JPEG 2000 Testing

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Agenda

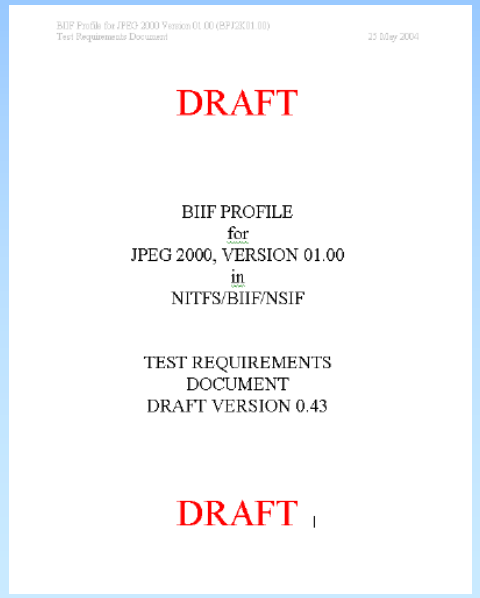
- NITFS 2004 DVD
- J2K Test Requirements Doc
- J2K Sample Files
- NITF Test Tools
- CIVA Demo
- Questions

NITFS DVD

BIIF Profile J2K	TRD
NITF Mil-Stds	DIGEST
BIIF Profile CGM	STANAGS
Guide for J2K	BIIF ISO
NITFS Tutorial	Sample Files
Demo SW	Test Tools

Test Requirements Document

- BIIF Profile for J2K
- ISO/IEC 15444-4: 2002 Conformance Testing



DRAFT

BIIF PROFILE
for
JPEG 2000, VERSION 01.00
in
NITFS/BIIF/NSIF

TEST REQUIREMENTS
DOCUMENT
DRAFT VERSION 0.43

DRAFT

TRD (Continued)

Provides test requirements for conformance

- Encoding within the JPEG 2000, Part 1, Profile 1
- Encoding within the NPJE constraints
- Decoding compliant JPEG 2000 Part 1, Profile 1 codestreams
- Decoding compliant NPJE files
- Parsing, chipping, and repackaging JPEG 2000 codestreams
- Decoding J2P file format
- NSIF file structure when using JPEG 2000
- Use of the J2KLRA Extension
- NSIF Clevel constraints when using JPEG 2000
- *Encoding within EPJE constraints*
- *Decoding within EPJE constraints*

TRD (Continued)

Modified test requirements for conformance

- Encoding within the JPEG 2000, Part 1, Profile 1
- Encoding within the NPJE constraints
- Decoding compliant JPEG 2000 Part 1, Profile 1 codestreams
- Decoding compliant NPJE files
- Parsing, chipping, and repackaging JPEG 2000 codestreams
- Decoding J2P file format
- NSIF file structure when using JPEG 2000
- Use of the J2KLRA Extension
- NSIF Clevel constraints when using JPEG 2000
- Encoding within EPJE constraints
- Decoding within EPJE constraints

J2K Sample Files

- Profile 0
- Profile 1
- JP2

  www.jpeg.org/jpeg2000/testlinks.html

  www.crc.ricoh.com/~gormish/jpeg2000conformance/
- NPJE

J2K Sample Files (Continued)

NITF version 2.1 JPEG 2000 Sample Imagery

NITF 1.1	NITF 2.0	NITF 2.1/NSIF1.0	JPEG 2000

Joint Interoperability Test Command (JITC) personnel have prepared several sets of sample NITF 2.1 J2K files for evaluation purposes only (see links below). They do not constitute the JITC Test Suite for NITF JPEG 2000 Compliance/Certification.

The Profile 0, Profile 1 and JP2 files were created by downloading the JPEG 2000 test code streams, via the JPEG ORG website, and placing them into the NITF version 2.1 file format. Information and guidelines found in documentation provided by the NTB Bandwidth Compression Working Group were essential in creating these NITF files.

Note: The Profile 0, Profile 1 and JP2 files do not fully comply with the NSIF Preferred JPEG 2000 encoding described in the ISO/IES BIIF Profile for JPEG 2000 (BPJ2K01.00). For example, included files may not have the JPEG 2000 Tagged Record Extension (J2KLRA).

Developers/Implementors can download JPEG 2000 software for UNIX, LINUX and Win32 by visiting the JPEG ORG website. This software can decode and display each of the JPEG 2000 data streams, but not the NITF files.

For questions or comments regarding these files, please contact the NITF Certification Test & Evaluation Facility at JITC, 520-538-5458, jitcn@fhu.disa.mil.

- ISO Profile 0 Test Code Streams
- ISO Profile 1 Test Code Streams
- JITC Demo Code Streams
- ISO JP2 Test Code Streams

All Documents · Test Program Plan · Format · Compression
Graphics · Communications · Information Documents
Demonstration Software · Sample Files · JITC Test Tools
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J2K Sample Files (Continued)

JITC Demo Code Streams

Using freely available J2K compression utilities and image arrays, JITC personnel created this set of sample files. JITC designed them to comply with the Preferred J2K encoding described in the ISO/IEC BIIF Profile for JPEG 2000 (BPJ2K01.00).

Sample Files		BANDS							
		1	3	4	7	9	255	256	999
bpp	8	●	●	●	●	●	●	●	●
	11	●	●	●	●				
	12	●	●						
	16	●	●						

All Documents · Test Program Plan · Format · Compression · Graphics · Communications · Information Documents
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NITF Test Tools

- SNIPER
- MrBIIF
- CIVA

SNIPER

- NITF 1.1, 2.0, 2.1
- Windows OS, 3.1 - Xp
- Parse / Display Segment Headers
- Validates Segment Header Content
- Displays Image & CGM Symbols
- Validates ECC Blocks

MrBIIF

- NITF 1.1, 2.0, 2.1, NSIF 1.0
- Win OS, 3.1 - Xp
- Validates Structure
- Parse / Display
  - Segment Headers
  - Simple TREs via user-defined file
- Validates Header Content
  - Segment Header
  - JPEG (C3) Header

CGM Header

- Edit Fields*

CIVA

- NITF 2.0 (Limited) & 2.1, NSIF 1.0, BIIF
- Any OS with Java
- Validates Structure
- Parse / Display / Validates

  Segment Headers

  Aerospace CDF

  DES, RES, TRE

  Compendium, BANDSB, ENGRDA, J2KLRA, DIGEST

CIVA (Continued)

- Parse / Display /

  J2K codestream markers

- MSE & Peak SNR

- XML Report

CIVA (Continued)

- Validates in 5 Passes
  - Field Character Set
  - Value Range
  - Header & Data Length check
  - Internal Segment Header Crosscheck
  - External Segment Header Crosscheck
  - Compliance Level

CIVA Future

- Complete NITF 2.0
- End User Documentation
- JPEG2000 Validation
- DCT-JPEG Validation (readjpg)
- CGM Parse (readcgm)
- Hex Editor
- Ultra-Edit
- Cross TRE Validation

NITF Test Tools

	SNIPER	MrBIIF	CIVA
NITF version	1.1, 2.0, 2.1	1.1, 2.0, 2.1	2.0, 2.1, 1.1
NSIF	No	Yes	Yes
Clevel	6	6	9, Any
Display Image	Yes	No	No
Parse / Display Hdr	Yes	Yes	Yes
Validates Structure	No	Yes	Yes
Validates Hdr Content	Low	Med	High
Parse J2K	No	No	Yes
Validates ECC	Yes	No	No
Parse TRE	No	Yes	Yes
Validates TRE	No	No	Yes

NITF/NSIF Tool

- Old DOS Utilities
- NITF 2.0, 2.1, NSIF 1.0
- Win OS, NT - Xp
- Parse / Display
  - CGM Header
  - JPEG (DCT) Header
- IMODE B:P Converter

Other Tools

- Bit 2 Bit
- LView
- Hypercube
- Kakadu
- Aware Comp/Decomp
- Direct Edit
- Ultra Edit

NITF Test Tools

- CIVA DEMO

Questions

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Contact Info

NITFS CTE Facility

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