integers. The quotient is computed in one of the write routines and output to the metadata.	8		0-100%	X		No	8 bit scaled integer containing the percentage of out of bounds data. Internally, code keeps # of pixels in granule and number of out of bounds pixels (I.e., pixels than can not be geolocated), both as integers. The quotient is computed in one of the write routines and output to the metadata.
HAM/RTA Encoder	Indicates the quality of the HAM and RTA encoder timestamps	32		• Nominal – All encoder data valid • Bad – All encoder data is bad for entire scan for HAM, RTA or both • Degraded – Some timestamps are invalid within	X		No	HAM_impulse_flag, SCI_ ABNORM, & SCI_STATE: Note: SCI_ABNORM, & SCI_STATE removed for version 2.0

				scan for either HAM, RTA or both • Missing encoder data for scan				
Missing Ephemeris or Attitude Data	2 bit flag indicating the Ephemeris and Attitude Interpolation Scheme used when data is missing.	32		• Nominal - E&A data available • Missing Data <= Small Gap • Small Gap < Missing Data <= Granule Boundary • Missing Data > Granule Boundary	2 bits/scan		No	
South Atlantic Anomaly	Instrument over SAA.	16		Not above SAA Above SAA	X		No	SI to check if in metadata already - same flag moved from SDR to geo
Solar Eclipse	Solar eclipse (umbra or penumbra) affected scan during Earth view	16		No Solar Eclipse Solar Eclipse	X		No	1 bit/per scan - same flag moved from SDR to geo

Lunar Eclipse	Lunar eclipse during Earth view scan	16		No Lunar Eclipse Lunar Eclipse	X		No	1 bit/per scan - same flag moved from SDR to geo - DNB only
Invalid Input Data	Indicates that any of the SC ephemeris or attitude data is invalid or the encoder data is invalid		1	Valid Invalid		X	No	
Bad Pointing	Indicates that the sensor LOS does not intersect the geoid, is near the limb or has invalid sensor angles		1	Good Pointing Bad Pointing		X	No	
Bad Terrain	Indicates that the algorithm could not obtain a valid terrain value		1	Good Terrain Bad Terrain		X	No	

Invalid Solar angles	Indicates that the solar angles are invalid.		1	Valid angles Invalid angles		X	No	