

RADARSAT-2 NITF 2.1 Product Format Definition

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CHANGE RECORD

ISSUE	DATE	PAGE(S)	DESCRIPTION	RELEASE
1/0	Apr. 14, 2009	All	First Issue ECN #C11844	
1/1	May. 10, 2010	Table A-2 Table A-4	First Issue, First Revision Correct definition of IID2, Image Identifier 2 Changes for SLC data (ref: Issue# 4846) <ul style="list-style-type: none">- I and Q are now 16 bit shorts instead of 32 bit floats- I and Q are represented each in a separate band, interleaved by pixel, instead of a single band containing both	
1/2	Jun. 21, 2010	Section 3.1.1	First Issue, Second Revision NITF2.1 will support images potentially as big as 1TB with multiple image segments which are less than 10GB for each	
2/0	Nov. 26, 2014	All	Second Issue ECN C24334 The RADARSAT-2 NITF 2.1 format has been significantly redesigned to be a single file definition with image data, product metadata, LUT, and product license files contained within a single NITF 2.1 file.	



ISSUE	DATE	PAGE(S)	DESCRIPTION	RELEASE
2/1	May 22, 2015	All	Second Issue, First Revision ECN C25525 Changes to address lookup table and band ordering for single file NITF products. Added BLOCKA and EXPLTB TRE definitions. Various updates throughout document.	
2/2	March 16, 2016		Second Issue, Second Revision Table A-4 Update to incorrect field name of NBPC field (was NPBC). Table A-6 PSO field incorrectly contained 'easting' in name and description (updated to 'northing').	



TABLE OF CONTENTS

1	INTRODUCTION	1-1
	1.1 Scope	1-1
	1.2 Document Overview.....	1-1
2	DOCUMENTS	2-1
	2.1 Applicable Documents	2-1
	2.2 Reference Documents.....	2-1
3	RADARSAT-2 NITF 2.1 PRODUCT	3-1
	3.1 RADARSAT-2 Product Components.....	3-1
	3.2 NITF 2.1 Product Composition	3-3
	3.2.1 Image Pixel Data.....	3-4
	3.2.2 Tagged Record Extensions	3-5
	3.2.3 Product Information	3-5
	3.2.4 Look-Up Tables	3-6
	3.2.5 End User License Agreement	3-6
	3.2.6 Product Name.....	3-6
A	NITF 2.1 RECORD DEFINITIONS.....	A-1

LIST OF FIGURES

Figure 3-1	RADARSAT-2 NITF 2.1 Product Composition	3-3
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LIST OF TABLES

Table 3-1	RADARSAT-2 Product Components and Mapping to GeoTIFF and NITF 2.1 Products	3-1
Table 3-2	RADARSAT-2 Product Types	3-2
Table 3-3	Metadata Components of a RADARSAT-2 NITF 2.1 Product.....	3-4
Table A-1	NITF 2.1 File Header Fields.....	A-2
Table A-2	NITF 2.1 GEOPSB Tagged Record Extension Fields.....	A-6
Table A-3	NITF 2.1 PRJPSB Tagged Record Extension Fields	A-8
Table A-4	NITF 2.1 Image Sub-Header Fields	A-9
Table A-5	NITF 2.1 RPC00B Tagged Record Extension Fields.....	A-17
Table A-6	NITF 2.1 MAPLOB Tagged Record Extension Fields	A-19
Table A-7	NITF 2.1 BLOCKA Tagged Record Extension Fields	A-20
Table A-8	NITF 2.1 EXPLTB Tagged Record Extension Fields.....	A-22
Table A-9	NITF 2.1 Product License Text Sub-Header Fields	A-25
Table A-10	NITF 2.1 Product Information File and LUT Data Extension Segment Sub-Header Fields.....	A-27

ACRONYMS AND ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
Az	Azimuth
BLOCKA	Image Block Information Extension Format
CE	Controlled Extensions
dB	Decibel
DEM	Digital Elevation Model
ECR	Earth Centered Rotational
EXPLTB	Exploitation Related Information Extension Format
FFT	Fast Fourier Transformation
GB	GigaByte (10 ⁹ bytes)
GEOPSB	Geographic Positioning Support Data Extension Record for NITF
GeoTIFF	Geographic extension to the Tagged Image File Format
HD	Horizontal Transmit Dual Receive Polarization (HH & HV)
HH	Horizontal Transmit Horizontal Receive (Polarization)
HV	Horizontal Transmit Vertical Receive (Polarization)
ID	Identifier
JITC	Joint Interoperability Test Committee
LUT	Look-Up Table
MAPLOB	Map Location Support Data Extension Record for NITF
MDA	MacDonald, Dettwiler and Associates Ltd.
NGA	National Geospatial-Intelligence Agency
NITF	National Imagery Transmission Format
PDF	Portable Document Format
PRJPSB	Map Projection Parameters Support Data Extension Record for NITF
QP	Quad Polarization (HH & HV & VH & VV)
RPC00B	Rational Function Positioning Support Data Extension Record for NITF
SAR	Synthetic Aperture RADAR
ScanSAR	Scanning Synthetic Aperture Radar

SCF	ScanSAR Fine product
SCN	ScanSAR Narrow product
SCS	ScanSAR Sampled product
SCW	ScanSAR Wide product
SELF	Self-Describing Data
SGF	SAR Georeferenced Fine product
SGX	SAR Georeferenced Extra-Fine product
SLC	Single Look Complex product
SPG	SAR Precision Geocoded product
SSG	SAR Systematic Geocoded product
TB	Terabyte (10^{12} bytes = 1000 GB)
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
VD	Vertical Transmit with Dual Receive Polarization (VV & VH)
VH	Vertical Transmit Horizontal Receive (Polarization)
VV	Vertical Transmit Vertical Receive (Polarization)
WGS84	World Geodetic System 1984
XML	Extensible Markup Language

1 INTRODUCTION

This document defines how RADARSAT-2 products [A-2] are formatted based on the National Imagery Transmission Format (NITF) version 2.1 [A-3]. In this format each RADARSAT-2 product, including all image data, metadata and license text, is provided as a single NITF 2.1 file. RADARSAT-2 products are also available with image, metadata and license files in separate GeoTIFF, XML and text files [A-1].

1.1 Scope

This document specifies the content, format and organization of RADARSAT-2 NITF 2.1 products as generated by the RADARSAT-2 processor. This document makes reference to the Product Information File, Look-Up Table Files and Support Files as defined in the RADARSAT-2 Product Format Document [A-1]. Detailed information on the different types of RADARSAT-2 products and sensor characteristics are provided in the RADARSAT-2 Product Description Document [A-2].

1.2 Document Overview

This document is structured as follows:

- Section 1 describes the purpose and scope of the document.
- Section 2 lists the applicable and reference documents referred to herein.
- Section 3 describes the RADARSAT-2 NITF 2.1 Products.
- Appendix A lists NITF 2.1 record definitions for RADARSAT-2 Products.

2 DOCUMENTS

2.1 Applicable Documents

A-1	RN-RP-51-2713	RADARSAT-2 Product Format Definition. Issue/Revision 1/12. MacDonald Dettwiler and Associates Ltd. (MDA), July 14, 2014.
A-2	RN-SP-52-1238	RADARSAT-2 Product Description. Issue/Revision 1/11. MDA, May 5, 2014.
A-3	MIL-STD-2500C	National Imagery Transmission Format. Version 2.1, May 6, 2006. Department of Defense.
A-4	STDI-0002-1	The Compendium of Controlled Extensions (CE) for the National Imagery Transmission Format (NITF), Volume 1, Tagged Record Extensions. Version 4.0, August 1, 2011. NGA.
A-5		The Digital Geographic Information Exchange Standard Part 2 - Annex D. Edition 2.1, September 2000. NGA
A-6		The Digital Geographic Information Exchange Standard Part 3, September 2000. NGA.
A-7	STDI-0002-2	The Compendium of Controlled Extensions (CE) for the National Imagery Transmission Format (NITF), Volume 2, Data Extension Segments. Version 1.0, December 3, 2012. NGA.

2.2 Reference Documents

R-1	STDI-0006	NITF Version 2.1 Commercial Dataset Requirements Document. December 20, 2006. NGA.
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3 RADARSAT-2 NITF 2.1 PRODUCT

3.1 RADARSAT-2 Product Components

A RADARSAT-2 product, at a high level view, is a collection of digital information. It comprises image pixel data, product metadata, and support information. Table 3-1 lists these components and how they map to the two product formats supported by the RADARSAT-2 system, GeoTIFF products and single file NITF 2.1 products.

Table 3-1 RADARSAT-2 Product Components and Mapping to GeoTIFF and NITF 2.1 Products

RADARSAT-2 Product Components	Mapping to GeoTIFF Product	Mapping to NITF 2.1 Product
Image Data		
Image Pixel Data (single, dual or quad-pol)	TIF Format Imagery File(s): (separate file for each pol) imagery_HH.tif imagery_HV.tif imagery_VH.tif imagery_VV.tif	NITF 2.1 Image Segment (pols band interleaved per pixel)
Browse Image	TIF Format Imagery File: BrowseImage.tif	Not included with product
Product Metadata		
Product Information formatted in XML	Stand-alone XML File: product.xml	NITF 2.1 XML_DATA_CONTENT Data Extension Segment
Beta0 LUT formatted in XML*	Stand-alone XML File: lutBeta.xml	NITF 2.1 XML_DATA_CONTENT Data Extension Segment
Gamma0 LUT formatted in XML*	Stand-alone XML File: lutGamma.xml	NITF 2.1 XML_DATA_CONTENT Data Extension Segment
Sigma0 LUT formatted in XML*	Stand-alone XML File: lutSigma.xml	NITF 2.1 XML_DATA_CONTENT Data Extension Segment
Support Files		
Product Licenses	Stand-alone PDF License File(s): *.pdf	NITF 2.1 Text Segments
Readme File	Stand-alone ASCII Text File: Readme.txt	Not included with product
Product Description SELF File	Stand-alone SELF File: ProductDescription.self	Not included with product
Coverage polygon formatted in KML*	Stand-alone KML File: product.kml	Not included with product (instead corner coords are recorded in the IGEOL0 field)



RADARSAT-2 Product Components	Mapping to GeoTIFF Product	Mapping to NITF 2.1 Product
Product Processing Report	Stand-alone ASCII Text File: ORDER_ID.prodReport	Not included with product
Schemas	Directory containing XML schemas is included in root product directory	Not included with product

*not included with Geocorrected Products

The NITF 2.1 product embeds the above components in a single file. The GeoTIFF product comprises a directory containing each component as a separate file and is fully described in [A-1]. Some components available in GeoTIFF products are not included in the NITF 2.1 products such as the browse image, product description, processing report, KML and readme files. NITF 2.1 formatting is available for all RADARSAT-2 product types as listed below in Table 3-2. These product types are fully described in [A-2].

Table 3-2 RADARSAT-2 Product Types

Grouping	Type	Description
Georeferenced SAR Image Products	Single Look Complex (SLC)	Single-Look Complex slant range.
	SAR Georeferenced Fine (SGF)	Detected, georeferenced, ground range, standard pixel spacing.
	SAR Georeferenced Extra (SGX)	As for SGF, but with finer pixel spacing (suitable for post processing).
	ScanSAR Narrow (SCN)	Detected, georeferenced, ground range from ScanSAR Narrow beam.
	ScanSAR Wide (SCW)	Detected, georeferenced, ground range from ScanSAR Wide beam.
	ScanSAR Fine (SCF)	Detected, georeferenced, ground range from ScanSAR
	ScanSAR Sampled (SCS)	Detected, georeferenced, ground range from ScanSAR
Geocorrected SAR Image Products	SAR Systematic Geocoded (SSG)	Systematically geocoded to a standard map projection (without the use of ground control).
	SAR Precision Geocoded (SPG)	Precision geocoded to a standard map projection (with ground control). May also be ortho-rectified using a Digital Elevation Model (DEM).

3.2 NITF 2.1 Product Composition

NITF 2.1 is a highly scalable image format that allows multiple images to be represented in a single file together with relevant meta-data and support information [A-3, A-4]. A NITF 2.1 file consists of a file-header and multiple segments, each for a different data object. There are separate types of segments for imagery, graphics, text and auxiliary data. Each segment has its own sub-header. The File-Header provides a record of the location and size of all the constituent segments.

The structure of a RADARSAT-2 NITF 2.1 product is displayed in Figure 3-1 and Table 3-3 lists the constituent segments and how they depend on RADARSAT-2 product type. Appendix A provides a detailed listing of the fields in the file-header and various sub-headers and how they depend on RADARSAT-2 product type.

The transmit and receive polarizations (HH, HV, VH, or VV) are represented as bands in a NITF 2.1 product. A detected product is composed of either one, two or four bands, while a complex SLC product is composed of either two, four or eight bands as the real and imaginary components of each polarization are provided as separate bands. The NITF 2.1 product band ordering will match the polarization list in the product name defined in Section 3.2.6. The Image Sub-header IID2 field (Table A-4) will also contain a string of ordered polarizations that match the polarization order in the product.

The constituent segments (components) of a RADARSAT-2 NITF 2.1 product are described further below.

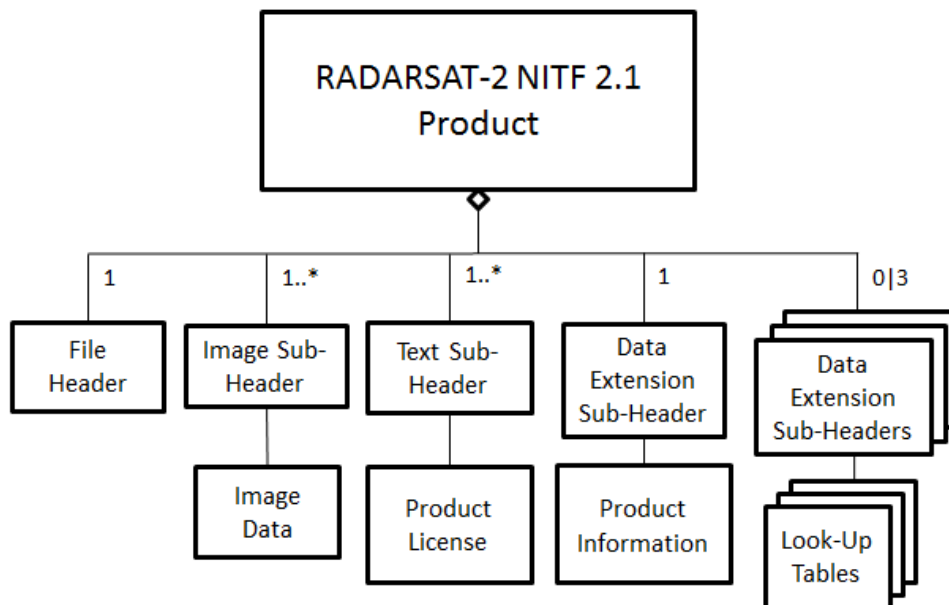


Figure 3-1 RADARSAT-2 NITF 2.1 Product Composition

Table 3-3 Metadata Components of a RADARSAT-2 NITF 2.1 Product

	SLC	SGF	SGX	SCN	SCW	SCF	SCS	SSG	SPG
File Header	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Positioning Support Tagged Record Extension (GEOPSB)	No	No	No	No	No	No	No	Yes	Yes
Map Projection Parameters Support Tagged Record Extension (PRJPSB)	No	No	No	No	No	No	No	Yes	Yes
Image Segment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rational Function Positioning Support Tagged Record Extension (RPC00B)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Map Location Support Tagged Record Extension (MAPLOB)	No	No	No	No	No	No	No	Yes	Yes
Image Block Information Tagged Record Extension (BLOCKA)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exploitation Related Information Tagged Record Extension (EXPLTB)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Product License Text Segments	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Product Metadata XML Data Extension Segment (DES)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Look-Up Table (x3) XML Data Extension Segment (DES)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No

3.2.1 Image Pixel Data

Image Pixel Data is contained in one or more NITF 2.1 image segments.

Because NITF has a limit of 10 GB for each image segment, longer images will be broken into N separate image segments, but will be stored in the same NITF file. While the segmentation is driven by the 10 GB size limit, the first N-1 segments must be sized at fewer than 100,000 lines due to NITF lines per segment limitations. The last segment may be larger than the previous ones. The size limit for an entire NITF 2.1 file is 1 TB which will be sufficient for all potential products.

3.2.2 Tagged Record Extensions

Tagged Record Extensions (TREs) are used to embed additional metadata within header files. RADARSAT-2 NITF 2.1 products include the following TREs within the File-header or Image Sub-header:

PRJPSB - Map Projection Parameters Support TRE, which defines map projection parameters.

GEOPSB - Geographic Positioning Support TRE, which defines datums and ellipsoids.

RPC00B - Rational Function Positioning Support TRE, which lists the rational function for mapping geodetic coordinates to image coordinates.

MAPLOB - Map Location Support TRE, which define map coordinates.

BLOCKA - Image Block Information Extension Format TRE, which lists image block information.

EXPLTB - Exploitation Related Information Extension Format TRE, which defines image orientation information.

The RPC00B TRE is only provided with NITF 2.1 Georeferenced Products and the MAPLOB, PRJPSB and GEOPSB TREs are only provided with NITF 2.1 Geocorrected Products. The BLOCKA and EXPLTB TREs are provided with both Georeferenced and Geocorrected Products.

3.2.3 Product Information

Every RADARSAT-2 product includes product information, or metadata, written in Extensible Markup Language (XML), that documents all key imaging and processing parameters, including sufficient information to generate a rigorous georeferencing model. The contents and layout of the product information XML is defined in the RADARSAT-2 Product Format Definition [A-1]. In a NITF 2.1 formatted RADARSAT-2 product the product information is embedded within the .ntf file as a XML Data Extension Segment (DES). Schema files for the product information XML are available online at location:

<http://gs.mdacorporation.com/includes/documents/RS2ProductSchemas.zip>.

The product metadata XML was originally designed for directory based products and, therefore, fields such as fullResolutionImageData are not well suited for a single file product but are retained for consistency with the GeoTIFF product metadata XML file.

3.2.4 Look-Up Tables

All RADARSAT-2 Georeferenced Products provide three Look-Up Tables (LUTs), written in XML, for respectively scaling digital numbers to sigma-zero, beta-zero, and gamma-zero backscatter values. LUTs are not provided with Geocorrected Products. The contents and usage of the LUTs are described in the RADARSAT-2 Product Format Definition [A-1]. In a NITF 2.1 formatted RADARSAT-2 Georeferenced Product, each of the three LUTs is embedded within the .ntf file as a separate XML DES. The name of the LUT file for each respective DES is written to the DESSHABS field (Table A-10).

3.2.5 End User License Agreement

The RADARSAT-2 End User License Agreements for single user or government user are included within the NITF 2.1 product as text segments in English, French and Spanish. The license filename is displayed in the TXTITL field of the Text Header Record described in Table A-9.

3.2.6 Product Name

All RADARSAT-2 products include a formatted product name followed by an ‘.ntf’ extension: <Product_name>.ntf. The <Product_name> will follow the below format:

RS2_BeamMode_Date_Time_Polarizations_ProcessingLevel.ntf

For example:

RS2_MF23_20080328_074502_HH_HV_SGF.ntf

Where:

RS2 = RADARSAT-2
MF23 = Beam Mode
20080328 = Acquisition Date
075402 = Acquisition UTC Start Time
HH_HV = Polarizations
SGF = Processing Level

The local disk product directory name and zipped products delivered by FTP will follow the naming convention in [A-1] section 8.1.2.

A NITF 2.1 RECORD DEFINITIONS

The following tables specify the definitions of the NITF 2.1 records, including how they vary with product type. Throughout the tables the following conventions are used in the Format column:

- A<number> - general ASCII field, number of characters long, right-padded with spaces
- N<number> - numeric ASCII field, number of characters long, left padded with zeros
- B<number> - binary field, number of bytes long

Throughout the tables the following conventions are used in the Values column:

- A list of quoted strings showing the allowable values for a general ASCII field
- A list of numbers showing the allowable values for a numeric ASCII field
- A hyphen separated range of allowable values for a numeric ASCII field
- Positive and negative numbers specifying a range of allowable values for a numeric ASCII field
- A list of hexadecimal strings showing the allowable values for a binary field
- Configuration – indicating the value is defined in a configuration file.
- Generate – indicating that the value is calculated
- No value – indicates that the field is blank filled with ASCII space characters

In the following tables, when the value length is shorter than the specified length the value will be blank filled to the specified length. As an example, for the IREP field of format A8, a single-band SAR product will contain the ASCII string “MONO” and when written to the NITF 2.1 product the ASCII string will be followed by 4 spaces to fill all of the required 8 characters: “MONO ”.



The NITF 2.1 File Header is included in all NITF 2.1 formatted products.

Table A-1 NITF 2.1 File Header Fields

Field	Name	Format	Values	Description
FHDR	File Type	A4	NITF	Identifies the file as an NITF file.
FVER	File Version	N5	02.10	Version of the NITF file.
CLEVEL	Complexity Level	N2	01 03 05 06 07 09	Calculated based on size of image and other factors.
STYPE	System Type	A4	BF01	Also referred to as "Standard Type".
OSTAID	Originating Station ID	A10	Generate	Name of facility that created the file.
FDT	File Date & Time	A14	Generate	UTC time of file creation using the format: CCYYMMDDhhmmss Where: CC is the first two digits of the year, YY is the last two digits of the year, MM is the month (01-12), DD is the day of the month (01-31), hh is the hour (00-23), mm is the minute (00-59), ss are the seconds (00-59).
FTITLE	File Title	A80	Generate	Filename of product.
FSCLAS	File Security Classification	A1	U	Data is unclassified.
FSCLSY	File Security Classification System	A2		Blank filled - not required for unclassified data.
FSCODE	File Codewords	A11		Blank filled - not required for unclassified data.
FSCTLH	File Control and Handling	A2		Blank filled - not required for unclassified data.
FSREL	File Releasing Instructions	A20		Blank filled - not required for unclassified data.
FSDCTP	File Declassification Type	A2		Blank filled - not required for unclassified data.
FSDCDT	File Declassification Date	A8		Blank filled - not required for unclassified data.



Field	Name	Format	Values	Description
FSDCXM	File Declassification Exemption	A4		Blank filled - not required for unclassified data.
FSDG	File Downgrade	A1		Blank filled - not required for unclassified data.
FSDGDT	File Downgrade Date	A8		Blank filled - not required for unclassified data.
FSCLTX	File Classification Text	A43		Blank filled - not required for unclassified data.
FSCATP	File Classification Authority Type	A1		Blank filled - not required for unclassified data.
FSCAUT	File Classification Authority	A40		Blank filled - not required for unclassified data.
FSCRSN	File Classification Reason	A1		Blank filled - not required for unclassified data.
FSSRDT	File Security Source Date	A8		Blank filled - not required for unclassified data.
FSCTLN	File Security Control Number	A15		Blank filled - not required for unclassified data.
FSCOP	File Copy Number	N5	00000	Copy number of the file. Zero implies no tracking of copy numbers.
FSCPYS	File Number Of Copies	N5	00000	Copy number of the file. Zero implies no tracking of copy numbers.
ENCRYP	Encryption	N1	0	Not encrypted.
FBKGC	File Background Color	B3	0x000000	Unsigned binary 3-tuple giving the background color in red, green, blue order. 0x000000 is black and 0xffff is white.
ONAME	Originator's Name	A24		Blank filled - no operator is assigned responsibility for origination.
OPHONE	Originator's Phone Number	A18		Blank filled – phone number of the facility that created the file will not be included.
FL	File Length	N12	Generate	Length of file in bytes.
HL	NITF File Header Length	N6	Generate	Length of this header in bytes. Will depend on the number of image, text, data extension, or user defined segments.
NUMI	Number of Image Segments	N3	Generate	Number of image segments in the file. Typically will be 001. The image will be split into multiple image segments only if the maximum image segment size (approximately 10GB) is exceeded. Following this field there will be NUMI (LISH, LI) field pairs.

Field	Name	Format	Values	Description
LISHn	Length of n th Image Segment Subheader	N6	Generate	Length of the image segment n sub-header record in bytes, 1 <= n <= NUMI. There will be one LISH entry per image segment in a file and it will be associated with one following LI entry.
LIn	Length of n th Image Segment	N10	Generate	Length of the image segment n in bytes, 1 <= n <= NUMI. There will be one LI entry per image segment in a file and it will be associated with one preceding LISH entry.
NUMS	Number of Graphic Segments	N3	000	No graphic segments.
NUMX	Reserved for Future Use	N3	000	Must be zero filled.
NUMT	Number of Text Segments	N3	Generate	Number of text segments in the file. There will be N text segments corresponding to N language versions of the license. Following this field there will be NUMT (LTSH, LT) field pairs.
LTSHn	Length of nth Text Subheader	N4	Generate	Length of text subheader n in bytes. 1 <= n <= NUMT. There will be one LTSH entry per text segment in a file and it will be associated with one following LT entry.
LTn	Length of nth Text Segment	N5	Generate	Length of text segment n in bytes. 1 <= n <= NUMT. There will be one LT entry per text segment in a file and it will be associated with one preceding LTSH entry.
NUMDES	Number of Data Extension Segments	N3	001 004	Number of data extension sub-header segments in the file. For Geocorrected Products this will be 001. For Georeferenced Products will be 004. Following this field there will be NUMDES (LDSH, LD) field pairs.
LDSHn	Length of nth DES Subheader	N4	Generate	Length of DES subheader n in bytes. 1 <= n <= NUMDES. There will be one LDSH entry per data extension segment in a file and it will be associated with one following LD entry.
LDn	Length of nth DES	N5	Generate	Length of DES n in bytes. 1 <= n <= NUMDES. There will be one LD entry per data extension segment in a file and it will be associated with one preceding LDSH entry.



Field	Name	Format	Values	Description
NUMRES	Number of Reserved Extension Segments	N3	000	No reserved extension segments.
UDHDL	User Defined Header Data Length	N5	Generate	Length of user defined header data. Includes the length of each user defined record extension included. The number of user defined data records, and their sizes, varies by product type.
XHDL	Extended Header Data Length	N5	Generate	The length in bytes of extended header data. Will only exist for Geocorrected Products and is calculated as follows: $(\text{length of XHDLOFL}) + (\text{length of GEOPSB}) + (\text{length of PRJPSB}) = 3 + 454 + 124 + 15 * \text{numProjParams}$ Will be 00000 for all other product types.
XHDLOFL	Extended Header Overflow	N3	000	Extended sub-header does not overflow the XHDL field.
XHD	Extended Header Data	See Table A-2 to Table A-3.	Tagged Record Extensions	The field will contain the tagged record extensions for the various product types, defined in Documents A-4, A-5 and A-6. The tagged record extensions included vary with product type. The format and contents of these extensions are described in the following tables. The length of the tagged record extensions is the value of XHDL minus the 3 bytes used for the XHDLOFL field.

The NITF 2.1 GEOPSB Tagged Record Extension is included in all NITF 2.1 Geocorrected Products.

Table A-2 NITF 2.1 GEOPSB Tagged Record Extension Fields

Field	Name	Format	Values	Description
CETAG	Unique Extension Identifier	A6	GEOPSB	Uniquely identifies this extension.
CEL	Length of Data Field	N5	00443	Gives length of this extension.
TYP	Type	A3	GEO MAP	Set to the following: <ul style="list-style-type: none"> “GEO” – for equirectangular projection “MAP” – otherwise.
UNI	Units	A3	DEG M	Set to the following: <ul style="list-style-type: none"> “DEG” – degrees, for equirectangular projection “M” – meters, otherwise.
DAG	Geodetic Datum Name	A80	Generate	Geodetic datum name defined in Document A-6.
DCD	Geodetic Datum Code	A4	Generate	Geodetic datum code defined in Document A-6.
ELL	Ellipsoid Name	A80	Generate	Ellipsoid name defined in Document A-6.
ELC	Ellipsoid Code	A3	Generate	Ellipsoid code defined in Document A-6.
DVR	Vertical Datum Reference	A80	Generate	Vertical datum reference defined in Document A-6.
VDCDVR	Code of Vertical Reference	A4	Generate	Vertical datum reference code defined in Document A-6.
SDA	Sounding Datum Name	A80		Blank filled – no sounding data.
VDCSDA	Code for Sounding Datum	A4		Blank filled – no sounding data.
ZOR	Z values False Origin	N15	0000000000000000	No projection false Z origin – zero filled
GRD	Grid Code	A3	UT	Set to the following: <ul style="list-style-type: none"> “UT” – for UTM projection. blank filled otherwise.



Field	Name	Format	Values	Description
GRN	Grid Description	A80		Blank filled.
ZNA	Grid Zone Number	N4	0000 - 0060	Set to the following: <ul style="list-style-type: none">• Zone number (1-60) for UTM• Zero otherwise



The NITF 2.1 PRJPSB Tagged Record Extension is included in all NITF 2.1 Geocorrected Products.

Table A-3 NITF 2.1 PRJPSB Tagged Record Extension Fields

Field	Name	Format	Values	Description
CETAG	Unique Extension Identifier	A6	PRJPSB	Uniquely identifies this extension.
CEL	Length of Data Field	N5	00113 00128 00143 00158 00173 00188 00203 00218 00233 00248	Gives length of this extension. This value depends on the value of the NUM_PRJ field.
PRN	Projection Name	A80	Generate	Map Projection Name defined in Document A-6.
PCO	Units	A2	Generate	Map Projection Code defined in Document A-6.
NUM_PRJ	Number of projection parameters	N1	0 – 9	Number of parameters per projection, as defined in Document A-6.
PRJ1	Projection Parameter	N15	Generate	Projection parameter value defined in Document A-6.
...				
PRJn	Projection Parameter	N15	Generate	Projection parameter value defined in Document A-6.
XOR	False Easting	N15	0000000000000000 - 9999999999999999	False Easting for projection.
YOR	False Northing	N15	0000000000000000 - 9999999999999999	False Northing for projection.

The NITF 2.1 Image Sub-Header is included in all NITF 2.1 formatted products.

Table A-4 NITF 2.1 Image Sub-Header Fields

Field	Name	Format	Values	Description
IM	File Part Type	A2	IM	Identifies this record as an image sub-header record.
IID1	Image Identifier 1	A10	Generate	As per Document R-1, set to "Px", where x is the image segment number, starting at 1.
IDATIM	Image Date and Time	A14	Generate	Gives date and time of first line of the product image in UTC using the format: CCYYMMDDhhmmss
TGTID	Target ID	A17		Blank filled.
IID2	Image Identifier 2	A80	Generate	As per Document R-1, set to a string containing the following components: <ul style="list-style-type: none"> • 7 character date – DDMMYY • 4 character satellite identifier. For RADARSAT-2 the identifier will be "RS02". • 2 character pass – orbit number since midnight UTC, 01 to 99 • 3 character operation – "000" • 48 character unique identifier comprising: <ul style="list-style-type: none"> ○ 1-10 character image id number ○ 1 character delimiter – "-" ○ 2-11 character polarization list. For multiple polarizations, each polarization is delimited by an underscore. Will be HH_HV_VH_VV for quad polarization products, HH_HV or VV_VH for dual polarization products, and one of HH, HV, VH or VV for single polarization products. ○ Space characters to fill the remainder of the 48 characters. • 16 space characters
ISCLAS	Image Security Classification	A1	U	Unclassified

Field	Name	Format	Values	Description
ISCLSY	Image Security Classification System	A2		Blank filled - not required for unclassified data.
ISCODE	Image Codewords	A11		Blank filled - not required for unclassified data.
ISCTLH	Image Control and Handling	A2		Blank filled - not required for unclassified data.
ISREL	Image Releasing Instructions	A20		Blank filled - not required for unclassified data.
ISDCTP	Image Declassification Type	A2		Blank filled - not required for unclassified data.
ISDCDT	Image Declassification Date	A8		Blank filled - not required for unclassified data.
ISDCXM	Image Declassification Exemption	A4		Blank filled - not required for unclassified data.
ISDG	Image Downgrade	A1		Blank filled - not required for unclassified data.
ISDGDT	Image Downgrade Date	A8		Blank filled - not required for unclassified data.
ISCLTX	Image Classification Text	A43		Blank filled - not required for unclassified data.
ISCATP	Image Classification Authority Type	A1		Blank filled - not required for unclassified data.
ISCAUT	Image Classification Authority	A40		Blank filled - not required for unclassified data.
ISCRSN	Image Classification Reason	A1		Blank filled - not required for unclassified data.
ISSRDT	Image Security Source Date	A8		Blank filled - not required for unclassified data.
ISCTLN	Image Security Control Number	A15		Blank filled - not required for unclassified data.
ENCRYP	Encryption	N1	0	Not encrypted.
ISORCE	Image Source	A42	Generate	Satellite name or commercial data provider company name followed by space characters.
NROWS	Number of Significant Rows in Image	N8	Generate	Number of rows in the image, not including pad rows.
NCOLS	Number of Significant Columns in Image	N8	Generate	Number of columns in the image, not including pad columns.



Field	Name	Format	Values	Description
IREPBAND02	Second Band Representation	A2	M	Blank for SLC data. M for other image types. This field is not present for data with less than 2 bands.
IREPBAND03	Third Band Representation	A2		... This field is not present for data with less than 3 bands.
IREPBAND04	Fourth Band Representation	A2		... This field is not present for data with less than 4 bands.
IREPBAND05	Fifth Band Representation	A2		... This field is not present for data with less than 5 bands.
IREPBAND06	Sixth Band Representation	A2		... This field is not present for data with less than 6 bands.
IREPBAND07	Seventh Band Representation	A2		... This field is not present for data with less than 7 bands.
IREPBAND08	Eighth Band Representation	A2		... This field is not present for data with less than 8 bands.
ISUBCAT01	First Band Subcategory	A6	I	Blank filled for all data types except SLC data. In-phase for SLC data
ISUBCAT02	Second Band Subcategory	A6	Q	Blank filled for all data types except SLC. Quadrature for SLC data This field is not present for data with less than 2 bands.
ISUBCAT03	Third Band Subcategory	A6	I	Blank filled for all data types except SLC data. In-phase for SLC data This field is not present for data with less than 3 bands.
ISUBCAT04	Fourth Band Subcategory	A6	Q	Blank filled for all data types except SLC. Quadrature for SLC data This field is not present for data with less than 4 bands.



Field	Name	Format	Values	Description
ISUBCAT05	Fifth Band Subcategory	A6	I	In-phase for SLC data This field is not present for data with less than 5 bands.
ISUBCAT06	Sixth Band Subcategory	A6	Q	Quadrature for SLC data This field is not present for data with less than 6 bands.
ISUBCAT07	Seventh Band Subcategory	A6	I	In-phase for SLC data This field is not present for data with less than 7 bands.
ISUBCAT08	Eighth Band Subcategory	A6	Q	Quadrature for SLC data This field is not present for data with less than 8 bands.
IFC01	First Band Image Filter Condition	A1	N	Must contain N meaning none - other values are reserved for future use.
IFC02	Second Band Image Filter Condition	A1	N	Must contain N meaning none - other values are reserved for future use. This field is not present for data with less than 2 bands.
IFC03	Third Band Image Filter Condition	A1	N	Must contain N meaning none - other values are reserved for future use. This field is not present for data with less than 3 bands.
IFC04	Fourth Band Image Filter Condition	A1	N	Must contain N meaning none - other values are reserved for future use. This field is not present for data with less than 4 bands.
IFC05	Fifth Band Image Filter Condition	A1	N	Must contain N meaning none - other values are reserved for future use. This field is not present for data with less than 5 bands.
IFC06	Sixth Band Image Filter Condition	A1	N	Must contain N meaning none - other values are reserved for future use. This field is not present for data with less than 6 bands.
IFC07	Seventh Band Image Filter Condition	A1	N	Must contain N meaning none - other values are reserved for future use. This field is not present for data with less than 7 bands.

Field	Name	Format	Values	Description
IFC08	Eighth Band Image Filter Condition	A1	N	Must contain N meaning none - other values are reserved for future use. This field is not present for data with less than 8 bands.
IMFLT01	First Band Standard Image Filter Code	A3		Blank filled.
IMFLT02	Second Band Standard Image Filter Code	A3		Blank filled. This field is not present for data with less than 2 bands.
IMFLT03	Third Band Image Filter Code	A3		Blank filled. This field is not present for data with less than 3 bands.
IMFLT04	Fourth Band Image Filter Code	A3		Blank filled. This field is not present for data with less than 4 bands.
IMFLT05	Fifth Band Image Filter Code	A3		Blank filled. This field is not present for data with less than 5 bands.
IMFLT06	Sixth Band Image Filter Code	A3		Blank filled. This field is not present for data with less than 6 bands.
IMFLT07	Seventh Band Image Filter Code	A3		Blank filled. This field is not present for data with less than 7 bands.
IMFLT08	Eighth Band Image Filter Code	A3		Blank filled. This field is not present for data with less than 8 bands.
NLUTS01	Number of LUTs for the First Image Band	N1	0	No LUTs.
NLUTS02	Number of LUTs for the Second Image Band	N1	0	No LUTs. This field is not present for data with less than 2 bands.
NLUTS03	Number of LUTs for the Third Image Band	N1	0	No LUTs. This field is not present for data with less than 3 bands.
NLUTS04	Number of LUTs for the Fourth Image Band	N1	0	No LUTs. This field is not present for data with less than 4 bands.

Field	Name	Format	Values	Description
NLUTS05	Number of LUTs for the Fifth Image Band	N1	0	No LUTs. This field is not present for data with less than 5 bands.
NLUTS06	Number of LUTs for the Sixth Image Band	N1	0	No LUTs. This field is not present for data with less than 6 bands.
NLUTS07	Number of LUTs for the Seventh Image Band	N1	0	No LUTs. This field is not present for data with less than 7 bands.
NLUTS08	Number of LUTs for the Eighth Image Band	N1	0	No LUTs. This field is not present for data with less than 8 bands.
ISYNC	Image Sync Code	N1	0	Must contain 0.
IMODE	Image Mode	A1	P B	Band interleaved by pixel 'P' for all SLC and multi-band detected products and band interleaved by band 'B' for single-band detected products.
NBPR	Number of Blocks Per Row	N4	Generate	Image consists of a set of blocks.
NBPC	Number of Blocks Per Column	N4	Generate	Image consists of a set of blocks.
NPPBH	Number of Pixels Per Block Horizontal	N4	Generate	Width of an image block.
NPPBV	Number of Pixels Per Block Vertical	N4	Generate	Length of an image block.
NBPP	Number of Bits Per Pixel Per Band	N2	16	Valid values are: 16 - for SAR image data
IDLVL	Display Level	N3	Generate	If an image is split into multiple segments, due to size limitations, IDLVL is set to 051 for the first segment of the image, 052 for the second segment of the image, etc. For images that are not split into multiple segments, IDLVL may be set to 999. A full description of IDLVL, IALVL, and ILOC settings for segmented images is defined in Document R-1.
IALVL	Attachment Level	N3	Generate	Where IALVL is set to 000 for the first segment of any image, and is set to the IDLVL of the previous segment for any subsequent segments of an image.



Field	Name	Format	Values	Description
ILOC	Image Location	N10	Generate	The last 5 digits of ILOC are always set to 00000, indicating that we are not segmenting in the column direction. The first 5 digits of ILOC are set to 00000 for the first segment of any image and the number of rows in the previous segment for subsequent segments of an image.
IMAG	Image Magnification	A4	1.0	No magnification or reduction.
UDIDL	User Defined Image Data Length	N5	00000	No user defined tagged records.
IXSHDL	Extended Sub-Header Data Length	N5	Generate	Length of extended sub-header data. Includes 3 bytes for the IXSOFL field plus the length of each tagged record extension included. The number of tagged record extensions, and their sizes, varies by product type.
IXSOFL	Extended Sub-Header Overflow	N3	000	Extended sub-header does not overflow the IXHSD field.
IXSHD	Extended Sub-Header Data	See Table A-5 to Table A-8.	Tagged Record Extensions	The field will contain the tagged record extensions for the various product types, defined in Documents A-4, A-5 and A-6. The tagged record extensions included vary with product type. The format and contents of these extensions are described in the following tables. The length of the tagged record extensions is the value of IXSHDL minus the 3 bytes used for the IXSOFL field.

The NITF 2.1 RPC00B Tagged Record Extension is included in all NITF 2.1 Georeferenced Products.

Table A-5 NITF 2.1 RPC00B Tagged Record Extension Fields

Field	Name	Format	Values	Description
CETAG	Unique Extension Identifier	A6	RPC00B	Uniquely identifies this extension.
CEL	Length of Data Field	N5	01041	Gives length of this extension.
SUCCESS	Success	N1	1	Indicates that the product generation was successful.
ERR_BIAS	Error – Bias	N7	0000.00 - 9999.99	Non-time varying error estimate, for correlated images (1-sigma). A nominal value for the satellite and product type will be used.
ERR_RAND	Error – Random	N7	0000.00 - 9999.99	Time varying error estimate, for correlated images (1-sigma). A nominal value for the satellite and product type will be used.
LINE_OFF	Line Offset	N6	000000 – 999999	The remaining fields are identical to the rational function fields in the support metadata as described in Document A-1.
SAMP_OFF	Sample Offset	N5	00000 - 99999	
LAT_OFF	Geodetic Latitude Offset	N8	±90.0000	
LONG_OFF	Geodetic Longitude Offset	N9	±180.0000	
HEIGHT_OFF	Geodetic Height Offset	N5	±9999	
LINE_SCALE	Line Scale	N6	000001 – 999999	
SAMP_SCALE	Sample Scale	N5	00001 - 99999	
LAT_SCALE	Geodetic Latitude Scale	N8	±90.0000	Value cannot be zero.
LONG_SCALE	Geodetic Longitude Scale	N9	±180.0000	Value cannot be zero



Field	Name	Format	Values	Description
HEIGHT_SCALE	Geodetic Height Scale	N5	±9999	Value cannot be zero
LINE_NUM_COEFF_1 through LINE_NUM_COEFF_20	Line Numerator Coefficients	N12	±9.999999E±9	
LINE_DEN_COEFF_1 through LINE_DEN_COEFF_20	Line Denominator Coefficients	N12	±9.999999E±9	
SAMP_NUM_COEFF_1 through SAMP_NUM_COEFF_20	Sample Numerator Coefficients	N12	±9.999999E±9	
SAMP_DEN_COEFF_1 through SAMP_DEN_COEFF_20	Sample Denominator Coefficients	N12	±9.999999E±9	



The NITF 2.1 MAPLOB Tagged Record Extension is included in all NITF 2.1 Geocorrected Products.

Table A-6 NITF 2.1 MAPLOB Tagged Record Extension Fields

Field	Name	Format	Values	Description
CETAG	Unique Extension Identifier	A6	MAPLOB	Uniquely identifies this extension.
CEL	Length of Data Field	N5	00043	Gives length of this extension.
UNILOA	Length Units	A3	IN CM	Set to the following: <ul style="list-style-type: none"> • “IN” – inches, when map projection units are feet • “CM” – centimeters, otherwise These units are chosen since the LOD and LAD values must be integers.
LOD	Easting Interval	N5	00001 - 99999	Pixel spacing in specified units.
LAD	Northing Interval	N5	00001 - 99999	Line spacing in specified units.
LSO	Easting of Reference Origin	N15	±999999999999.9	Easting of origin pixel (row, column) = (0,0) in specified units. Origin pixel is treated as a point sample.
PSO	Northing of Reference Origin	N15	±999999999999.9	Northing of origin pixel (row, column) = (0,0) in specified units. Origin pixel is treated as a point sample.



The NITF 2.1 BLOCKA Tagged Record Extension is included in all NITF 2.1 Georeferenced and Geocorrected Products.

Table A-7 NITF 2.1 BLOCKA Tagged Record Extension Fields

Field	Name	Format	Values	Description
CETAG	Unique Extension Identifier	A6	BLOCKA	Uniquely identifies this extension.
CEL	Length of Data Field	N5	00123	Gives length of this extension.
BLOCK_INSTANCE	Block Number of Image Block	N2	01-99	Gives the block number of this segment. Will be 01 for images with a single image segment, and will be n for products greater than 10GB with n image segments.
N_GRAY	Number Gray Fill Pixels	N5	00000	Will be defaulted to 00000 for all products.
L_LINES	Row Count	N5	00001-99999	Number of rows.
LAYOVER_ANGLE	Layover Angle	N3	000-359	The angle in degrees between the first row of pixels and the layover direction in the image, measured in the clockwise direction. For Georeferenced Products, the value will be 0 degrees for left-look ascending or right-look descending and 180 degrees otherwise. For Geocorrected Products the layover angle is derived from the satellite heading and assumes a north up map projection.
SHADOW_ANGLE	Shadow Angle	N3	000-359	The angle in degrees between the first row of pixels and the radar shadow in the image, measured in a clockwise direction. The shadow angle is the 180 degree complement of the layover angle.
(reserved-001)		A16		Blank filled reserved segment.
<p>The following four fields repeat earth coordinates image corner locations described by IGEOLO in the NITF image subheader, but provide higher precision. Note that the order of these coordinates is different from IGEOLO.</p> <p>The format Xddmmss.cc represents degrees (00 to 89), minutes (00 to 59), seconds (00 to 59), and hundredths of seconds (00 to 99) of latitude, with X = N for north or S for south, and Yddmmss.cc represents degrees (000 to 179), minutes (00 to 59), seconds (00 to 59), and hundredths of seconds (00 to 99) of longitude, with Y = E for east or W for west.</p>				



Field	Name	Format	Values	Description
FRLC_LOC	First Row Last Column Location	A21	XDDMMSS.S SYDDMMMS S.SS	First row last column location. Location of the first row, last column of the image block.
LRLC_LOC	Last Row Last Column Location	A21	XDDMMSS.S SYDDMMMS S.SS	Last row last column location. Location of the last row, last column of the image block.
LRFC_LOC	Last Row First Column Location	A21	XDDMMSS.S SYDDMMMS S.SS	Last row first column location. Location of the last row, first column of the image block.
FRFC_LOC	First Row First Column Location	A21	XDDMMSS.S SYDDMMMS S.SS	First row first column location. Location of the first row, first column of the image block.
(reserved-002)		N5	010.0	Constant reserved segment value.

The NITF 2.1 EXPLTB Tagged Record Extension is included in all NITF 2.1 Georeferenced and Geocorrected Products.

Table A-8 NITF 2.1 EXPLTB Tagged Record Extension Fields

Field	Name	Format	Values	Description
CETAG	Unique Extension Identifier	A6	EXPLTB	Uniquely identifies this extension.
CEL	Length of Data Field	N5	00101	Gives length of this extension.
ANGLE_TO_NORTH	Angle To North	N7	000.000 - 359.999	Angle in degrees, measured clockwise about the origin of the image, from first row of the image to True North. For Geocorrected Products this field is only valid for products with a north up map projection and is a best estimate of angle to north. The value is derived using the satellite heading and pass direction. For Georeferenced Products the top left and top right earth centered rotational (ECR) image corner coordinates are used to derive row direction relative to True North.
ANGLE_TO_NORTH_ACCY	Angle To North Accuracy	N6	00.000 05.000	90% probable error value of angle to north. This field will be default value 00.000 for all Georeferenced Products. This field will be nominal value 05.000 degrees for Geocorrected Products.
SQUINT_ANGLE	Squint Angle	N7	+00.000	The angle, measured in degrees, from crosstrack (broadside) to the great circle joining the ground point directly below the Aircraft Reference Point (ARP) to the Output Reference Point (ORP). This field will have nominal value +00.000 for all product types.
SQUINT_ANGLE_ACCY	Squint Angle Accuracy	N6	00.001	90% probable error value of the squint angle. This field will have nominal value 00.001 for all product types.
MODE	Mode	A3		Blank filled as field not applicable to RADARSAT-2 SAR products. Validation errors in CIVA are expected.



Field	Name	Format	Values	Description
(reserved-001)		A16		Blank filled reserved segment.
GRAZE_ANG	Graze Angle	N5	00.00 - 90.00	The angle, measured in degrees, which for zero squint is given by the complement of the average of the incidence angles at near and far range.
GRAZE_ANG_ACCY	Graze Angle Accuracy	N5	00.01 - 90.00	90% probable error value of Graze Angle.
SLOPE_ANG	Slope Angle	N5	00.00 - 90.00	The angle in degrees between the SAR plane and the focus plane. Same as the Graze Angle due to zero squint.
POLAR	Polarization	A2	HH HV VH VV HD VD QP	For single-polarization products the first character indicates the nominal transmit polarization and the second character indicates the nominal receive polarization. Dual-polarization products will either be HD for HH-HV polarizations or VD for VH-VV polarizations. Quad-polarization products will be QP for HH-HV-VH-VV polarizations. Validation errors in CIVA are expected for the HD, VD, and QP tokens as these are not accepted values but have been added on to satisfy all product polarization possibilities.
NSAMP	Number of Samples	N5	00001 - 99999	Pixels per line.
(reserved-002)		N1	0	Constant reserved segment value.
SEQ_NUM	Sequence Number	N1	1	Sequence within Coupled Imagery Set.
PRIME_ID	Primary Target ID	A12		Target designator of primary target. Blank filled.
PRIME_BE	Primary Target Basic Encyclopedia ID	A15		Basic Encyclopedia ID/OSUFFIX (target designator) of the primary target. Blank filled.
(reserved-003)		N1	0	Constant reserved segment value.
N_SEC	Number Secondary Targets	N2	00	Number of secondary targets in image. Will be default value of 00 for all products.



Field	Name	Format	Values	Description
IPR	Commanded Impulse Response	N2	00 - 99	Geometric average of the azimuth and range resolution in feet. Will be 00 for ScanSAR products as the geometric average of the azimuth and range resolutions will be greater than 100 feet (30 m) in most cases.

The NITF 2.1 Product License Text Sub-Header is included in all NITF 2.1 formatted products.

Table A-9 NITF 2.1 Product License Text Sub-Header Fields

Field	Name	Format	Values	Description
TE	File Part Type	A2	TE	This field shall contain the characters "TE" to identify the subheader as a text subheader.
TEXTID	Text Identifier	A7	License	This field shall contain a valid alphanumeric identification code associated with the text item. The valid codes are determined by the application.
TXTALVL	Text Attachment Level	N3	000	This field shall contain a valid value that indicates the attachment level of the text. Valid values for this field are 000 (BCS zeros (0x30)) or the display level value of ny image or graphic in the file.
TXTDT	Text Date and Time	N14	Generate	This field shall contain the time (UTC) (Zulu) of origination of the text in the format CCYYMMDDhhmmss, where CC is the century (00 to 99), YY is the last two digits of the year (00 to 99), MM is the month (01 to 12), DD is the day (01 to 31), hh is the hour (00 to 23), mm is the minute (00 to 59), and ss is the second (00 to 59). UTC (Zulu) is assumed to be the time zone designator to express the time of day.
TXTTITL	Text Title	A80	Configura tion	This field shall contain the title of the text item.
TSCLAS	Text Security Classification	A1	U	This field shall contain a valid value representing the classification level of the text. Valid values are T (=Top Secret), S (=Secret), C (=Confidential), R (=Restricted), U (=Unclassified).
TSCLSY	Text Security Classification System	A2		Blank filled - not required for unclassified data.
TSCODE	Text Codewords	A11		Blank filled - not required for unclassified data.
TSCTLH	Text Control and Handling	A2		Blank filled - not required for unclassified data.
TSREL	Text Releasing Instructions	A20		Blank filled - not required for unclassified data.
TSDCTP	Text Declassification Type	A2		Blank filled - not required for unclassified data.
TSDCDT	Text Declassification Date	A8		Blank filled - not required for unclassified data.
TSDCXM	Text Declassification Exemption	A4		Blank filled - not required for unclassified data.



Field	Name	Format	Values	Description
TSDG	Text Downgrade	A1		Blank filled - not required for unclassified data.
TSDGDT	Text Downgrade Date	A8		Blank filled - not required for unclassified data.
TSCLTX	Text Classification Text	A43		Blank filled - not required for unclassified data.
TSCATP	Text Classification Authority Type	A1		Blank filled - not required for unclassified data.
TSCAUT	Text Classification Authority	A40		Blank filled - not required for unclassified data.
TSCRSN	Text Classification Reason	A1		Blank filled - not required for unclassified data.
TSSRDT	Text Security Source Date	A8		Blank filled - not required for unclassified data.
TSCTLN	Text Security Control Number	A15		Blank filled - not required for unclassified data.
ENCRYP	Encryption	N1	0	This field shall contain the value BCS zero (0x30) until such time as this specification is updated to define the use of other values.
TXTFMT	Text Format	A3	U8S	This field shall contain a valid three character code indicating the format or type of text data. Valid codes are MTF to indicate USMTF (Refer to MIL-STD-6040 for examples of the USMTF format), STA to indicate BCS, UT1 to indicate CS text formatting, and U8S to indicate U8S text formatting. Refer to paragraph 5.7.1 or additional discussion of standards and the BCS.
TXSHDL	Text Extended Subheader Data Length	N5	00000	A value of BCS zeros (0x30) shall represent that no TRE are included in the text subheader. If a TRE exists, the field shall contain the sum of the length of all the TRE (paragraph 5.8.1) appearing in the TSXHD field plus 3 bytes (length of TSXOFL field). If a TRE is too long to fit in the TXSHD field, it shall be put in the TRE overflow DES with DESID set to the value TRE_OVERFLOW.



The NITF 2.1 Product Information File Data Extension Segment Sub-Header is included in all NITF 2.1 formatted products. The NITF 2.1 LUT Files Data Extension Segment Sub-Header is included in all NITF 2.1 Georeferenced Products (it is not included with Geocorrected Products).

Table A-10 NITF 2.1 Product Information File and LUT Data Extension Segment Sub-Header Fields

Field	Name	Format	Values	Description
DE	File Part Type	A2	DE	This field shall contain the characters DE to identify the subheader as a data extension.
DESID	Unique DES Type Identifier	A25	XML_ DATA_ CONTENT	This field shall contain XML_DATA_CONTENT.
DESVR	Version of the Data Definition	N2	01	This field shall contain the alphanumeric version number of the use of the Tag. The version number is assigned as part of the registration process.
DECLAS	Data Extension File Security Classification	A1	U	This field shall contain a valid value representing the classification level of the DES. Valid values are T for top Secret, S for Secret, C for Confidential, R for Restricted or U for Unclassified.
DESCLSY	DES Security Classification System	A2		Blank filled - not required for unclassified data.
DESCODE	DES Codewords	A11		Blank filled - not required for unclassified data.
DESCTLH	DES Control and Handling	A2		Blank filled - not required for unclassified data.
DESREL	DES Releasing Instructions	A20		Blank filled - not required for unclassified data.
DESDCTP	DES Declassification Type	A2		Blank filled - not required for unclassified data.
DESDCDT	DES Declassification Date	A8		Blank filled - not required for unclassified data.
DESDCXM	DES Declassification Exemption	A4		Blank filled - not required for unclassified data.
DESDG	DES Downgrade	A1		Blank filled - not required for unclassified data.
DESDGDT	DES Downgrade Date	A8		Blank filled - not required for unclassified data.
DESCLTX	DES Classification Text	A43		Blank filled - not required for unclassified data.
DESCATP	DES Classification Authority Type	A1		Blank filled - not required for unclassified data.



Field	Name	Format	Values	Description
DESCAUT	DES Classification Authority	A40		Blank filled - not required for unclassified data.
DESCRSN	DES Classification Reason	A1		Blank filled - not required for unclassified data.
DESSRDT	DES Security Source Date	A8		Blank filled - not required for unclassified data.
DESCTLN	DES Security Control Number	A15		Blank filled - not required for unclassified data.
DESSHL	DES User-defined Subheader Length	N4	0773	<p>This field shall contain the number of bytes in the field DESSHF. The inclusion of DESSHF subfield content is conditional based on the byte count value entered in this field. The DESSHF field may be omitted by setting this value to 0000. Otherwise, three increments of subfield inclusion are identified in the specified value range.</p> <p>0000 – User-defined Subheader Field is not in use. 0005 – User-defined Subheader Field DESCRC only. 0283 – User-defined Subheader Fields DESCRC thru DESSHTN included. 0773 – Complete inclusion of all User-defined Subheader Subfields</p>
DESCRC	Cyclic Redundancy Check	N5	99999	This field contains the calculated CRC value for the content of the DESDATA field. A value of 99999 shall be used when CRC is not calculated.
DESSHFT	XML File Type	A8	XML	<p>Data in this field shall be representative of the XML File Type.</p> <p>Examples: XSD, XML, DTD, XSL, XSLT</p>

Field	Name	Format	Values	Description
DESSHDT	Date and Time	A20	Generate	<p>This field shall contain the time (UTC) (Zulu) of the XML file's origination in the format: YYYY-MM-DDThh:mm:ssZ, where YYYY is the year (0000-9999), MM is the month (01 to 12), DD is the day (01 to 31), T is the separator between date and time, hh is the hour (00 to 23), mm is the minute (00 to 59), and ss is the second (00 to 59). Z is the UTC time zone designator to express the time of day.</p> <p>The precision for recording the date and time is dictated by the user application and the field size constraint.</p> <p>Examples: 2007-04-12T11:45:20Z 2007-04-12T11:45Z 2007-04-12</p>
DESSHRP	Responsible Party – Organization Identifier	A40	GSI	Identification of the organization responsible for the content of the DES.
DESSHSI	Specification Identifier	A60	Configuration	Name of the specification used for the XML data content. The name of this document.
DESSHSV	Specification Version	A10	Configuration	Version or edition of this specification.
DESSHSD	Specification Date	A20	Configuration	Version or edition date for this specification. See Date and Time description above.
DESSHTN	Target Namespace	A120	Configuration	<p>Identification of the <i>target namespace</i>, if any, designated within the XML data content.</p> <p>Example: http://www.rsi.ca/rs2/prod/xml/schemas</p>
DESSHLPG	Location – Polygon	A125	Generate	<p>Five-point boundary enclosing the area applicable to the DES, expressed as the closed set of coordinates of the polygon (last point replicates first point). NOTE: This is only an approximate reference so specifying the coordinate reference system is unnecessary.</p> <p>Recorded as paired latitude and longitude values in decimal degrees with no separator. Each latitude and longitude value includes an explicit 'plus' or 'minus sign'.</p> <p>The precision for recording the values in the subheader is dictated by the field size constraint.</p>



Field	Name	Format	Values	Description
DESSLPT	Location – Point	A25		Blank filled, as DESSLPG contains the location information.
DESSLHI	Location – Identifier	A20		Blank filled, as DESSLPG contains the location information.
DESSLIN	Location Identifier Namespace URI	A120		Blank filled, as DESSLPG contains the location information.
DESSHABS	Abstract	A200	Generate	Source XML file name