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STANDARDIZATION SECTOR
OF ITU

T.37

Amendment 1
(09/99)

SERIES T: TERMINALS FOR TELEMATIC SERVICES

Procedures for the transfer of facsimile data via
store-and-forward on the Internet

Amendment 1: Full Mode

ITU-T Recommendation T.37 – Amendment 1

(Previously CCITT Recommendation)

ITU-T T-SERIES RECOMMENDATIONS
TERMINALS FOR TELEMATIC SERVICES

For further details, please refer to ITU-T List of Recommendations.

ITU-T RECOMMENDATION T.37

PROCEDURES FOR THE TRANSFER OF FACSIMILE DATA VIA STORE-AND-FORWARD ON THE INTERNET

AMENDMENT 1

Full Mode

Summary

This amendment adds support for the Full Mode of Internet fax to Recommendation T.37. The additional functionality includes support for the transmission and reception of additional TIFF image formats, capabilities exchange and acknowledgement of receipt.

Source

Amendment 1 to ITU-T Recommendation T.37 was prepared by ITU-T Study Group 8 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on 24 September 1999.

FOREWORD

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The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administrations" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, the ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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**PROCEDURES FOR THE TRANSFER OF FACSIMILE DATA
VIA STORE-AND-FORWARD ON THE INTERNET**

AMENDMENT 1

Full Mode

(Geneva, 1999)

1) Clause 3

Delete the following references:

- CCITT Recommendation T.6 (1988), *Facsimile coding schemes and coding control functions for Group 4 facsimile apparatus*.
- RFC 1725, *Post Office Protocol – Version 3*.

Add the following references and Note:

- RFC 1869, *SMTP Service Extensions*.
- RFC 1939, *Post Office Protocol – Version 3*.
- RFC 2060, *Internet Message Access Protocol – Version 4rev1*.
- RFC 2298, *An Extensible Message Format for Message Disposition Notifications*.
- RFC 2532, *Extended Facsimile Using Internet Mail*.
- RFC 2530, *Indicating Supported Media Features Using Extensions to DSN and MDN*.
- RFC 2531, *Content Feature Schema for Internet Fax*.

NOTE – Embedded references within RFCs referenced in this Recommendation, which are described as "work in progress", are informative only and not normative.

2) Subclause 6.2

Amend subclause 6.2 to read:

6.2 Full Mode

Full Mode supports the transfer of image data, capabilities exchange and acknowledgement of receipt, per the requirements of Recommendation F.185.

6.2.1 Procedures for Full Mode

Procedures for Full Mode are defined in RFC 2532, unless stated otherwise in Table 2. A functional summary and related references for Full Mode are included in the table.

Table 2/T.37 – Functional summary of procedures for Full Mode

Addressing	Procedures: RFC 2305 section 3 Email: RFC 822 Offramp: RFC 2303, RFC 2304
Image format	TIFF Profiles: RFC 2301
Acknowledgement of receipt	Delivery Confirmation: RFC 1891, Delivery Status Notification (DSN) Processing Confirmation: RFC 2298, Message Disposition Notification (MDN)
Capabilities exchange	Capabilities Format: RFC 2531 Capabilities Mechanism: RFC 2530
Transport	ESMTP: RFC 1869
Mailbox access	POP3: RFC 1939 IMAP4: RFC 2060
NOTE – The requirement for onramp and offramp gateways to support G4 facsimile terminals is for further study.	

3) Appendix I

Add a new subclause I.2:

I.2 Full Mode implementation requirements

Table I.2/T.37 – Implementation requirements for Full Mode

Sender		
Required	Send image data as a single MIME multi-page RFC 2301 file	RFC 2305 § 2.2.3
	Provide notice in case of relay problems	RFC 2305 § 2.3.1
	Provide a return address in the SMTP mail from envelope header	RFC 2305 § 2.3.1
	Request Delivery Status Notification, if the sender desires delivery confirmation	RFC 2532 § 2.1.1 (Note 3)
	Request Message Disposition Notification, if the sender desires processing confirmation	RFC 2532 § 2.1.2 (Note 3)
Strongly recommended	Include Message-ID	RFC 2305 § 2.2.1
	Use Base 64 encoding for image data	
	Be able to recognize and process the feature tags as defined in RFC 2531 when reviewing the capabilities presented by a potential recipient	RFC 2532 § 3 (Note 2)
Optional	Use other TIFF Profiles if it has prior knowledge that such profiles are supported by the receiver	RFC 2305 § 4
	Provide notice on receipt of DSN or other notifications	RFC 1894 (Note 3)
	Request a positive DSN and an MDN, if DSN/MDN capability response is desired	RFC 2532 § 3.3 (Notes 1, 2 and 4)
	Send a message containing both minimum subset of TIFF and a higher quality TIFF using multipart/alternative	RFC 2532 § 3
	Manually override the default setting	RFC 2532 § 3.1
	Access directory structure of recipient capabilities	RFC 2532 § 3.2
	Use any of the TIFF Profiles defined in RFC 2301 when sending to a recipient with the corresponding capabilities based on an MDN/DSN capability response	RFC 2532 § 3 (Notes 1, 2 and 4)

Table I.2/T.37 (continued)

Receiver		
Required	Be MIME compliant except that it is not required to offer to place a MIME attachment in a file and may print a received file rather than display	RFC 2305 § 2.2.2
	Be capable of processing multiple MIME RFC 2301 Profile S image files within a single message	RFC 2305 § 2.2.4
	Provide notice in case of reception or processing problems	RFC 2305 § 2.3.2 (Note 3)
	Implement Message Disposition Notification	RFC 2532 § 2.2 (Notes 1, 2 and 4)
	Indicate supported media features in DSN and/or MDN messages per RFC 2530	RFC 2532 § 2.2
	Configurable to silently ignore a request for MDN	RFC 2532 § 2.2.1
	Not generate an unsolicited MDN to indicate successful processing	RFC 2532 § 2.2.1
	Possible for an operator to disable automatic MDN responses	RFC 2532 § 2.2.1
	Not generate DSN when using POP3 and IMAP4	RFC 2532 § 2.2.2
Strongly recommended	If the MTA determines the message cannot be processed, reject the message with a status code 5.6.1	RFC 2530 (Note 3)
Optional	Be capable of processing any TIFF Profiles	RFC 2305 § 4
	Automated system be configurable to always respond to MDN request	RFC 2532 § 2.2.1
Sender infrastructure		
Required	Support for DSN	RFC 2532 § 2.3.1 (Note 5)
Receiver infrastructure		
Required	Support for DSN	RFC 2532 § 2.3.2 (Note 5)
Offramp gateway (When implemented)		
Required	Be SMTP compliant	RFC 0821
	Provide delivery failure notification	RFC 1894, RFC 2305 § 2.3.1 (Note 3)
	Be able to process PSTN/FAX Email addresses	RFC 2303, RFC 2304
	Comply with the relevant ITU Recommendations relating to facsimile transmission	T.30
	Attempt to relay authorized Email to the corresponding G3 facsimile terminals	RFC 2305 § 3.2
	Ensure that local legal requirements relating to facsimile transmissions are met	
Strongly recommended	Use DSN for delivery failure notification	RFC 2305 § 2.3.1 RFC 1894 (Note 3)
	Use an approved mailbox access protocol when serving multiple users	RFC 2305 § 2.1.3
Optional	Translate image data into a format acceptable by the receiving G3 facsimile terminal	RFC 2305 § 2.1.2
	Use a mailbox access protocol when serving a single mail recipient	RFC 2305 § 2.1.3

Table I.2/T.37 (end)

NOTE 1 – Typical Full Mode implementation includes capability exchange. The available method for eliciting a capability response is by requesting an MDN or DSN. In response, recipient should provide an indication of capabilities using DSN/MDN extensions per RFC 2530 extension. The detailed method of requesting MDN/DSN and use of other capabilities request and indication methods are for further study.

NOTE 2 – For the typical Full Mode implementation, the DSN or MDN that is returned should contain information describing the recipient's capabilities. The sender should use this information for subsequent communications with that recipient. For example, a sender may use any of the TIFF Profiles defined in RFC 2301 when sending to a recipient with the corresponding capabilities based on an MDN/DSN capability response.

NOTE 3 – For the typical Full Mode implementation, delivery confirmation and processing confirmation are available using DSN and MDN. Clarification of MDN processing is for further study. Inclusion of additional data such as total page number and error page number in MDN and DSN messages is for further study.

NOTE 4 – Some implementers may wish to add private extensions to the standard Full Mode implementation. For example, vendors could find company-specific MIME types and X Email headers to help implement specific applications.

NOTE 5 – Per RFC 2532, DSN support is required within the sender and receiver infrastructure. Full Mode terminals may still operate in situations where some MTAs in the mail relay path do not support DSN. Delivery confirmation via DSN for the final destination will not be provided in this case. However, processing confirmation via MDN may still be possible.

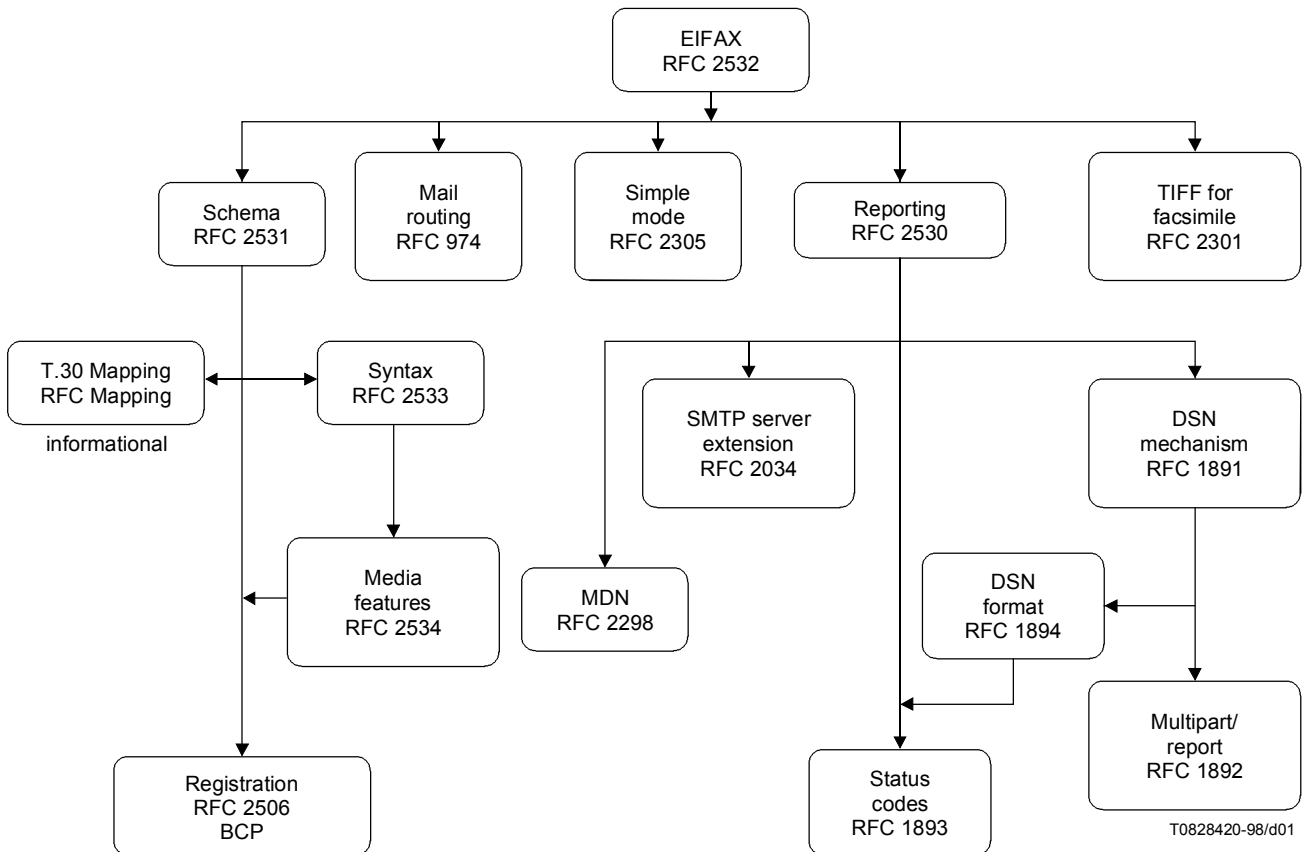
4) New Appendix III

Add a new Appendix III:

Appendix III

Full Mode RFC references chart

This appendix provides a chart of relationships among the Internet standards that are used for achieving T.37 Full Mode functionality.



5) New Appendix IV

Add a new Appendix IV:

Appendix IV

TIFF-FX (RFC 2301) coding examples for profiles beyond Profile S

This appendix provides examples of coding image data for profiles beyond Profile S. It corresponds with TIFF-FX (RFC 2301) Profiles F, J, C, L and M. This is provided for information only.

The actual files used to generate the attached coding examples, together with the associated test cases and other TIFF-FX information, may be accessed at the following URL:

<http://www.itu.int/ITU-T/tiff-fx/index.html>

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IV.1 Profile F coding examples

IV.1.1 T.4 one-dimensional (MH) compression

A4 page at 204 × 196 pels/25.4 mm, MH with non-byte aligned EOLs, single-strip image, FillOrder is MSB, 0 is white, based on test case Profile F F5

Table IV.1-1/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 166470 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Big endian order			4D 4D	
0002	File identifier	42, TIFF file			00 2A	
0004	1 st IFD offset	Offset of IFD 0			00 00 00 08	
IFD0 Offset 8 (0x8H) NextIFDOffset 62140 (0xf2bcH)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	20 entries	00 14
000A	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	00 FE 00 04 00 00 00 01 00 00 00 02
0016	ImageWidth	256	Long	1728	A4	01 00 00 04 00 00 00 01 00 00 06 C0
0022	ImageLength	257	Long	n/a	2339 lines	01 01 00 04 00 00 00 01 00 00 09 23
002E	BitsPerSample	258	Short	1	1 bit/sample	01 02 00 03 00 00 00 01 00 01 00 00
003A	Compression	259	Short	3	T.4 MH or MR	01 03 00 03 00 00 00 01 00 03 00 00
0046	Photometric Interpretation	262	Short	0	0 is white	01 06 00 03 00 00 00 01 00 00 00 00
0052	FillOrder	266	Short	2	MSB first	01 0A 00 03 00 00 00 01 00 01 00 00
005E	DocumentName	269	ASCII	n/a	Test case D05F	01 0D 00 02 00 00 00 0F 00 00 00 FE
006A	ImageDescription	270	ASCII	n/a	Page 1: French text Page 2: kanji	01 0E 00 02 00 00 00 22 00 00 01 0E
0076	StripOffsets	273	Long	n/a	444 bytes	01 11 00 04 00 00 00 01 00 00 01 BC
0082	SamplesPerPixel	277	Short	1	1 sample/pixel	01 15 00 03 00 00 00 01 00 01 00 00
008E	RowsPerStrip	278	Long	=ImageLength	2339 rows	01 16 00 04 00 00 00 01 00 00 09 23
009A	StripByteCounts	279	Long	n/a	61694 bytes	01 17 00 04 00 00 00 01 00 00 F0 FE
00A6	Xresolution	282	Rational	204, 200	204 pixels/inch	01 1A 00 05 00 00 00 01 00 00 01 32
00B2	Yresolution	283	Rational	200,196,100, 98	196 pixels/inch	01 1B 00 05 00 00 00 01 00 00 01 3A
00BE	T4Option	292	Long	0	1-dimensional MH, byte aligned	01 24 00 04 00 00 00 01 00 00 00 04
00CA	ResolutionUnit	296	Short	2	inch	01 28 00 03 00 00 00 01 00 02 00 00
00D6	PageNumber	297	Short	n/a	1 of 2	01 29 00 03 00 00 00 02 00 00 00 02
00E2	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	01 31 00 02 00 00 00 41 00 00 01 42
00EE	GlobalParameters IFD	400	Long	n/a	Offset 390	01 90 00 04 00 00 00 01 00 00 01 86
						Next IFD offset 00 00 F2 BC

IFD 0 Values longer than 4 bytes						
Offset	Description	Comments			Coding	
00FE	DocumentName	Test Case D05F			54 65 73 74 20 63 61 73 65 20 44 30 35 46 00	
00010E	ImageDescription	Page 1: French text			50 61 67 65 20 31 3A 20 46 72 65 6E 63 68 20 74	
00011E		Page 2: Kanji			65 78 74 20 50 61 67 65 20 32 3A 20 6B 61 6E 6A	
00012E					69 00	
000132	Xresolution	204 pixels/inch			00 00 00 CC 00 00 00 01	
00013A	Yresolution	196 pixels/inch			00 00 00 C4 00 00 00 01	
000142	Software	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99			58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
000152					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
000162					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30	
000172					38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39	
000182					00	
IFD 0 → GP IFD → Child IFD 0 Offset 390 (0x186H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
000186	Number of Directory Entries	–	–	–	4 entries	00 04
000188	ProfileType	401	Long	1	1 (Group 3 fax)	01 91 00 04 00 00 00 01 00 00 00 01
000194	FaxProfile	402	Byte	1	2 (Extended black & white lossless, Profile F)	01 92 00 01 00 00 00 01 02 00 00 00
0001A0	CodingMethod	403	Long	2	2 (MH)	01 93 00 04 00 00 00 01 00 00 00 02
0001AC	VersionYear	404	Byte	n/a	1998	01 94 00 01 00 00 00 04 31 39 39 38
						Next IFD offset 00 00 00 00
Image data						
Offset		Description			Comments	
0001bcH - 00f2baH		IFD 0 Strip 0			Compressed data	
IFD1 Offset 62140 (0xf2bcH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
00F2BC	Number of Directory Entries	–	–	–	19 entries	00 13
00F2BE	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	00 FE 00 04 00 00 00 01 00 00 00 02
00F2CA	ImageWidth	256	Long	1728	1728 (A4)	01 00 00 04 00 00 00 01 00 00 06 C0
00F2DA	ImageLength	257	Long	n/a	2339 lines	01 01 00 04 00 00 00 01 00 00 09 23
00F2E2	BitsPerSample	258	Short	1	1 bit/sample	01 02 00 03 00 00 00 01 00 01 00 00
00F2EE	Compression	259	Short	3	T.4 HM or MR	01 03 00 03 00 00 00 01 00 03 00 00
00F2FA	Photometric Interpretation	262	Short	0	0 is white	01 06 00 03 00 00 00 01 00 00 00 00

00F306	FillOrder	266	Short	2	MSB first	01 0A 00 03 00 00 00 01 00 01 00 00
00F312	DocumentName	269	ASCII	n/a	Test case D05F	01 0D 00 02 00 00 00 0F 00 00 F3 A6
00F31E	ImageDescription	270	ASCII	n/a	Page 1: French text Page 2: kanji	01 0E 00 02 00 00 00 22 00 00 F3 B6
00F32A	StripOffsets	273	Long	n/a	62510 bytes	01 11 00 04 00 00 00 01 00 00 F4 2E
00F336	SamplesPerPixel	277	Short	1	1 sample/pixel	01 15 00 03 00 00 00 01 00 01 00 00
00F342	RowsPerStrip	278	Long	=ImageLength	2339 rows	01 16 00 04 00 00 00 01 00 00 09 23
00F34E	StripByteCounts	279	Long	n/a	103958 bytes	01 17 00 04 00 00 00 01 00 01 96 16
00F35A	Xresolution	282	Rational	204, 200 pixels/inch	204 pixels/inch	01 1A 00 05 00 00 00 01 00 00 F3 DA
00F366	Yresolution	283	Rational	200,196,100, 98 pixels/inch	196 pixels/inch	01 1B 00 05 00 00 00 01 00 00 F3 E2
00F372	T4Option	292	Long	0, 4	1-dimensional MH, byte aligned	01 24 00 04 00 00 00 01 00 00 00 04
00F37E	ResolutionUnit	296	Short	2	inches	01 28 00 03 00 00 00 01 00 02 00 00
00F38A	PageNumber	297	Short	n/a	2 of 2	01 29 00 03 00 00 00 02 00 01 00 02
00F396	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	01 31 00 02 00 00 00 41 00 00 F3 EA
						Next IFD offset 00 00 00 00
IFD 1 Values longer than 4 bytes						
Offset	Description				Comments	Coding
00F3A6	DocumentName				Test Case D05F	54 65 73 74 20 63 61 73 65 20 44 30 33 46 00
00F3B6	ImageDescription				Page 1: French text	50 61 67 65 20 31 3A 20 46 72 65 6E 63 68 20 74
00F3C6					Page 2: Kanji	65 78 74 20 50 61 67 65 20 32 3A 20 6B 61 6E 6A
00F3D6						69 00
00F3DA	Xresolution				204 pixels/inch	00 00 00 CC 00 00 00 01
00F3E2	Yresolution				196 pixels/inch	00 00 00 C4 00 00 00 01
00F3EA	Software				Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65
00F3FA						66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E
00F40A						74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30
00F41A						38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39
00F42A						00
Image data						
Offset	Description				Comments	
00f42eH - 028a44H	IFD 0 Strip 0				Compressed data	

IV.1.2 T.4 two-dimensional (MR) compression

A4 page at 80 × 154 pels/cm, MR with non-byte aligned EOLs, single strip image, FillOrder is MSB, 0 is black, with GP IFD, based on test case Profile F F6

Table IV.1-2/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 236002 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Little endian order			49 49	
0002	File identifier	42, TIFF file			2A 00	
0004	1 st IFD offset	Offset of IFD 0			08 00 00 00	
IFD0 Offset 8 (0x8H) NextIFDOffset 81740 (0x13f4cH)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	20 entries	14 00
000A	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	FE 00 04 00 01 00 00 00 02 00 00 00
0016	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
0022	ImageLength	257	Long	n/a	4677 lines	01 01 04 00 01 00 00 00 45 12 00 00
002E	BitsPerSample	258	Short	1	1 bit/sample	02 01 03 00 01 00 00 00 01 00 00 00
003A	Compression	259	Short	3	T.4 HM or MR	03 01 03 00 01 00 00 00 03 00 00 00
0046	Photometric Interpretation	262	Short	0	0 is black	06 01 03 00 01 00 00 00 01 00 00 00
0052	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
005E	DocumentName	269	ASCII	n/a	Test case D06F	0D 01 02 00 0F 00 00 00 FE 00 00 00
006A	ImageDescription	270	ASCII	n/a	Page 1: French text Page 2: kanji	0E 01 02 00 22 00 00 00 0E 01 00 00
0076	StripOffsets	273	Long	n/a	444 bytes	11 01 04 00 01 00 00 00 BC 01 00 00
0082	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
008E	RowsPerStrip	278	Long	=ImageLength	4677 rows	16 01 04 00 01 00 00 00 45 12 00 00
009A	StripByteCounts	279	Long	n/a	81296 bytes	17 01 04 00 01 00 00 00 90 3D 01 00
00A6	Xresolution	282	Rational	204, 200	80 pixels/cm	1A 01 05 00 01 00 00 00 32 01 00 00
00B2	Yresolution	283	Rational	200,196,100, 98	154 pixels/cm	1B 01 05 00 01 00 00 00 3A 01 00 00
00BE	T4Option	292	Long	0,4	2-dimensional MR and not byte-aligned EOL	24 01 04 00 01 00 00 00 01 00 00 00
00CA	ResolutionUnit	296	Short	2	cm	28 01 03 00 01 00 00 00 03 00 00 00
00D6	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
00E2	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 42 01 00 00
00EE	GlobalParameters IFD	400	Long	n/a	Offset 390	90 01 04 00 01 00 00 00 86 01 00 00
						Next IFD offset 4C 3F 01 00

IFD 0 Values longer than 4 bytes						
Offset	Description		Comments		Coding	
000FE	DocumentName		Test Case D06F		54 65 73 74 20 63 61 73 65 20 44 30 36 46 00	
00010E	ImageDescription		Page 1: French text		50 61 67 65 20 31 3A 20 46 72 65 6E 63 68 20 74	
00011E			Page 2: Kanji		65 78 74 20 50 61 67 65 20 32 3A 20 6B 61 6E 6A	
00012E					69 00	
000132	Xresolution		80 pixels/cm		50 00 00 00 01 00 00 00	
00013A	Yresolution		154 pixels/cm		9A 00 00 00 01 00 00 00	
000142	Software		Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
000152					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
000162					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32	
000172					32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39	
000182					00	
IFD 0 → GP IFD → Child IFD 0 Offset 390 (0x186H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
000186	Number of Directory Entries	–	–	–	4 entries	04 00
000188	ProfileType	401	Long	1	1 (Group 3 fax)	91 01 04 00 01 00 00 00 01 00 00 00
000194	FaxProfile	402	Byte	1	2 (Extended black & white lossless, Profile F)	92 01 01 00 01 00 00 00 02 00 00 00
0001A0	CodingMethod	403	Long	2, MH	MR	93 01 04 00 01 00 00 00 04 00 00 00
0001AC	VersionYear	404	Byte	n/a	1998	94 01 01 00 04 00 00 00 31 39 39 38
						Next IFD offset 00 00 00 00
Image data						
Offset		Description			Comments	
0001bcH - 013f4cH		IFD 0 Strip 0			Compressed data	
IFD1 Offset 81740 (0x13f4cH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
013F4C	Number of Directory Entries	–	–	–	19 entries	13 00
013F4E	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	FE 00 04 00 01 00 00 00 02 00 00 00
013F5A	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
013F66	ImageLength	257	Long	n/a	4677 lines	01 01 04 00 01 00 00 00 45 12 00 00
013F72	BitsPerSample	258	Short	1	1 bit/sample	02 01 03 00 01 00 00 00 01 00 00 00
013F7E	Compression	259	Short	3	T.4 HM or MR	03 01 03 00 01 00 00 00 03 00 00 00
013F8A	Photometric Interpretation	262	Short	0	0 is black	06 01 03 00 01 00 00 00 01 00 00 00

013F96	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
013FA2	DocumentName	269	ASCII	n/a	Test case D06F	0D 01 02 00 0F 00 00 00 36 40 01 00
013FAE	ImageDescription	270	ASCII	n/a	Page 1: French text Page 2: kanji	0E 01 02 00 22 00 00 00 46 40 01 00
013FBA	StripOffsets	273	Long	n/a	82110 bytes	11 01 04 00 01 00 00 00 BE 40 01 00
013FC6	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
013FD2	RowsPerStrip	278	Long	=ImageLength	4677 rows	16 01 04 00 01 00 00 00 45 12 00 00
013FDE	StripByteCounts	279	Long	n/a	153890 bytes	17 01 04 00 01 00 00 00 22 59 02 00
013FEA	Xresolution	282	Rational	204, 200 pixels/inch	80 pixels/cm	1A 01 05 00 01 00 00 00 6A 40 01 00
013FF6	Yresolution	283	Rational	200,196,100, 98 pixels/inch	154 pixels/cm	1B 01 05 00 01 00 00 00 72 40 01 00
014002	T4Option	292	Long	0, 4	2-dimensional MR and not byte-aligned EOL	24 01 04 00 01 00 00 00 01 00 00 00
01400E	ResolutionUnit	296	Short	2	cm	28 01 03 00 01 00 00 00 03 00 00 00
01401A	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
014026	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 7A 40 01 00
						Next IFD offset 00 00 00 00
IFD 1 Values longer than 4 bytes						
Offset	Description				Comments	Coding
014036	DocumentName				Test Case D06F	54 65 73 74 20 63 61 73 65 20 44 30 36 46 00
014046	ImageDescription				Page 1: French text	50 61 67 65 20 31 3A 20 46 72 65 6E 63 68 20 74
014056					Page 2: Kanji	65 78 74 20 50 61 67 65 20 32 3A 20 6B 61 6E 6A
014066						69 00
01406A	Xresolution				80 pixels/cm	50 00 00 00 01 00 00 00
014072	Yresolution				154 pixels/cm	9A 00 00 00 01 00 00 00
01407A	Software				Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65
01408A						66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E
01409A						74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32
0140AA						32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39
0140BA						00
Image data						
Offset	Description				Comments	
000140beH - 000399e0H	IFD 1 Strip 0				Compressed data	

IV.1.3 T.6 two dimensional (MMR) compression

A4 page at 400 × 400 pels/25.4 mm, MMR, multi-strip image, FillOrder is MSB, 0 is white and without GlobalParameters IFD, based on test case Profile F F3

Table IV.1-3/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 193324 bytes				
Offset	Description				Comments	Coding
0000	Octet order				Big endian order	4D 4D
0002	File identifier				42, TIFF file	00 2A
0004	1 st IFD offset				Offset of IFD 0	00 00 00 08
IFD0 Offset 8 (0x8H) NextIFDOffset 61434 (0xeffaH)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	19 entries	00 13
000A	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	00 FE 00 04 00 00 00 01 00 00 00 02
0016	ImageWidth	256	Long	3456	A4	01 00 00 04 00 00 00 01 00 00 0D 80
0022	ImageLength	257	Long	n/a	4677 lines	01 01 00 04 00 00 00 01 00 00 12 45
002E	BitsPerSample	258	Short	1	1 bit/sample	01 02 00 03 00 00 00 01 00 01 00 00
003A	Compression	259	Short	3	T.6 MMR	01 03 00 03 00 00 00 01 00 04 00 00
0046	Photometric Interpretation	262	Short	0	0 is white	01 06 00 03 00 00 00 01 00 00 00 00
0052	FillOrder	266	Short	2	MSB first	01 0A 00 03 00 00 00 01 00 01 00 00
005E	DocumentName	269	ASCII	n/a	Test case D03F	01 0D 00 02 00 00 00 0F 00 00 00 F2
006A	ImageDescription	270	ASCII	n/a	Page 1: French text Page 2: kanji	01 0E 00 02 00 00 00 22 00 00 01 02
0076	StripOffsets	273	Long	n/a	458 690 8262 18314 34710 39266 46030 48586 56794 61370 bytes	01 11 00 04 00 00 00 0A 00 00 01 26
0082	SamplesPerPixel	277	Short	1	1 sample/pixel	01 15 00 03 00 00 00 01 00 01 00 00
008E	RowsPerStrip	278	Long	=ImageLength	500 rows	01 16 00 04 00 00 00 01 00 00 01 F4
009A	StripByteCounts	279	Long	n/a	232 7572 10051 16393 4555 6763 2556 8208 4576 62 bytes	01 17 00 04 00 00 00 0A 00 00 01 4E
00A6	Xresolution	282	Rational	204, 200	400 pixels/inch	01 1A 00 05 00 00 00 01 00 00 01 76
00B2	Yresolution	283	Rational	200,196,100, 98	400 pixels/inch	01 1B 00 05 00 00 00 01 00 00 01 7E
00BE	T6Option	293	Long	0	MMR (G4) compressed	01 25 00 04 00 00 00 01 00 00 00 00
00CA	ResolutionUnit	296	Short	2	inch	01 28 00 03 00 00 00 01 00 02 00 00
00D6	PageNumber	297	Short	n/a	1 of 2	01 29 00 03 00 00 00 02 00 00 00 02
00E2	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	01 31 00 02 00 00 00 41 00 00 01 86
						Next IFD offset 00 00 EF FA

IFD 0 Values longer than 4 bytes						
Offset	Description		Comments		Coding	
00F2	DocumentName		Test Case D03F		54 65 73 74 20 63 61 73 65 20 44 30 33 46 00	
000102	ImageDescription		Page 1: French text		50 61 67 65 20 31 3A 20 46 72 65 6E 63 68 20 74	
000112			Page 2: Kanji		65 78 74 20 50 61 67 65 20 32 3A 20 6B 61 6E 6A	
000122					69 00	
000126	StripOffset		458 690 8262 18314 34710 39266 46030 48586 56794 61370 bytes		00 00 01 CA 00 00 02 B2 00 00 20 46 00 00 47 8A	
000136					00 00 87 96 00 00 99 62 00 00 B3 CE 00 00 BD CA	
000146					00 00 DD DA 00 00 EF BA	
00014E	StipByteCounts		232 7572 10051 16393 4555 6763 2556 8208 4576 62 bytes		00 00 00 E8 00 00 1D 94 00 00 27 43 00 00 40 09	
00015E					00 00 11 CB 00 00 1A 6B 00 00 09 FC 00 00 20 10	
00016E					00 00 11 E0 00 00 00 3E	
000176	Xresolution		400 pixels/inch		00 00 01 90 00 00 00 01	
00017E	Yresolution		400 pixels/inch		00 00 01 90 00 00 00 01	
000186	Software		Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
000196					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
0001A6					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30	
0001B6					38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39	
0001C6					00	
Image data						
Offset	Description		Comments			
0001caH - 0002b2H	IFD 0 Strip 0		Compressed data			
0002b2H - 002046H	IFD 0 Strip 1		Compressed data			
002046H - 004789H	IFD 0 Strip 2		Compressed data			
00478aH - 008793H	IFD 0 Strip 3		Compressed data			
008796H - 009961H	IFD 0 Strip 4		Compressed data			
009962H - 00b3cdH	IFD 0 Strip 5		Compressed data			
00b3ceH - 00bdcaH	IFD 0 Strip 6		Compressed data			
00bdcaH - 00dddaH	IFD 0 Strip 7		Compressed data			
00dddaH - 00efbaH	IFD 0 Strip 8		Compressed data			
00efbaH - 00eff8H	IFD 0 Strip 9		Compressed data			
IFD1 Offset 61434 (0xeffaH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
00EFAA	Number of Directory Entries	-	-	-	19 entries	00 13

00EFC	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	00 FE 00 04 00 00 00 01 00 00 00 02
00F008	ImageWidth	256	Long	1728	3456 (A4)	01 00 00 04 00 00 00 01 00 00 0D 80
00F014	ImageLength	257	Long	n/a	4677 lines	01 01 00 04 00 00 00 01 00 00 12 45
00F020	BitsPerSample	258	Short	1	1 bit/sample	01 02 00 03 00 00 00 01 00 01 00 00
00F02C	Compression	259	Short	3	T.6 MMR	01 03 00 03 00 00 00 01 00 04 00 00
00F038	Photometric Interpretation	262	Short	0	0 is white	01 06 00 03 00 00 00 01 00 00 00 00
00F044	FillOrder	266	Short	2	MSB first	01 0A 00 03 00 00 00 01 00 01 00 00
00F050	DocumentName	269	ASCII	n/a	Test case D03F	01 0D 00 02 00 00 00 0F 00 00 F0 E4
00F05C	ImageDescription	270	ASCII	n/a	Page 1: French text Page 2: kanji	01 0E 00 02 00 00 00 22 00 00 F0 F4
00F068	StripOffsets	273	Long	n/a	61884 65460 82600 99624 115020 125960 146916 166016 182812 193276 bytes	01 11 00 04 00 00 00 0A 00 00 F1 18
00F074	SamplesPerPixel	277	Short	1	1 sample/pixel	01 15 00 03 00 00 00 01 00 01 00 00
00F080	RowsPerStrip	278	Long	=ImageLength	500 rows	01 16 00 04 00 00 00 01 00 00 01 F4
00F08C	StripByteCounts	279	Long	n/a	3575 17137 17024 15394 10938 20955 19099 16796 10461 48 bytes	01 17 00 04 00 00 00 0A 00 00 F1 40
00F098	Xresolution	282	Rational	204, 200 pixels/inch	400 pixels/inch	01 1A 00 05 00 00 00 01 00 00 F1 68
00F0A4	Yresolution	283	Rational	200,196,100, 98 pixels/inch	400 pixels/inch	01 1B 00 05 00 00 00 01 00 00 F1 70
00F0B0	T6Option	292	Long	0, 4	MMR (G4) compressed	01 25 00 04 00 00 00 01 00 00 00 00
00F0BC	ResolutionUnit	296	Short	2	inches	01 28 00 03 00 00 00 01 00 02 00 00
00F0C8	PageNumber	297	Short	n/a	2 of 2	01 29 00 03 00 00 00 02 00 01 00 02
00F0D4	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	01 31 00 02 00 00 00 41 00 00 F1
						Next IFD offset 78 00 00 00 00
IFD 1 Values longer than 4 bytes						
Offset	Description	Comments			Coding	
00F0E4	DocumentName	Test Case D03F			54 65 73 74 20 63 61 73 65 20 44 30 33 46 00	
00F0F4	ImageDescription	Page 1: French text			50 61 67 65 20 31 3A 20 46 72 65 6E 63 68 20 74	
00F104		Page 2: Kanji			65 78 74 20 50 61 67 65 20 32 3A 20 6B 61 6E 6A	
00F114					69 00	
00F118	StripOffset	61884 65460 82600 99624 115020 125960 146916 166016 182812 193276 bytes			00 00 F1 BC 00 00 FF B4 00 01 42 A8 00 01 85 28	
00F128					00 01 C1 4C 00 01 EC 08 00 02 3D E4 00 02 88 80	
00F138					00 02 CA 1C 00 02 F2 FC	

00F140	StipByteCounts	3575 17137 17024 15394 10938 20955 19099 16796 10461 48 bytes	00 00 0D F7 00 00 42 F1 00 00 42 80 00 00 3C 22
00F150			00 00 2A BA 00 00 51 DB 00 00 4A 9B 00 00 41 9C
00F160			00 00 28 DD 00 00 00 30
00F168	Xresolution	400 pixels/inch	00 00 01 90 00 00 00 01
00F170	Yresolution	400 pixels/inch	00 00 01 90 00 00 00 01
00F178	Software	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65
00F188			66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E
00F198			74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30
00F1A8			38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39
00F1B8			00
Image data			
Offset	Description		Comments
00f1bcH - 00ffb3H	IFD 0 Strip 0		Compressed data
00ffb4H - 0142a5H	IFD 0 Strip 1		Compressed data
0142a8H - 018528H	IFD 0 Strip 2		Compressed data
:	:		:
:	:		:
:	:		:
02f2fcH - 02f32cH	IFD 0 Strip 9		Compressed data

IV.2 Profile J coding examples, T.85 (JBIG) compression

A4 page at 300 × 300 pels/25.4 mm, FillOrder is MSB, 0 is white, big endian byte order and without GlobalParameters IFD, based on test case Profile J J1

Table IV.2/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 115140 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Big endian order			4D 4D	
0002	File identifier	42, TIFF file			00 2A	
0004	1 st IFD offset	Offset of IFD 0			00 00 00 08	
IFD0 Offset 8 (0x8H) NextIFDOffset 35298 (0x89e2H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	18 entries	00 12
000A	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	00 FE 00 04 00 00 00 01 00 00 00 02
0016	ImageWidth	256	Long	1728	2592, A4	01 00 00 04 00 00 00 01 00 00 0A 20
0022	ImageLength	257	Long	n/a	3508 lines	01 01 00 04 00 00 00 01 00 00 0D B4
002E	BitsPerSample	258	Short	1	1 bit/sample	01 02 00 03 00 00 00 01 00 01 00 00
003A	Compression	259	Short	9	9, JBIG T.85	01 03 00 03 00 00 00 01 00 09 00 00
0046	Photometric Interpretation	262	Short	0	0 is white	01 06 00 03 00 00 00 01 00 00 00 00
0052	FillOrder	266	Short	2	MSB first	01 0A 00 03 00 00 00 01 00 01 00 00
005E	DocumentName	269	ASCII	n/a	Test case D01J	01 0D 00 02 00 00 00 0F 00 00 00 E6
006A	ImageDescription	270	ASCII	n/a	Page 1: French text Page 2: kanji	01 0E 00 02 00 00 00 22 00 00 00 F6
0076	StripOffsets	273	Long	n/a	366 bytes	01 11 00 04 00 00 00 01 00 00 01 6E
0082	SamplesPerPixel	277	Short	1	1 sample/pixel	01 15 00 03 00 00 00 01 00 01 00 00
008E	RowsPerStrip	278	Long	=ImageLength	3508 rows	01 16 00 04 00 00 00 01 00 00 0D B4
009A	StripByteCounts	279	Long	n/a	34933 bytes	01 17 00 04 00 00 00 01 00 00 88 75
00A6	Xresolution	282	Rational	204, 200	300 pixels/inch	01 1A 00 05 00 00 00 01 00 00 01 1A
00B2	Yresolution	283	Rational	200,196,100, 98	300 pixels/inch	01 1B 00 05 00 00 00 01 00 00 01 22
00BE	ResolutionUnit	296	Short	2	inch	01 28 00 03 00 00 00 01 00 02 00 00
00CA	PageNumber	297	Short	n/a	1 of 2	01 29 00 03 00 00 00 02 00 00 00 02
00D6	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	01 31 00 02 00 00 00 41 00 00 01 2A
						Next IFD offset 00 00 89 E6
IFD 0 Values longer than 4 bytes						
Offset	Description	Comments			Coding	
0000E6	DocumentName	Test Case D01J			54 65 73 74 20 63 61 73 65 20 44 30 31 4A 00	

0000F6	ImageDescription	Page 1: French text		50 61 67 65 20 31 3A 20 46 72 65 6E 63 68 20 74		
000106		Page 2: Kanji		65 78 74 20 50 61 67 65 20 32 3A 20 6B 61 6E 6A		
000116				69 00		
00011A	Xresolution	300 pixels/inch		00 00 01 2C 00 00 00 01		
000122	Yresolution	300 pixels/inch		00 00 01 2C 00 00 00 01		
00012A	Software	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65		
00013A				66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E		
00014A				74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30		
00015A				38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39		
00016A				00		
Image data						
Offset		Description		Comments		
00016eH - 0089e3H		IFD 0 Strip 0		Compressed data		
IFD1 Offset 35302 (0x89e6H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0089E6	Number of Directory Entries	–	–	–	18 entries	00 12
0089E8	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	00 FE 00 04 00 00 00 01 00 00 00 02
0089F4	ImageWidth	256	Long	1728	2592, A4	01 00 00 04 00 00 00 01 00 00 0A 20
008a00	ImageLength	257	Long	n/a	3508 lines	01 01 00 04 00 00 00 01 00 00 0D B4
008A0C	BitsPerSample	258	Short	1	1 bit/sample	01 02 00 03 00 00 00 01 00 01 00 00
008A18	Compression	259	Short	9	9, JBIG T.85	01 03 00 03 00 00 00 01 00 09 00 00
008A24	Photometric Interpretation	262	Short	0	0 is white	01 06 00 03 00 00 00 01 00 00 00 00
008A30	FillOrder	266	Short	2	MSB first	01 0A 00 03 00 00 00 01 00 01 00 00
008A3C	DocumentName	269	ASCII	n/a	Test case D01J	01 0D 00 02 00 00 00 0F 00 00 8A C4
008A48	ImageDescription	270	ASCII	n/a	Page 1: French text Page 2: kanji	01 0E 00 02 00 00 00 22 00 00 8A D4
008A54	StripOffsets	273	Long	n/a	35660 bytes	01 11 00 04 00 00 00 01 00 00 8B 4C
008A60	SamplesPerPixel	277	Short	1	1 sample/pixel	01 15 00 03 00 00 00 01 00 01 00 00
008A6C	RowsPerStrip	278	Long	=ImageLength	3508 rows	01 16 00 04 00 00 00 01 00 00 0D B4
008A78	StripByteCounts	279	Long	n/a	79480 bytes	01 17 00 04 00 00 00 01 00 01 36 78
008A84	Xresolution	282	Rational	204, 200	300 pixels/inch	01 1A 00 05 00 00 00 01 00 00 8A F8
008A90	Yresolution	283	Rational	200,196,100, 98	300 pixels/inch	01 1B 00 05 00 00 00 01 00 00 8B 00
008A9C	ResolutionUnit	296	Short	2	inch	01 28 00 03 00 00 00 01 00 02 00 00
008AA8	PageNumber	297	Short	n/a	2 of 2	01 29 00 03 00 00 00 02 00 01 00 02
008AB4	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	01 31 00 02 00 00 00 41 00 00 8B 08

					Next IFD offset 00 00 00 00
IFD 1 Values longer than 4 bytes					
Offset	Description	Comments	Coding		
008AC4	DocumentName	Test Case D01J	54 65 73 74 20 63 61 73 65 20 44 30 31 4A 00		
008AD4	ImageDescription	Page 1: French text	50 61 67 65 20 31 3A 20 46 72 65 6E 63 68 20 74		
008AE4		Page 2: Kanji	65 78 74 20 50 61 67 65 20 32 3A 20 6B 61 6E 6A		
008AF4			69 00		
008AF8	Xresolution	300 pixels/inch	00 00 01 2C 00 00 00 01		
008B00	Yresolution	300 pixels/inch	00 00 01 2C 00 00 00 01		
008B08	Software	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65		
008B18			66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E		
008B28			74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30		
008B38			38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39		
008B48			00		
Image data					
Offset	Description	Comments			
008b4cH - 01c1c4H	IFD 1 Strip 0	Compressed data			

IV.3 Profile C coding example, JPEG compression and T.4 Annex E (L*a*b*) encoding

A4 page at 200 × 200 pels/25.4 mm, 3 samples per pixel, 8 bits per sample, 4:1:1 subsampling, FillOrder is MSB, little endian byte order, based on test case Profile C C3

Table IV.3/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 885062 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Little endian order			49 49	
0002	File identifier	42, TIFF file			2A 00	
0004	1 st IFD offset	Offset of IFD 0			08 00 00 00	
IFD0 Offset 8 (0x8H) NextIFDOffset 508108 (0x7c0cH)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	20 entries	14 00
000A	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	FE 00 04 00 01 00 00 00 02 00 00 00
0016	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
0022	ImageLength	257	Long	n/a	2342 lines	01 01 04 00 01 00 00 00 26 09 00 00
002E	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 B6 C1 07 00
003A	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
0046	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0052	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
005E	DocumentName	269	ASCII	n/a	Test case D03C	0D 01 02 00 0F 00 00 00 06 01 00 00
006A	ImageDescription	270	ASCII	n/a	Page 1: Color test chart Page2: Continuous tone fax test chart	0E 01 02 00 41 00 00 00 16 01 00 00
0076	StripOffsets	273	Long	n/a	484 bytes	11 01 04 00 01 00 00 00 E4 01 00 00
0082	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
008E	RowsPerStrip	278	Long	=ImageLength	2342 rows	16 01 04 00 01 00 00 00 26 09 00 00
009A	StripByteCounts	279	Long	n/a	507622 bytes	17 01 04 00 01 00 00 00 E6 BE 07 00
00A6	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 5A 01 00 00
00B2	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 62 01 00 00
00BE	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
00CA	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
00D6	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	31 01 02 00 41 00 00 00 6A 01 00 00
00E2	GlobalParameters IFD	400	Long	n/a	Offset 430	90 01 04 00 01 00 00 00 AE 01 00 00
00EE	ChromaSubSampling	530	Short	4:1:1	4:1:1	12 02 03 00 02 00 00 00 02 00 02 00
						Next IFD offset CC C0 07 00

IFD 0 Values longer than 4 bytes						
Offset	Description		Comments		Coding	
0000FE	BitsPerSample		8, 8, 8		08 00 08 00 08 00	
000106	DocumentName		Test Case D03C		54 65 73 74 20 63 61 73 65 20 44 30 33 43 00	
000116	ImageDescription		Page 1: Color test chart		50 61 67 65 20 31 3A 20 43 6F 6C 6F 72 20 74 65	
000126			Page 2: Continuous tone fax test chart		73 74 20 63 68 61 72 74 20 20 50 61 67 65 20 32	
000136					3A 20 43 6F 6E 74 69 6E 75 6F 75 73 20 74 6F 6E	
000146					65 20 66 61 78 20 74 65 73 74 20 63 68 61 72 74	
000156					00	
00015A	Xresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
000162	Yresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
00016A	Software		Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
00017A					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
00018A					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30	
00019A					38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39	
0001AA					00	
IFD 0 → GP IFD → Child IFD 0 Offset 430 (0x1aeH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0001AE	Number of Directory Entries	–	–	–	4 entries	04 00
0001B0	ProfileType	401	Long	1	1 (Group 3 fax)	91 01 04 00 01 00 00 00 01 00 00 00
0001BC	FaxProfile	402	Byte	4	Lossy color and grayscale, Profile C	92 01 01 00 01 00 00 00 04 00 00 00
0001C8	CodingMethod	403	Long	32	T.81 (JPEG)	93 01 04 00 01 00 00 00 20 00 00 00
0001D4	VersionYear	404	Byte	n/a	1998	94 01 01 00 04 00 00 00 31 39 39 38
						Next IFD offset 00 00 00 00
Image data						
Offset		Description			Comments	
0001e4H - 07c0caH		IFD 0 Strip 0			Compressed data	
IFD1 Offset 508108 (0x7c0ccH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
07C0CC	Number of Directory Entries	–	–	–	19 entries	13 00
07C0CE	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	FE 00 04 00 01 00 00 00 02 00 00 00
07C0DA	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
07C0E6	ImageLength	257	Long	n/a	1949 lines	01 01 04 00 01 00 00 00 9D 07 00 00

07C0F2	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 BA C1 07 00
07C1FE	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
07C10A	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
07C116	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
07C122	DocumentName	269	ASCII	n/a	Test case D03C	0D 01 02 00 0F 00 00 00 BE C1 07 00
07C12E	ImageDescription	270	ASCII	n/a	Page 1: Color test chart Page2: Continuous tone fax test chart	0E 01 02 00 41 00 00 00 CE C1 07 00
07C13A	StripOffsets	273	Long	n/a	508518 bytes	11 01 04 00 01 00 00 00 66 C2 07 00
07C146	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
07C152	RowsPerStrip	278	Long	=ImageLength	1949 rows	16 01 04 00 01 00 00 00 9D 07 00 00
07C15E	StripByteCounts	279	Long	n/a	376541 bytes	17 01 04 00 01 00 00 00 DD BE 05 00
07C16A	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 12 C2 07 00
07C176	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 1A C2 07 00
07C182	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
07C18E	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
07C19A	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	31 01 02 00 41 00 00 00 22 C2 07 00
07C1A6	ChromaSubSampl ing	530	Short	4:1:1	4:1:1	12 02 03 00 02 00 00 00 02 00 02 00
						Next IFD offset 00 00 00 00
IFD 1 Values longer than 4 bytes						
Offset	Description			Comments	Coding	
07C1B6	BitsPerSample			8, 8, 8	08 00 08 00 08 00	
07C1BE	DocumentName			Test Case D03C	54 65 73 74 20 63 61 73 65 20 44 30 33 43 00	
07C1CE	ImageDescription			Page 1: Color test chart	50 61 67 65 20 31 3A 20 43 6F 6C 6F 72 20 74 65	
07C1DE				Page 2: Continuous tone fax test chart	73 74 20 63 68 61 72 74 20 20 50 61 67 65 20 32	
07C1EE					3A 20 43 6F 6E 74 69 6E 75 6F 75 73 20 74 6F 6E	
07C1FE					65 20 66 61 78 20 74 65 73 74 20 63 68 61 72 74	
07C20E					00	
07C212	Xresolution			200 pixels/inch	C8 00 00 00 01 00 00 00	
07C21A	Yresolution			200 pixels/inch	C8 00 00 00 01 00 00 00	

07C222	Software	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65
07C232			66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E
07C242			74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30
07C252			38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39
07C262			00
Image data			
Offset	Description	Comments	
07c266H - 0d8143H	IFD 1 Strip 0	Compressed data	

IV.4 Profile L coding examples, JBIG compression with T.43 color encoding

IV.4.1 One bit per sample CMYK encoding of color

A4 page at 400 × 400 pels/25.4 mm, 3 samples per pixel, FillOrder is MSB, big endian byte order, based on test case Profile L L2

Table IV.4-1/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 1583262 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Big endian order			4D 4D	
0002	File identifier	42, TIFF file			00 2A	
0004	1 st IFD offset	Offset of IFD 0			00 00 00 08	
IFD0 Offset 8 (0x8H) NextIFDOffset 1053616 (0x1013b0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	19 entries	00 13
000A	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	00 FE 00 04 00 00 00 01 00 00 00 02
0016	ImageWidth	256	Long	3456	A4	01 00 00 04 00 00 00 01 00 00 0D 80
0022	ImageLength	257	Long	n/a	4684 lines	01 01 00 04 00 00 00 01 00 00 12 4C
002E	BitsPerSample	258	Short	1	1, 1, 1 bit/sample	01 02 00 03 00 00 00 03 00 00 00 F2
003A	Compression	259	Short	10	T.43 JBIG color	01 03 00 03 00 00 00 01 00 0A 00 00
0046	Photometric Interpretation	262	Short	5	CMYK	01 06 00 03 00 00 00 01 00 05 00 00
0052	FillOrder	266	Short	2	MSB first	01 0A 00 03 00 00 00 01 00 01 00 00
005E	DocumentName	269	ASCII	n/a	Test case L2	01 0D 00 02 00 00 00 0D 00 00 00 FA
006A	ImageDescription	270	ASCII	n/a	Page 1: Color test chart Page2: Bar chart	01 0E 00 02 00 00 00 2C 00 00 01 0A
0076	StripOffsets	273	Long	n/a	448 bytes	01 11 00 04 00 00 00 01 00 00 01 C0
0082	SamplesPerPixel	277	Short	1	3 sample/pixel	01 15 00 03 00 00 00 01 00 03 00 00
008E	RowsPerStrip	278	Long	=ImageLength	4684 rows	01 16 00 04 00 00 00 01 00 00 12 4C
009A	StripByteCounts	279	Long	n/a	1053166 bytes	01 17 00 04 00 00 00 01 00 10 11 EE
00A6	Xresolution	282	Rational	200	400 pixels/inch	01 1A 00 05 00 00 00 01 00 00 01 36
00B2	Yresolution	283	Rational	200	400 pixels/inch	01 1B 00 05 00 00 00 01 00 00 01 3E
00BE	ResolutionUnit	296	Short	2	inch	01 28 00 03 00 00 00 01 00 02 00 00
00CA	PageNumber	297	Short	n/a	1 of 2	01 29 00 03 00 00 00 02 00 00 00 02
00D6	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	01 31 00 02 00 00 00 41 00 00 01 46
00E2	GlobalParameters IFD	400	Long	n/a		01 90 00 04 00 00 00 01 00 00 01 8A
						Next IFD offset 00 10 13 B0

IFD 0 Values longer than 4 bytes						
Offset	Description		Comments		Coding	
0000F2	BitsPerSample		1, 1, 1		00 01 00 01 00 01	
0000FA	DocumentName		Test Case L2		54 65 73 74 20 63 61 73 65 20 4C 32 00	
00010A	ImageDescription		Page 1: Color test chart		50 61 67 65 20 31 3A 20 43 6F 6C 6F 72 20 74 65	
00011A			Page 2: Bar chart		73 74 20 63 68 61 72 74 20 20 50 61 67 65 20 32	
00012A					3A 20 42 61 72 20 63 68 61 72 74 00	
000136	Xresolution		400 pixels/inch		00 00 01 90 00 00 00 01	
00013E	Yresolution		400 pixels/inch		00 00 01 90 00 00 00 01	
000146	Software		Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
000156					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
000166					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30	
000176					38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39	
000186					00	
IFD 0 → GP IFD → Child IFD 0 Offset 394 (0x18aH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
00018A	Number of Directory Entries	–	–	–	4 entries	00 04
00018C	ProfileType	401	Long	1	1 (Group 3 fax)	01 91 00 04 00 00 00 01 00 00 00 01
000198	FaxProfile	402	Byte	5	Lossless color and grayscale, Profile L	01 92 00 01 00 00 00 01 05 00 00 00
0001A4	CodingMethod	403	Long	64	T.82 (JBIG), using T.43	01 93 00 04 00 00 00 01 00 00 00 40
0001B0	VersionYear	404	Byte	n/a	1998	01 94 00 01 00 00 00 04 31 39 39 38
						Next IFD offset 00 00 00 00
Image data						
Offset		Description			Comments	
000001c0H - 001013aeH		IFD 0 Strip 0			Compressed data	
IFD1 Offset 1053616 (0x1013b0H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
001013B0	Number of Directory Entries	–	–	–	18 entries	00 12
001013B2	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	00 FE 00 04 00 00 00 01 00 00 00 02
001013BE	ImageWidth	256	Long	3456	A4	01 00 00 04 00 00 00 01 00 00 0D 80
001013CA	ImageLength	257	Long	n/a	4472 lines	01 01 00 04 00 00 00 01 00 00 11 78
001013D6	BitsPerSample	258	Short	1	1, 1, 1 bit/sample	01 02 00 03 00 00 00 03 00 10 14 8E
001013E2	Compression	259	Short	10	T.43 JBIG color	01 03 00 03 00 00 00 01 00 0A 00 00

001013EE	Photometric Interpretation	262	Short	5	CMYK	01 06 00 03 00 00 00 01 00 05 00 00
001013FA	FillOrder	266	Short	2	MSB first	01 0A 00 03 00 00 00 01 00 01 00 00
00101406	DocumentName	269	ASCII	n/a	Test case L2	01 0D 00 02 00 00 00 0D 00 10 14 96
00101412	ImageDescription	270	ASCII	n/a	Page 1: Color test chart Page2: Bar chart	01 0E 00 02 00 00 00 2C 00 10 14 A6
0010141E	StripOffsets	273	Long	n/a	1053990 bytes	01 11 00 04 00 00 00 01 00 10 15 26
0010142A	SamplesPerPixel	277	Short	1	3 sample/pixel	01 15 00 03 00 00 00 01 00 03 00 00
00101436	RowsPerStrip	278	Long	=ImageLength	4472 rows	01 16 00 04 00 00 00 01 00 00 11 78
00101442	StripByteCounts	279	Long	n/a	529270 bytes	01 17 00 04 00 00 00 01 00 08 13 76
0010144E	Xresolution	282	Rational	200	400 pixels/inch	01 1A 00 05 00 00 00 01 00 10 14 D2
0010145A	Yresolution	283	Rational	200	400 pixels/inch	01 1B 00 05 00 00 00 01 00 10 14 DA
00101466	ResolutionUnit	296	Short	2	inch	01 28 00 03 00 00 00 01 00 02 00 00
00101472	PageNumber	297	Short	n/a	2 of 2	01 29 00 03 00 00 00 02 00 00 00 02
0010147E	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	01 31 00 02 00 00 00 41 00 10 14 E2
						Next IFD offset 00 00 00 00
IFD 1 Values longer than 4 bytes						
Offset	Description	Comments			Coding	
0010148E	BitsPerSample	1, 1, 1			00 01 00 01 00 01	
00101496	DocumentName	Test Case L2			54 65 73 74 20 63 61 73 65 20 4C 32 00	
001014A6	ImageDescription	Page 1: Color test chart			50 61 67 65 20 31 3A 20 43 6F 6C 6F 72 20 74 65	
001014B6		Page 2: Bar chart			73 74 20 63 68 61 72 74 20 20 50 61 67 65 20 32	
001014C6					3A 20 42 61 72 20 63 68 61 72 74 00	
001014D2	Xresolution	400 pixels/inch			00 00 01 90 00 00 00 01	
001014DA	Yresolution	400 pixels/inch			00 00 01 90 00 00 00 01	
001014E2	Software	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99			58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
001014F2					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
00101502					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30	
00101512					38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39	
00101522					00	
Image data						
Offset	Description	Comments				
00101526H - 0018289cH	IFD 1 Strip 0	Compressed data				

IV.4.2 Eight bits per sample ITU L*a*b* palette color encoding

A4 page at 200 × 200 pels/25.4 mm, 3 samples per pixel, 4:1:1 subsampling, FillOrder is MSB, little endian byte order, based on test case Profile L L4. Note that the ColorMap tag (i.e. tag code 320), present in this sample, is no longer used and may be ignored.

Table IV.4-2/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 1207546 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Little endian order			49 49	
0002	File identifier	42, TIFF file			2A 00	
0004	1 st IFD offset	Offset of IFD 0			08 00 00 00	
IFD0 Offset 8 (0x8H) NextIFDOffset 1166376 (0x11cc28H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	21 entries	15 00
000A	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	FE 00 04 00 01 00 00 00 02 00 00 00
0016	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
0022	ImageLength	257	Long	n/a	2342 lines	01 01 04 00 01 00 00 00 26 09 00 00
002E	BitsPerSample	258	Short	1	8 bit/sample	02 01 03 00 01 00 00 00 08 00 00 00
003A	Compression	259	Short	10	T.43 JBIG color	03 01 03 00 01 00 00 00 0A 00 00 00
0046	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0052	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
005E	DocumentName	269	ASCII	n/a	Test case L4	0D 01 02 00 0D 00 00 00 0A 01 00 00
006A	ImageDescription	270	ASCII	n/a	Page 1: Color test chart Page2: Bar chart	0E 01 02 00 2C 00 00 00 1A 01 00 00
0076	StripOffsets	273	Long	n/a	2000 bytes	11 01 04 00 01 00 00 00 D0 07 00 00
0082	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
008E	RowsPerStrip	278	Long	=ImageLength	2342 rows	16 01 04 00 01 00 00 00 26 09 00 00
009A	StripByteCounts	279	Long	n/a	1164373 bytes	17 01 04 00 01 00 00 00 55 C4 11 00
00A6	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 46 01 00 00
00B2	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 4E 01 00 00
00BE	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
00CA	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
00D6	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	31 01 02 00 41 00 00 00 56 01 00 00
00E2	ColorMap	320	Short	n/a	410 offset to ITU L*a*b* sample values	40 01 03 00 00 03 00 00 9A 01 00 00
00EE	Indexed	346	Short	n/a	1, palette color image	5A 01 03 00 01 00 00 00 01 00 00 00
00FA	GlobalParameters IFD	400	Long	n/a	offset 1946	90 01 04 00 01 00 00 00 9A 07 00 00
						Next IFD offset 28 CC 11 00

IFD 0 Values longer than 4 bytes						
Offset	Description	Comments	Coding			
00010A	DocumentName	Test Case L4	54 65 73 74 20 63 61 73 65 20 4C 34 00			
00011A	ImageDescription	Page 1: Color test chart	50 61 67 65 20 31 3A 20 43 6F 6C 6F 72 20 74 65			
00012A		Page 2: Bar chart	73 74 20 63 68 61 72 74 20 20 50 61 67 65 20 32			
00013A			3A 20 42 61 72 20 63 68 61 72 74 00			
000146	Xresolution	200 pixels/inch	C8 00 00 00 01 00 00 00			
00014E	Yresolution	200 pixels/inch	C8 00 00 00 01 00 00 00			
000156	Software	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65			
000166			66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E			
000176			74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30			
000186			38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39			
000196			00			
00019A	ColorMap		00 00 00 80 00 60 00 C5 00 A5 00 85 00 8E 00 2C			
0001AA			00 9B 00 FD 00 7E 00 66 00 FC 00 7C 00 5F 00 FE			
0001BA			00 80 00 60 00 20 00 81 00 3E 00 9F 00 63 00 25			
:			:			
:			:			
00078A			00 76 00 52 00 AD 00 80 00 60 00 00 00 80 00 60			
IFD 0 → GP IFD → Child IFD 0 Offset 1946 (0x79aH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
00079A	Number of Directory Entries	–	–	–	4 entries	04 00
00079C	ProfileType	401	Long	1	1 (Group 3 fax)	91 01 04 00 01 00 00 00 01 00 00 00
0007A8	FaxProfile	402	Byte	5	Lossless color and grayscale, Profile L	92 01 01 00 01 00 00 00 05 00 00 00
0007B4	CodingMethod	403	Long	64	T.82 (JBIG), using T.43	93 01 04 00 01 00 00 00 40 00 00 00
0007C0	VersionYear	404	Byte	n/a	1998	94 01 01 00 04 00 00 00 31 39 39 38
						Next IFD offset 00 00 00 00
Image data						
Offset	Description		Comments			
0007d0H - 0011cc25H	IFD 0 Strip 0		Compressed data			

IFD1 Offset 1166376 (0x11cc28H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0011CC28	Number of Directory Entries	–	–	–	20 entries	14 00
0011CC2A	NewSubfileType	254	Long	2, Bit1=1	single page of a multi-page	FE 00 04 00 01 00 00 00 02 00 00 00
0011CC36	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
0011CC42	ImageLength	257	Long	n/a	2236 lines	01 01 04 00 01 00 00 00 BC 08 00 00
0011CC4E	BitsPerSample	258	Short	1	8 bit/sample	02 01 03 00 01 00 00 00 08 00 00 00
0011CC5A	Compression	259	Short	10	T.43 JBIG color	03 01 03 00 01 00 00 00 0A 00 00 00
0011CC66	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0011CC72	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
0011CC7E	DocumentName	269	ASCII	n/a	Test case L4	0D 01 02 00 0D 00 00 00 1E CD 11 00
0011CC8A	ImageDescription	270	ASCII	n/a	Page 1: Color test chart Page2: Bar chart	0E 01 02 00 2C 00 00 00 2E CD 11 00
0011CC96	StripOffsets	273	Long	n/a	1168302 bytes	11 01 04 00 01 00 00 00 AE D3 11 00
0011CCA2	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
0011CCAE	RowsPerStrip	278	Long	=ImageLength	2236 rows	16 01 04 00 01 00 00 00 BC 08 00 00
0011CCBA	StripByteCounts	279	Long	n/a	39242 bytes	17 01 04 00 01 00 00 00 4A 99 00 00
0011CCC6	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 5A CD 11 00
0011CCD2	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 62 CD 11 00
0011CCDE	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
0011CCEA	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
0011CCF6	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	31 01 02 00 41 00 00 00 6A CD 11 00
0011CD02	ColorMap	320	Short	n/a	1166766 offset to ITU L*a*b* sample values	40 01 03 00 00 03 00 00 AE CD 11 00
0011CD0E	Indexed	346	Short	n/a	1, palette color image	5A 01 03 00 01 00 00 00 01 00 00 00
						Next IFD offset 00 00 00 00
IFD 1 Values longer than 4 bytes						
Offset	Description				Comments	Coding
0011CD1E	DocumentName				Test Case L4	54 65 73 74 20 63 61 73 65 20 4C 34 00
0011CD2E	ImageDescription				Page 1: Color test chart	50 61 67 65 20 31 3A 20 43 6F 6C 6F 72 20 74 65
0011CD3E					Page 2: Bar chart	73 74 20 63 68 61 72 74 20 20 50 61 67 65 20 32
0011CD4E						3A 20 42 61 72 20 63 68 61 72 74 00
0011CD5A	Xresolution				200 pixels/inch	C8 00 00 00 01 00 00 00
0011CD62	Yresolution				200 pixels/inch	C8 00 00 00 01 00 00 00

0011CD6A	Software	Xerox TIFF-FX Reference Implementation Mon Feb 08 08:58:02 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65
0011CD7A			66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E
0011CD8A			74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 30
0011CD9A			38 20 30 38 3A 35 38 3A 30 32 20 50 4D 20 39 39
0011CDAA			00
0011CDAE	ColorMap		00 00 00 80 00 60 00 92 00 F3 00 B4 00 F8 00 6A
0011CDBE			00 CF 00 FE 00 80 00 60 00 9D 00 80 00 60 00 C2
0011CDCE			00 80 00 60 00 BD 00 80 00 60 00 DB 00 06 00 BE
0011D39E			:
			:
			00 80 00 60 00 00 00 80 00 60 00 2C 00 B5 00 81
Image data			
Offset	Description	Comments	
0011d3aeH - 00126cf8H	IFD 1 Strip 0	Compressed data	

IV.5 Profile M coding examples

IV.5.1 Three layers & single strip per layer: Mask with T.6 (MMR) compression, Background and Foreground with JPEG compression and T.4 Annex E ITU L*a*b* color encoding

3-layer (BG/M/FG), 100/400/200 resolution, JPEG/MMR/JPEG compression, ChromaSubsampling BG=1:1:1 while FG=4:1:1, single strip image, FG default not black, MSB FillOrder, little-endian, based on test case Profile M M2

Table IV.5-1/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 374882 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Little endian order			49 49	
0002	File identifier	42, TIFF file			2A 00	
0004	1 st IFD offset	Offset of IFD 0			08 00 00 00	
IFD0 (Mask) Offset 8 (0x8H) NextIFDOffset 196772 (0x300a4H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	24 entries	18 00
000A	NewSubfileType	254	Long	18	primary IFD of a single page of a multi-page	FE 00 04 00 01 00 00 00 12 00 00 00
0016	ImageWidth	256	Long	3456	A4	00 01 04 00 01 00 00 00 80 0D 00 00
0022	ImageLength	257	Long	n/a	4400 lines	01 01 04 00 01 00 00 00 30 11 00 00
002E	BitsPerSample	258	Short	1	1 bit/sample	02 01 03 00 03 00 00 00 01 00 00 00
003A	Compression	259	Short	4	4, T.6 MMR	03 01 03 00 01 00 00 00 04 00 00 00
0046	Photometric Interpretation	262	Short	0	0 is white	06 01 03 00 01 00 00 00 00 00 00 00
0052	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
005E	DocumentName	269	ASCII	n/a	Test case M02	0D 01 02 00 0E 00 00 00 2E 01 00 00
006A	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 3E 01 00 00
0076	StripOffsets	273	Long	n/a	1400 bytes	11 01 04 00 01 00 00 00 78 05 00 00
0082	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
008E	RowsPerStrip	278	Long	=ImageLength	4400 rows	16 01 04 00 01 00 00 00 30 11 00 00
009A	StripByteCounts	279	Long	n/a	36943 bytes	17 01 04 00 01 00 00 00 4F 90 00 00
00A6	Xresolution	282	Rational	200	400 pixels/inch	1A 01 05 00 01 00 00 00 5E 01 00 00
00B2	Yresolution	283	Rational	200	400 pixels/inch	1B 01 05 00 01 00 00 00 66 01 00 00
00BE	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 6E 01 00 00
00CA	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 76 01 00 00
00D6	T6Option	293	Long	0	MMR (G4) compressed	25 01 04 00 01 00 00 00 00 00 00 00
00E2	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
00EE	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
00FA	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 7E 01 00 00

0106	SubIFDs	330	Long	n/a	Offsets of 466 and 900	4A 01 04 00 02 00 00 00 C2 01 00 00
0112	GlobalParameters IFD	400	Long	n/a	1334 offset	90 01 04 00 01 00 00 00 36 05 00 00
011E	ImageLayer	34732	Long	2, 1	2 (mask), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 CA 01 00 00
						Next IFD offset A4 00 03 00
IFD 0 (Mask) Values longer than 4 bytes						
Offset	Description		Comments		Coding	
00012E	DocumentName		Test case M02		54 65 73 74 20 43 61 73 65 20 4D 30 32 00	
00013E	ImageDescription		TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
00014E					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
00015E	Xresolution		400 pixels/inch		90 01 00 00 01 00 00 00	
000166	Yresolution		400 pixels/inch		90 01 00 00 01 00 00 00	
00016E	XPosition		0 offset		00 00 00 00 90 01 00 00	
000176	YPosition		0 offset		00 00 00 00 90 01 00 00	
00017E	Software		Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
00018E					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
00019E					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32	
0001AE					32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39	
0001BE					00	
0001C2	SubIFDs		Offsets of 466 and 900		D2 01 00 00 84 03 00 00	
0001CA	ImageLayer		2 (mask), 1 (first image to be imaged)		02 00 00 00 01 00 00 00	
IFD 0 → SubIFD 0 → Child IFD 0 (Bkgnd) Offset 466 (0x1d2H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0001D2	Number of Directory Entries	–	–	–	22 entries	16 00
0001D4	NewSubfileType	254	Long	16	Child IFD (background) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
0001E0	ImageWidth	256	Long	864	A4	00 01 04 00 01 00 00 00 60 03 00 00
0001EC	ImageLength	257	Long	n/a	1100 lines	01 01 04 00 01 00 00 00 4C 04 00 00
0001F8	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 E0 02 00 00
000204	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
000210	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
00021C	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
000228	DocumentName	269	ASCII	n/a	Test case M02	0D 01 02 00 0E 00 00 00 E8 02 00 00

000234	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 F8 02 00 00
000240	StripOffsets	273	Long	n/a	38344 bytes	11 01 04 00 01 00 00 00 C8 95 00 00
00024C	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
000258	RowsPerStrip	278	Long	=ImageLength	1100 rows	16 01 04 00 01 00 00 00 4C 04 00 00
000264	StripByteCounts	279	Long	n/a	42833 bytes	17 01 04 00 01 00 00 00 51 A7 00 00
000270	Xresolution	282	Rational	200	100 pixels/inch	1A 01 05 00 01 00 00 00 18 03 00 00
00027C	Yresolution	283	Rational	200	100 pixels/inch	1B 01 05 00 01 00 00 00 20 03 00 00
000288	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 28 03 00 00
000294	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 30 03 00 00
0002A0	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
0002AC	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
0002B8	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 38 03 00 00
0002C4	ChromaSubSampling	530	Short	4:1:1	1:1:1	12 02 03 00 02 00 00 00 01 00 01 00
0002D0	ImageLayer	34732	Long	1, 1	1 (background), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 7C 03 00 00
						Next IFD offset 00 00 00 00

IFD 0 → SubIFD 0 → Child IFD 0 (Bkgnd) Values longer than 4 bytes

Offset	Description	Comments	Coding
0002E0	BitsPerSample	8, 8, 8	08 00 08 00 08 00
0002E8	DocumentName	Test Case M02	54 65 73 74 20 43 61 73 65 20 4D 30 32 00
0002F8 000308	ImageDescription	TIFF-FX Profile M Test Sources	54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20 4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00
000318	Xresolution	100 pixels/inch	64 00 00 00 01 00 00 00
000320	Yresolution	100 pixels/inch	64 00 00 00 01 00 00 00
000328	XPosition	0 offset	00 00 00 00 90 01 00 00
000330	YPosition	0 offset	00 00 00 00 90 01 00 00
000338 000348 000358 000368 000378	Software	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65 66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E 74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32 32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39 00
00037C	ImageLayer	1 (background), 1 (first image to be imaged)	01 00 00 00 01 00 00 00

IFD 0 → SubIFD 1 → Child IFD 0 (Frgnd) Offset 900 (0x384H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
000384	Number of Directory Entries	–	–	–	22 entries	16 00
000386	NewSubfileType	254	Long	16	Child IFD (foreground) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
000392	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
00039E	ImageLength	257	Long	n/a	2200 lines	01 01 04 00 01 00 00 00 98 08 00 00
0003AA	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 92 04 00 00
0003B6	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
0003C2	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0003CE	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
0003DA	DocumentName	269	ASCII	n/a	Test case M02	0D 01 02 00 0E 00 00 00 9A 04 00 00
0003E6	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 AA 04 00 00
0003F2	StripOffsets	273	Long	n/a	81180 bytes	11 01 04 00 01 00 00 00 1C 3D 01 00
0003FE	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
00040A	RowsPerStrip	278	Long	=ImageLength	2200 rows	16 01 04 00 01 00 00 00 98 08 00 00
000416	StripByteCounts	279	Long	n/a	115591 bytes	17 01 04 00 01 00 00 00 87 C3 01 00
000422	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 CA 04 00 00
00042E	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 D2 04 00 00
00043A	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 DA 04 00 00
000446	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 E2 04 00 00
000452	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
00045E	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
00046A	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 EA 04 00 00
000476	ChromaSubSampling	530	Short	4:1:1	4:1:1	12 02 03 00 02 00 00 00 02 00 02 00
000482	ImageLayer	34732	Long	3, 1	3 (foreground), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 2E 05 00 00
						Next IFD offset 00 00 00 00
IFD 0 → SubIFD 1 → Child IFD 0 (Frgnd) Values longer than 4 bytes						
Offset	Description			Comments		Coding
000492	BitsPerSample			8, 8, 8		08 00 08 00 08 00
00049A	DocumentName			Test Case M02		54 65 73 74 20 43 61 73 65 20 4D 30 32 00
0004AA	ImageDescription			TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20
0004BA						4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00
0004CA	Xresolution			200 pixels/inch		C8 00 00 00 01 00 00 00

0004D2	Yresolution	200 pixels/inch	C8 00 00 00 01 00 00 00
0004DA	XPosition	0 offset	00 00 00 00 90 01 00 00
0004E2	YPosition	0 offset	00 00 00 00 90 01 00 00
0004EA	Software	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65
0004FA			66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E
00050A			74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32
00051A			32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39
00052A			00
00052E	ImageLayer	1 (foreground), 1 (first image to be imaged)	03 00 00 00 01 00 00 00

IFD 0 → GP IFD → Child IFD 0 Offset 1334 (0x536H) NextIFDOffset 0 (0x0H)

Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
000536	Number of Directory Entries	–	–	–	5 entries	05 00
000538	ProfileType	401	Long	1	1 (Group 3 fax)	91 01 04 00 01 00 00 00 01 00 00 00
000544	FaxProfile	402	Byte	6	Mixed Raster Content, Profile M	92 01 01 00 01 00 00 00 06 00 00 00
000550	CodingMethod	403	Long	2	40, T.6 (MMR) and T.81 (JPEG)	93 01 04 00 01 00 00 00 28 00 00 00
00055C	VersionYear	404	Byte	n/a	1999	94 01 01 00 04 00 00 00 31 39 39 39
000568	ModeNumber	405	Byte	1	1	95 01 01 00 01 00 00 00 00 00 00 00
						Next IFD offset 00 00 00 00

Image data

Offset	Description	Comments
000578H - 0095c7H	IFD 0 (Mask) Strip 0	Compressed data
0095c8H - 013d19H	IFD 0 (Bkgnd) Strip 0	Compressed data
013d1cH - 0300a3H	IFD 0 (Frgnd) Strip 0	Compressed data

IFD1 (Mask) Offset 196772 (0x300a4H) NextIFDOffset 0 (0x0H)

Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0300A4	Number of Directory Entries	–	–	–	23 entries	17 00
0300A6	NewSubfileType	254	Long	18	primary IFD of a single page of a multi-page	FE 00 04 00 01 00 00 00 12 00 00 00
0300B2	ImageWidth	256	Long	3456	A4	00 01 04 00 01 00 00 00 80 0D 00 00
0300BE	ImageLength	257	Long	n/a	4400 lines	01 01 04 00 01 00 00 00 30 11 00 00
0300CA	BitsPerSample	258	Short	1	1 bit/sample	02 01 03 00 01 00 00 00 01 00 00 00
0300D6	Compression	259	Short	4	4, T.6 MMR	03 01 03 00 01 00 00 00 04 00 00 00
0300E2	Photometric Interpretation	262	Short	0	0 is white	06 01 03 00 01 00 00 00 00 00 00 00
0300EE	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
0300FA	DocumentName	269	ASCII	n/a	Test case M02	0D 01 02 00 0E 00 00 00 BE 01 03 00

030106	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 CE 01 03 00
030112	StripOffsets	273	Long	n/a	198086 bytes	11 01 04 00 01 00 00 00 C6 05 03 00
03011E	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
03012A	RowsPerStrip	278	Long	=ImageLength	4400 rows	16 01 04 00 01 00 00 00 30 11 00 00
030136	StripByteCounts	279	Long	n/a	1678 bytes	17 01 04 00 01 00 00 00 8E 06 00 00
030142	Xresolution	282	Rational	200	400 pixels/inch	1A 01 05 00 01 00 00 00 EE 01 03 00
03014E	Yresolution	283	Rational	200	400 pixels/inch	1B 01 05 00 01 00 00 00 F6 01 03 00
03015A	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 FE 01 03 00
030166	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 06 02 03 00
030172	T6Option	293	Long	0	MMR (G4) compressed	25 01 04 00 01 00 00 00 00 00 00 00
03017E	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
03018A	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
030196	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 0E 02 03 00
0301A2	SubIFDs	330	Long	n/a	Offsets of 197218 and 197652	4A 01 04 00 02 00 00 00 52 02 03 00
0301AE	ImageLayer	34732	Long	2, 1	2 (mask), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 5A 02 03 00
						Next IFD offset 00 00 00 00
IFD 1 (Mask) Values longer than 4 bytes						
Offset	Description				Comments	Coding
0301BE	DocumentName				Test case M02	54 65 73 74 20 43 61 73 65 20 4D 30 32 00
0301CE	ImageDescription				TIFF-FX Profile M Test Sources	54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20
0301DE						4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00
0301EE	Xresolution				400 pixels/inch	90 01 00 00 01 00 00 00
0301F6	Yresolution				400 pixels/inch	90 01 00 00 01 00 00 00
0301FE	XPosition				0 offset	00 00 00 00 90 01 00 00
030206	YPosition				0 offset	00 00 00 00 90 01 00 00
03020E	Software				Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65
03021E						66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E
03022E						74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32
03023E						32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39
03024E						00
030252	SubIFDs				Offsets of 197202 and 197632	62 02 03 00 14 04 03 00
03025A	ImageLayer				2 (mask), 1 (first image to be imaged)	02 00 00 00 01 00 00 00

IFD 1 → SubIFD 0 → Child IFD 0 (Bkgnd) Offset 197218 (0x30262H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
030262	Number of Directory Entries	–	–	–	22 entries	16 00
030264	NewSubfileType	254	Long	16	Child IFD (background) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
030270	ImageWidth	256	Long	864	A4	00 01 04 00 01 00 00 00 60 03 00 00
03027C	ImageLength	257	Long	n/a	1100 lines	01 01 04 00 01 00 00 00 4C 04 00 00
030288	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 70 03 03 00
030294	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
0302A0	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0302AC	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
0302B8	DocumentName	269	ASCII	n/a	Test case M02	0D 01 02 00 0E 00 00 00 78 03 03 00
0302C4	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 88 03 03 00
0302D0	StripOffsets	273	Long	n/a	199766 bytes	11 01 04 00 01 00 00 00 56 0C 03 00
0302DC	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
0302E8	RowsPerStrip	278	Long	=ImageLength	1100 rows	16 01 04 00 01 00 00 00 4C 04 00 00
0302F4	StripByteCounts	279	Long	n/a	113332 bytes	17 01 04 00 01 00 00 00 B4 BA 01 00
030300	Xresolution	282	Rational	200	100 pixels/inch	1A 01 05 00 01 00 00 00 A8 03 03 00
03030C	Yresolution	283	Rational	200	100 pixels/inch	1B 01 05 00 01 00 00 00 B0 03 03 00
030318	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 B8 03 03 00
030324	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 C0 03 03 00
030330	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
03033C	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
030348	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 C8 03 03 00
030354	ChromaSubSampling	530	Short	4:1:1	1:1:1	12 02 03 00 02 00 00 00 01 00 01 00
030360	ImageLayer	34732	Long	1, 1	1 (background), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 0C 04 03 00
						Next IFD offset 00 00 00 00
IFD 1 → SubIFD 0 → Child IFD 0 (Bkgnd) Values longer than 4 bytes						
Offset	Description		Comments		Coding	
030370	BitsPerSample		8, 8, 8		08 00 08 00 08 00	
030378	DocumentName		Test Case M02		54 65 73 74 20 43 61 73 65 20 4D 30 32 00	
030388	ImageDescription		TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
030398					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
0303A8	Xresolution		100 pixels/inch		64 00 00 00 01 00 00 00	

0303B0	Yresolution		100 pixels/inch	64 00 00 00 01 00 00 00		
0303B8	XPosition		0 offset	00 00 00 00 90 01 00 00		
0303C0	YPosition		0 offset	00 00 00 00 90 01 00 00		
0303C8	Software		Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65		
0303D8				66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E		
0303E8				74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32		
0303F8				32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39		
030408				00		
03040C	ImageLayer		1 (background), 1 (first image to be imaged)	01 00 00 00 01 00 00 00		
IFD 1 → SubIFD 1 → Child IFD 0 (Frnd) Offset 197652 (0x30414H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
030414	Number of Directory Entries	–	–	–	22 entries	16 00
030416	NewSubfileType	254	Long	16	Child IFD (foreground) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
030422	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
03042E	ImageLength	257	Long	n/a	2200 lines	01 01 04 00 01 00 00 00 98 08 00 00
03043A	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 22 05 03 00
030446	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
030452	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
03045E	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
03046A	DocumentName	269	ASCII	n/a	Test case M02	0D 01 02 00 0E 00 00 00 2A 05 03 00
030476	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 3A 05 03 00
030482	StripOffsets	273	Long	n/a	313098 bytes	11 01 04 00 01 00 00 00 0A C7 04 00
03048E	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
03049A	RowsPerStrip	278	Long	=ImageLength	2200 rows	16 01 04 00 01 00 00 00 98 08 00 00
0304A6	StripByteCounts	279	Long	n/a	61782 bytes	17 01 04 00 01 00 00 00 56 F1 00 00
0304B2	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 5A 05 03 00
0304BE	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 62 05 03 00
0304CA	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 6A 05 03 00
0304D6	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 72 05 03 00
0304E2	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
0304EE	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
0304FA	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 7A 05 03 00

030506	ChromaSubSampling	530	Short	4:1:1	4:1:1	12 02 03 00 02 00 00 00 02 00 02 00
030512	ImageLayer	34732	Long	3, 1	3 (foreground), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 BE 05 03 00
						Next IFD offset 00 00 00 00
IFD 1 → SubIFD 1 → Child IFD 0 (Frgnd) Values longer than 4 bytes						
Offset	Description		Comments		Coding	
030522	BitsPerSample		8, 8, 8		08 00 08 00 08 00	
03052A	DocumentName		Test Case M02		54 65 73 74 20 43 61 73 65 20 4D 30 32 00	
03053A	ImageDescription		TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
03054A					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
03055A	Xresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
030562	Yresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
03056A	XPosition		0 offset		00 00 00 00 90 01 00 00	
030572	YPosition		0 offset		00 00 00 00 90 01 00 00	
03057A	Software		Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
03058A					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
03059A					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32	
0305AA					32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39	
0305BA					00	
0305BE	ImageLayer		3 (foreground), 1 (first image to be imaged)		03 00 00 00 01 00 00 00	
Image data						
Offset	Description		Comments			
000305c6H - 00030c54H	IFD 1 (Mask) Strip 0		Compressed data			
00030c56H - 0004c70aH	IFD 1 (Bkgnd) Strip 0		Compressed data			
0004c70aH - 0005b860H	IFD 1 (Frgnd) Strip 0		Compressed data			

IV.5.2 Three layers & multi-strip per layer: Mask with T.85 JBIG compression, Background with JPEG compression and Foreground with JBIG compression and T.43 color encoded ITU L*a*b*

3-layer (BG/M/FG), 200/400/200 resolution with FG having both 400 and 200 resolution, JPEG/JBIG/JBIG compression, multi-strip image with little-endian byte order and StripRowCounts used, BG & FG has strip with X and YPosition >0, ChromaSubsampling BG=4:1:1, FG LayerBaseColor changes between strip, LSB FillOrder, based on test case Profile M M11

Table IV.5-2/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 300028 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Little endian order			49 49	
0002	File identifier	42, TIFF file			2A 00	
0004	1 st IFD offset	Offset of IFD 0			08 00 00 00	
IFD0 (Mask) Offset 8 (0x8H) NextIFDOffset 88046 (0x4157eeH)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	23 entries	17 00
000A	NewSubfileType	254	Long	18	primary IFD of a single page of a multi-page	FE 00 04 00 01 00 00 00 12 00 00 00
0016	ImageWidth	256	Long	3456	A4	00 01 04 00 01 00 00 00 80 0D 00 00
0022	ImageLength	257	Long	n/a	4400 lines	01 01 04 00 01 00 00 00 30 11 00 00
002E	BitsPerSample	258	Short	1	1 bit/sample	02 01 03 00 01 00 00 00 01 00 00 00
003A	Compression	259	Short	4	9, JBIG T.85	03 01 03 00 01 00 00 00 09 00 00 00
0046	Photometric Interpretation	262	Short	0	0 is white	06 01 03 00 01 00 00 00 00 00 00 00
0052	FillOrder	266	Short	2	LSB first	0A 01 03 00 01 00 00 00 02 00 00 00
005E	DocumentName	269	ASCII	n/a	Test case M11	0D 01 02 00 0E 00 00 00 22 01 00 00
006A	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 32 01 00 00
0076	StripOffsets	273	Long	n/a	1726 38498 68626 77078 88022 bytes	11 01 04 00 05 00 00 00 52 01 00 00
0082	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
008E	StripByteCounts	279	Long	n/a	892 5588 8451 10944 22 bytes	17 01 04 00 05 00 00 00 66 01 00 00
009A	Xresolution	282	Rational	200	400 pixels/inch	1A 01 05 00 01 00 00 00 7A 01 00 00
00A6	Yresolution	283	Rational	200	400 pixels/inch	1B 01 05 00 01 00 00 00 82 01 00 00
00B2	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 8A 01 00 00
00BE	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 92 01 00 00
00CA	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
00D6	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
00E2	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 9A 01 00 00
00EE	SubIFDs	330	Long	n/a	Offsets of 514 and 948	4A 01 04 00 02 00 00 00 DE 01 00 00

00FA	GlobalParameters IFD	400	Long	n/a	1660 offset	90 01 04 00 01 00 00 00 7C 06 00 00
0106	StripRowCounts	559	Long	n/a	486 rows	2F 02 04 00 05 00 00 00 E6 01 00 00
0112	ImageLayer	34732	Long	2, 1	2 (mask), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 FA 01 00 00
						Next IFD offset EE 57 01 00
IFD 0 (Mask) Values longer than 4 bytes						
Offset	Description		Comments		Coding	
000122	DocumentName		Test case M11		54 65 73 74 20 43 61 73 65 20 4D 31 31 00	
000132	ImageDescription		TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
000142					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
000152	StripOffsets		1726 38498 68626 77078 88022 bytes		BE 06 00 00 62 96 00 00 12 0C 01 00 16 2D 01 00	
000162					D6 57 01 00	
000166	StripByteCounts		892 5588 8451 10944 22 bytes		7C 03 00 00 D4 15 00 00 03 21 00 00 C0 2A 00 00	
000176					16 00 00 00	
00017A	Xresolution		400 pixels/inch		90 01 00 00 01 00 00 00	
000182	Yresolution		400 pixels/inch		90 01 00 00 01 00 00 00	
00018A	XPosition		0 offset		00 00 00 00 90 01 00 00	
000192	YPosition		0 offset		00 00 00 00 90 01 00 00	
00019A	Software		Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
0001AA					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
0001BA					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32	
0001CA					32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39	
0001DA					00	
0001DE	SubIFDs		Offsets of 514 and 948		02 02 00 00 B4 03 00 00	
0001E6	StripRowCounts		486 rows		15 02 00 00 3B 01 00 00 A0 03 00 00 00 03 00 00	
0001F6					40 07 00 00	
0001FA	ImageLayer		2 (mask), 1 (first image to be imaged)		02 00 00 00 01 00 00 00	
IFD 0 → SubIFD 0 → Child IFD 0 (Bkgnd) Offset 514 (0x202H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
000202	Number of Directory Entries	–	–	–	22 entries	16 00
000204	NewSubfileType	254	Long	16	Child IFD (background) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
000210	ImageWidth	256	Long	n/a	900 pels	00 01 04 00 01 00 00 00 84 03 00 00

00021C	ImageLength	257	Long	n/a	600 lines	01 01 04 00 01 00 00 00 58 02 00 00
000228	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 10 03 00 00
000234	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
000240	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
00024C	FillOrder	266	Short	2	LSB first	0A 01 03 00 01 00 00 00 02 00 00 00
000258	DocumentName	269	ASCII	n/a	Test case M11	0D 01 02 00 0E 00 00 00 18 03 00 00
000264	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 28 03 00 00
000270	StripOffsets	273	Long	n/a	2618 bytes	11 01 04 00 01 00 00 00 3A 0A 00 00
00027C	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
000288	RowsPerStrip	278	Long	=ImageLength	600 rows	16 01 04 00 01 00 00 00 58 02 00 00
000294	StripByteCounts	279	Long	n/a	35878 bytes	17 01 04 00 01 00 00 00 26 8C 00 00
0002A0	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 48 03 00 00
0002AC	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 50 03 00 00
0002B8	XPosition	286	Rational	n/a	1.935 X-offset	1E 01 05 00 01 00 00 00 58 03 00 00
0002C4	YPosition	287	Rational	n/a	6.360 Y-offset	1F 01 05 00 01 00 00 00 60 03 00 00
0002D0	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
0002DC	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
0002E8	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 68 03 00 00
0002F4	ChromaSubSampl ing	530	Short	4:1:1	4:1:1	12 02 03 00 02 00 00 00 02 00 02 00
000300	ImageLayer	34732	Long	1, 1	1 (background), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 AC 03 00 00
						Next IFD offset 00 00 00 00
IFD 0 → SubIFD 0 → Child IFD 0 (Bkgnd) Values longer than 4 bytes						
Offset	Description			Comments	Coding	
000310	BitsPerSample			8, 8, 8	08 00 08 00 08 00	
000318	DocumentName			Test Case M11	54 65 73 74 20 43 61 73 65 20 4D 31 31 00	
000328	ImageDescription			TIFF-FX Profile M Test Sources	54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
000338					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
000348	Xresolution			200 pixels/inch	C8 00 00 00 01 00 00 00	
000350	Yresolution			200 pixels/inch	C8 00 00 00 01 00 00 00	
000358	XPosition			1.935 offset	06 03 00 00 90 01 00 00	
000360	YPosition			6.360 offset	F0 09 00 00 90 01 00 00	

000368	Software	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65
000378			66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E
000388			74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32
000398			32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39
0003A8			00
0003AC	ImageLayer	1 (background), 1 (first image to be imaged)	01 00 00 00 01 00 00 00

IFD 0 → SubIFD 1 → Child IFD 0 (Frgnd) Offset 948 (0x3b4H) NextIFDOffset 1238 (0x4d6H)

Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0003B4	Number of Directory Entries	–	–	–	19 entries	13 00
0003B6	NewSubfileType	254	Long	16	Child IFD (foreground) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
0003C2	ImageWidth	256	Long	3456	3456 pels, A4	00 01 04 00 01 00 00 00 80 0D 00 00
0003CE	ImageLength	257	Long	n/a	533 lines	01 01 04 00 01 00 00 00 15 02 00 00
0003DA	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 9E 04 00 00
0003E6	Compression	259	Short	n/a	No compression	03 01 03 00 01 00 00 00 01 00 00 00
0003F2	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0003FE	FillOrder	266	Short	2	LSB first	0A 01 03 00 01 00 00 00 02 00 00 00
00040A	StripOffsets	273	Long	n/a	38498 bytes	11 01 04 00 01 00 00 00 62 96 00 00
000416	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
000422	RowsPerStrip	278	Long	=ImageLength	533 rows	16 01 04 00 01 00 00 00 15 02 00 00
00042E	StripByteCounts	279	Long	n/a	0 bytes	17 01 04 00 01 00 00 00 00 00 00 00
00043A	Xresolution	282	Rational	200	400 pixels/inch	1A 01 05 00 01 00 00 00 A6 04 00 00
000446	Yresolution	283	Rational	200	400 pixels/inch	1B 01 05 00 01 00 00 00 AE 04 00 00
000452	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 B6 04 00 00
00045E	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 BE 04 00 00
00046A	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
000476	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
000482	DefaultImageColor	434	Short	black	1222 offset	B2 01 03 00 03 00 00 00 C6 04 00 00
00048E	ImageLayer	34732	Long	3, 1	3 (foreground), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 CE 04 00 00
						Next IFD offset D6 04 00 00

IFD 0 → SubIFD 1 → Child IFD 0 (Frgnd) Values longer than 4 bytes

Offset	Description	Comments	Coding
00049E	BitsPerSample	8, 8, 8	08 00 08 00 08 00
0004A6	Xresolution	400 pixels/inch	90 01 00 00 01 00 00 00
0004AE	Yresolution	400 pixels/inch	90 01 00 00 01 00 00 00
0004B6	XPosition	0 offset	00 00 00 00 90 01 00 00

0004BE	YPosition			0 offset		00 00 00 00 90 01 00 00
0004C6	DefaultImageColor			L*=57.25, a*=76.67, b*=65.88		92 00 F3 00 BE 00
0004CE	ImageLayer			3 (foreground), 1 (first image to be imaged)		03 00 00 00 01 00 00 00
IFD 0 → SubIFD 1 → Child IFD 1 (Frgnd) Offset 1238 (0x4d6H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0004D6	Number of Directory Entries	–	–	–	21 entries	15 00
0004D8	NewSubfileType	254	Long	16	Child IFD (foreground) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
0004E4	ImageWidth	256	Long		736	00 01 04 00 01 00 00 00 E0 02 00 00
0004F0	ImageLength	257	Long	n/a	464 lines	01 01 04 00 01 00 00 00 D0 01 00 00
0004FC	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 D8 05 00 00
000508	Compression	259	Short	n/a	JBIG color, T.43	03 01 03 00 01 00 00 00 0A 00 00 00
000514	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
000520	FillOrder	266	Short	2	LSB first	0A 01 03 00 01 00 00 00 02 00 00 00
00052C	DocumentName	269	ASCII	n/a	Test case M11	0D 01 02 00 0E 00 00 00 E0 05 00 00
000538	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 F0 05 00 00
000544	StripOffsets	273	Long	n/a	44086 bytes	11 01 04 00 01 00 00 00 36 AC 00 00
000550	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
00055C	RowsPerStrip	278	Long	=ImageLength	464 rows	16 01 04 00 01 00 00 00 D0 01 00 00
000568	StripByteCounts	279	Long	n/a	24539 bytes	17 01 04 00 01 00 00 00 DB 5F 00 00
000574	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 10 06 00 00
000580	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 18 06 00 00
00058C	XPosition	286	Rational	n/a	3.600 X-offset	1E 01 05 00 01 00 00 00 20 06 00 00
000598	YPosition	287	Rational	n/a	2.120 Y-offset	1F 01 05 00 01 00 00 00 28 06 00 00
0005A4	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
0005B0	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
0005BC	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 30 06 00 00
0005C8	ImageLayer	34732	Long	3, 2	3 (foreground), 2 (second image to be imaged)	AC 87 04 00 02 00 00 00 74 06 00 00
						Next IFD offset 00 00 00 00
IFD 0 → SubIFD 1 → Child IFD 1 (Frgnd) Values longer than 4 bytes						
Offset	Description				Comments	Coding
0005D8	BitsPerSample				8, 8, 8	08 00 08 00 08 00
0005E0	DocumentName				Test Case M11	54 65 73 74 20 43 61 73 65 20 4D 31 31 00

0005F0	ImageDescription	TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20		
000600				4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00		
000610	Xresolution	200 pixels/inch		C8 00 00 00 01 00 00 00		
000618	Yresolution	200 pixels/inch		C8 00 00 00 01 00 00 00		
000620	XPosition	3.600 offset		A0 05 00 00 90 01 00 00		
000628	YPosition	2.120 offset		50 03 00 00 90 01 00 00		
000630	Software	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65		
000640				66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E		
000650				74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32		
000660				32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39		
000670				00		
000674	ImageLayer	3 (foreground), 2 (second image to be imaged)		03 00 00 00 02 00 00 00		
IFD 0 → GP IFD → Child IFD 0 Offset 1660 (0x67cH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
00067C	Number of Directory Entries	–	–	–	5 entries	05 00
00067E	ProfileType	401	Long	1	1 (Group 3 fax)	91 01 04 00 01 00 00 00 01 00 00 00
00068A	FaxProfile	402	Byte	6	Mixed Raster Content, Profile M	92 01 01 00 01 00 00 00 06 00 00 00
000696	CodingMethod	403	Long	2	112, JBIG (T.85), JPEG (T.81) and JBIG color (T.43)	93 01 04 00 01 00 00 00 70 00 00 00
0006A2	VersionYear	404	Byte	n/a	1999	94 01 01 00 04 00 00 00 31 39 39 39
0006AE	ModeNumber	405	Byte	1	1	95 01 01 00 01 00 00 00 00 00 00 00
						Next IFD offset 00 00 00 00
Image data						
Offset	Description	Comments				
000006beH - 00000a3aH	IFD 0 (Mask) Strip 0	Compressed data				
00000a3aH - 00009660H	IFD 0 SubIFD 0 Child IFD 0 (Bkgnd) Strip 0	Compressed data				
00009662H - 00009662H	IFD 0 SubIFD 1 Child IFD 0 (Frgnd) Strip 0	Compressed data				
00009662H - 0000ac36H	IFD 0 (Mask) Strip 1	Compressed data				
0000ac36H - 00010c11H	IFD 0 SubIFD 1 Child IFD 1 (Frgnd) Strip 0	Compressed data				
00010c12H - 00012d15H	IFD 0 (Mask) Strip 2	Compressed data				
00012d16H - 000157d6H	IFD 0 (Mask) Strip 3	Compressed data				
000157d6H - 000157ecH	IFD 0 (Mask) Strip 4	Compressed data				

IFD1 (Mask) Offset 88046 (0x157eeH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0157EE	Number of Directory Entries	–	–	–	22 entries	16 00
0157F0	NewSubfileType	254	Long	18	primary IFD of a single page of a multi-page	FE 00 04 00 01 00 00 00 12 00 00 00
0157FC	ImageWidth	256	Long	3456	A4	00 01 04 00 01 00 00 00 80 0D 00 00
015808	ImageLength	257	Long	n/a	4400 lines	01 01 04 00 01 00 00 00 30 11 00 00
015814	BitsPerSample	258	Short	1	1 bit/sample	02 01 03 00 01 00 00 00 01 00 00 00
015820	Compression	259	Short	4	9, JBIG (T.85)	03 01 03 00 01 00 00 00 09 00 00 00
01582C	Photometric Interpretation	262	Short	0	0 is white	06 01 03 00 01 00 00 00 00 00 00 00
015838	FillOrder	266	Short	2	LSB first	0A 01 03 00 01 00 00 00 02 00 00 00
015844	DocumentName	269	ASCII	n/a	Test case M11	0D 01 02 00 0E 00 00 00 FC 58 01 00
015850	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 0C 59 01 00
01585C	StripOffsets	273	Long	n/a	89204 bytes	11 01 04 00 01 00 00 00 74 5C 01 00
015868	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
015874	RowsPerStrip	278	Long	=ImageLength	4400 rows	16 01 04 00 01 00 00 00 30 11 00 00
015880	StripByteCounts	279	Long	n/a	917 bytes	17 01 04 00 01 00 00 00 95 03 00 00
01588C	Xresolution	282	Rational	200	400 pixels/inch	1A 01 05 00 01 00 00 00 2C 59 01 00
015898	Yresolution	283	Rational	200	400 pixels/inch	1B 01 05 00 01 00 00 00 34 59 01 00
0158A4	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 3C 59 01 00
0158B0	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 44 59 01 00
0158BC	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
0158C8	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
0158D4	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 4C 59 01 00
0158E0	SubIFDs	330	Long	n/a	Offsets of 88480 and 88914	4A 01 04 00 02 00 00 00 90 59 01 00
0158EC	ImageLayer	34732	Long	2, 1	2 (mask),1 (first image to be imaged)	AC 87 04 00 02 00 00 00 98 59 01 00
						Next IFD offset 00 00 00 00
IFD 1 (Mask) Values longer than 4 bytes						
Offset	Description				Comments	Coding
0158FC	DocumentName				Test case M11	54 65 73 74 20 43 61 73 65 20 4D 31 31 00
01590C	ImageDescription				TIFF-FX Profile M Test Sources	54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20
01591C						4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00
01592C	Xresolution				400 pixels/inch	90 01 00 00 01 00 00 00
015934	Yresolution				400 pixels/inch	90 01 00 00 01 00 00 00

01593C	XPosition	0 offset		00 00 00 00 90 01 00 00		
015944	YPosition	0 offset		00 00 00 00 90 01 00 00		
01594C	Software	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65		
01595C				66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E		
01596C				74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32		
01597C				32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39		
01598C				00		
015990	SubIFDs	Offsets of 88480 and 88914		A0 59 01 00 52 5B 01 00		
015998	ImageLayer	2 (mask), 1 (first image to be imaged)		02 00 00 00 01 00 00 00		
IFD 1 → SubIFD 0 → Child IFD 0 (BkgnD) Offset 88480 (0x159a0H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0159A0	Number of Directory Entries	–	–	–	22 entries	16 00
0159A2	NewSubfileType	254	Long	16	Child IFD (background) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
0159AE	ImageWidth	256	Long		1198 pels	00 01 04 00 01 00 00 00 AE 04 00 00
0159BA	ImageLength	257	Long	n/a	1352 lines	01 01 04 00 01 00 00 00 48 05 00 00
0159C6	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 AE 5A 01 00
0159D2	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
0159DE	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0159EA	FillOrder	266	Short	2	LSB first	0A 01 03 00 01 00 00 00 02 00 00 00
0159F6	DocumentName	269	ASCII	n/a	Test case M11	0D 01 02 00 0E 00 00 00 B6 5A 01 00
015A02	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 C6 5A 01 00
015A0E	StripOffsets	273	Long	n/a	90124 bytes	11 01 04 00 01 00 00 00 0C 60 01 00
015A1A	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
015A26	RowsPerStrip	278	Long	=ImageLength	1352 rows	16 01 04 00 01 00 00 00 48 05 00 00
015A32	StripByteCounts	279	Long	n/a	209902 bytes	17 01 04 00 01 00 00 00 EE 33 03 00
015A3E	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 E6 5A 01 00
015A4A	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 EE 5A 01 00
015A56	XPosition	286	Rational	n/a	1.185 X-offset	1E 01 05 00 01 00 00 00 F6 5A 01 00
015A62	YPosition	287	Rational	n/a	1.345 Y-offset	1F 01 05 00 01 00 00 00 FE 5A 01 00
015A6E	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
015A7A	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
015A86	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 06 5B 01 00

015A92	ChromaSubSampling	530	Short	4:1:1	4:1:1	12 02 03 00 02 00 00 00 02 00 02 00
015A9E	ImageLayer	34732	Long	1, 1	1 (background), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 4A 5B 01 00
						Next IFD offset 00 00 00 00
IFD 1 → SubIFD 0 → Child IFD 0 (Bkgnd) Values longer than 4 bytes						
Offset	Description	Comments			Coding	
015AAE	BitsPerSample	8, 8, 8			08 00 08 00 08 00	
015AB6	DocumentName	Test Case M11			54 65 73 74 20 43 61 73 65 20 4D 31 31 00	
015AC6	ImageDescription	TIFF-FX Profile M Test Sources			54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
015AD6					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
015AE6	Xresolution	200 pixels/inch			C8 00 00 00 01 00 00 00	
015AEE	Yresolution	200 pixels/inch			C8 00 00 00 01 00 00 00	
015AF6	XPosition	1.185 offset			DA 01 00 00 90 01 00 00	
015AFE	YPosition	1.345 offset			1A 02 00 00 90 01 00 00	
015B06	Software	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99			58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
015B16					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
015B26					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32	
015B36					32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39	
015B46					00	
015B4A	ImageLayer	1 (background), 1 (first image to be imaged)			01 00 00 00 01 00 00 00	
IFD 1 → SubIFD 1 → Child IFD 0 (Frgnd) Offset 88914 (0x15b52H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
015B52	Number of Directory Entries	–	–	–	19 entries	13 00
015B54	NewSubfileType	254	Long	16	Child IFD (foreground) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
015B60	ImageWidth	256	Long	3456	A4	00 01 04 00 01 00 00 00 80 0D 00 00
015B6C	ImageLength	257	Long	n/a	4400 lines	01 01 04 00 01 00 00 00 30 11 00 00
015B78	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 3C 5C 01 00
015B84	Compression	259	Short		uncompressed	03 01 03 00 01 00 00 00 01 00 00 00
015B90	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
015B9C	FillOrder	266	Short	2	LSB first	0A 01 03 00 01 00 00 00 02 00 00 00
015BA8	StripOffsets	273	Long	n/a	300028 bytes	11 01 04 00 01 00 00 00 FC 93 04 00
015BB4	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
015BC0	RowsPerStrip	278	Long	=ImageLength	4400 rows	16 01 04 00 01 00 00 00 30 11 00 00

015BCC	StripByteCounts	279	Long	n/a	0 bytes	17 01 04 00 01 00 00 00 00 00 00 00
015BD8	Xresolution	282	Rational	200	400 pixels/inch	1A 01 05 00 01 00 00 00 44 5C 01 00
015BE4	Yresolution	283	Rational	200	400 pixels/inch	1B 01 05 00 01 00 00 00 4C 5C 01 00
015BF0	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 54 5C 01 00
015BFC	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 5C 5C 01 00
015C08	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
015C14	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
015C20	DefaultImageColor	434	Short	Black	89188 offset	B2 01 03 00 03 00 00 00 64 5C 01 00
015C2C	ImageLayer	34732	Long	3, 1	3 (foreground), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 6C 5C 01 00
						Next IFD offset 00 00 00 00

IFD 1 → SubIFD 1 → Child IFD 0 (Frnd) Values longer than 4 bytes

Offset	Description	Comments	Coding
015C3C	BitsPerSample	8, 8, 8	08 00 08 00 08 00
015C44	Xresolution	400 pixels/inch	90 01 00 00 01 00 00 00
015C4C	Yresolution	400 pixels/inch	90 01 00 00 01 00 00 00
015C54	XPosition	0 offset	00 00 00 00 90 01 00 00
015C5C	YPosition	0 offset	00 00 00 00 90 01 00 00
015C64	DefaultImageColor	L*=97.65, a*=-14.67, b*=87.06	F9 00 6A 00 DA 00
015C6C	ImageLayer	3 (foreground), 1 (first image to be imaged)	03 00 00 00 01 00 00 00

Image data

Offset	Description	Comments
00015c74H - 00016009H	IFD 1 (Mask) Strip 0	Compressed data
0001600cH - 000493faH	IFD 1 SubIFD 0 Child IFD 0 (Bkgnd) Strip 0	Compressed data
000493fcH - 000493fcH	IFD 1 SubIFD 1 Child IFD 0 (Frnd) Strip 0	Compressed data

IV.5.3 Two layers & single strip per layer: Mask with MH (1-dimensional T.4) compression and Foreground with JPEG compression and T.4 Annex E ITU L*a*b* encoding

2-layer (M/FG), -/200/200 resolution, -/MH/JPEG compression, single strip image, ChromaSubsampling FG=4:1:1, FG LayerBaseColor other than black, FG has strip with X and YPosition >0, MSB FillOrder, little-endian byte order, based on test case Profile M M6

Table IV.5-3/T.37 – Coding example of TIFF header, IFD and image data

Header		File Length 262032 bytes				
Offset	Description	Comments			Coding	
0000	Octet order	Little endian order			49 49	
0002	File identifier	42, TIFF file			2A 00	
0004	1 st IFD offset	Offset of IFD 0			08 00 00 00	
IFD0 (Mask) Offset 8 (0x8H) NextIFDOffset 83670 (0x146d6H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0008	Number of Directory Entries	–	–	–	24 entries	18 00
000A	NewSubfileType	254	Long	18	primary IFD of a single page of a multi-page	FE 00 04 00 01 00 00 00 12 00 00 00
0016	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
0022	ImageLength	257	Long	n/a	2200 lines	01 01 04 00 01 00 00 00 98 08 00 00
002E	BitsPerSample	258	Short	1	1 bit/sample	02 01 03 00 01 00 00 00 01 00 00 00
003A	Compression	259	Short	4	T.4 MH or MR	03 01 03 00 01 00 00 00 03 00 00 00
0046	Photometric Interpretation	262	Short	0	0 is white	06 01 03 00 01 00 00 00 00 00 00 00
0052	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
005E	DocumentName	269	ASCII	n/a	Test case M06	0D 01 02 00 0E 00 00 00 2E 01 00 00
006A	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 3E 01 00 00
0076	StripOffsets	273	Long	n/a	958 bytes	11 01 04 00 01 00 00 00 BE 03 00 00
0082	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
008E	RowsPerStrip	278	Long	=ImageLength	2200 rows	16 01 04 00 01 00 00 00 98 08 00 00
009A	StripByteCounts	279	Long	n/a	38033 bytes	17 01 04 00 01 00 00 00 91 94 00 00
00A6	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 5E 01 00 00
00B2	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 66 01 00 00
00BE	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 6E 01 00 00
00CA	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 76 01 00 00
00D6	T4Option	292	Long	0	1-dimensional T.4 MH, byte aligned	24 01 04 00 01 00 00 00 04 00 00 00
00E2	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
00EE	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
00FA	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 7E 01 00 00
0106	SubIFDs	330	Long	n/a	Offsets of 458	4A 01 04 00 01 00 00 00 CA 01 00 00

0112	GlobalParameters IFD	400	Long	n/a	892 offset	90 01 04 00 01 00 00 00 7C 03 00 00
011E	ImageLayer	34732	Long	2, 1	2 (mask), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 C2 01 00 00
						Next IFD offset D6 46 01 00
IFD 0 (Mask) Values longer than 4 bytes						
Offset	Description			Comments	Coding	
00012E	DocumentName			Test case M06	54 65 73 74 20 43 61 73 65 20 4D 30 36 00	
00013E	ImageDescription			TIFF-FX Profile M Test Sources	54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
00014E					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
00015E	Xresolution			400 pixels/inch	C8 00 00 00 01 00 00 00	
000166	Yresolution			400 pixels/inch	C8 00 00 00 01 00 00 00	
00016E	XPosition			0 offset	00 00 00 00 C8 00 00 00	
000176	YPosition			0 offset	00 00 00 00 C8 00 00 00	
00017E	Software			Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
00018E					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
00019E					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32	
0001AE					32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39	
0001BE					00	
0001C2	ImageLayer			2 (mask), 1 (first image to be imaged)	02 00 00 00 01 00 00 00	
IFD 0 → SubIFD 0 → Child IFD 0 (Frgnd) Offset 458 (0x1caH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0001CA	Number of Directory Entries	–	–	–	22 entries	16 00
0001CC	NewSubfileType	254	Long	16	Child IFD (foreground) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
0001D8	ImageWidth	256	Long	1728	736 pels	00 01 04 00 01 00 00 00 E0 02 00 00
0001E4	ImageLength	257	Long	n/a	464 lines	01 01 04 00 01 00 00 00 D0 01 00 00
0001F0	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 D8 02 00 00
0001FC	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
000208	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
000214	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
000220	DocumentName	269	ASCII	n/a	Test case M06	0D 01 02 00 0E 00 00 00 E0 02 00 00
00022C	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 F0 02 00 00
000238	StripOffsets	273	Long	n/a	38994 bytes	11 01 04 00 01 00 00 00 52 98 00 00

000244	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
000250	RowsPerStrip	278	Long	=ImageLength	464 rows	16 01 04 00 01 00 00 00 D0 01 00 00
00025C	StripByteCounts	279	Long	n/a	44673 bytes	17 01 04 00 01 00 00 00 81 AE 00 00
000268	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 10 03 00 00
000274	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 18 03 00 00
000280	XPosition	286	Rational	n/a	3.600 X-offset	1E 01 05 00 01 00 00 00 20 03 00 00
00028C	YPosition	287	Rational	n/a	2.140 Y-offset	1F 01 05 00 01 00 00 00 28 03 00 00
000298	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
0002A4	PageNumber	297	Short	n/a	1 of 2	29 01 03 00 02 00 00 00 00 00 02 00
0002B0	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 30 03 00 00
0002BC	ChromaSubSampling	530	Short	4:1:1	4:1:1	12 02 03 00 02 00 00 00 02 00 02 00
0002C8	ImageLayer	34732	Long	3, 1	3 (foreground), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 74 03 00 00
						Next IFD offset 00 00 00 00
IFD 0 → SubIFD 0 → Child IFD 0 (Frgnd) Values longer than 4 bytes						
Offset	Description		Comments		Coding	
0002D8	BitsPerSample		8, 8, 8		08 00 08 00 08 00	
0002E0	DocumentName		Test Case M06		54 65 73 74 20 43 61 73 65 20 4D 30 36 00	
0002F0	ImageDescription		TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
000300					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
000310	Xresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
000318	Yresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
000320	XPosition		3.600 offset		D0 02 00 00 C8 00 00 00	
000328	YPosition		2.140 offset		AC 01 00 00 C8 00 00 00	
000330	Software		Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
000340					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
000350					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32	
000360					32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39	
000370					00	
000374	ImageLayer		3 (foreground), 1 (first image to be imaged)		03 00 00 00 01 00 00 00	
IFD 0 → GP IFD → Child IFD 0 Offset 892 (0x37cH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
00037C	Number of Directory Entries	–	–	–	5 entries	05 00
00037E	ProfileType	401	Long	1	1 (Group 3 fax)	91 01 04 00 01 00 00 00 01 00 00 00

00038A	FaxProfile	402	Byte	6	Mixed Raster Content, Profile M	92 01 01 00 01 00 00 00 06 00 00 00
000396	CodingMethod	403	Long	2	34, T.4 (MH) and T.81 (JPEG)	93 01 04 00 01 00 00 00 22 00 00 00
0003A2	VersionYear	404	Byte	n/a	1999	94 01 01 00 04 00 00 00 31 39 39 39
0003AE	ModeNumber	405	Byte	1	1	95 01 01 00 01 00 00 00 00 00 00 00
						Next IFD offset 00 00 00 00
Image data						
Offset		Description			Comments	
0003beH - 00984fH		IFD 0 (Mask) Strip 0			Compressed data	
009852H - 0146d3H		IFD 0 (Frgnd) Strip 0			Compressed data	
IFD1 (Mask) Offset 83670 (0x146d6H) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0146D6	Number of Directory Entries	–	–	–	23 entries	17 00
0146D8	NewSubfileType	254	Long	18	primary IFD of a single page of a multi-page	FE 00 04 00 01 00 00 00 12 00 00 00
0146E4	ImageWidth	256	Long	1728	A4	00 01 04 00 01 00 00 00 C0 06 00 00
0146F0	ImageLength	257	Long	n/a	2200 lines	01 01 04 00 01 00 00 00 98 08 00 00
0146FC	BitsPerSample	258	Short	1	1 bit/sample	02 01 03 00 01 00 00 00 01 00 00 00
014708	Compression	259	Short	4	T.4 MH or MR	03 01 03 00 01 00 00 00 03 00 00 00
014714	Photometric Interpretation	262	Short	0	0 is white	06 01 03 00 01 00 00 00 00 00 00 00
014720	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
01472C	DocumentName	269	ASCII	n/a	Test case M06	0D 01 02 00 0E 00 00 00 F0 47 01 00
01473B	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 00 48 01 00
014744	StripOffsets	273	Long	n/a	84832 bytes	11 01 04 00 01 00 00 00 60 4B 01 00
014750	SamplesPerPixel	277	Short	1	1 sample/pixel	15 01 03 00 01 00 00 00 01 00 00 00
01475C	RowsPerStrip	278	Long	=ImageLength	2200 rows	16 01 04 00 01 00 00 00 98 08 00 00
014768	StripByteCounts	279	Long	n/a	13209 bytes	17 01 04 00 01 00 00 00 99 33 00 00
014774	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 20 48 01 00
014780	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 28 48 01 00
01478C	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 30 48 01 00
014798	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 38 48 01 00
0147A4	T4Option	292	Long	0	1-dimensional T.4 MH, byte aligned	24 01 04 00 01 00 00 00 04 00 00 00
0147B0	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
0147BC	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
0147C8	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 40 48 01 00

0147D4	SubIFDs	330	Long	n/a	Offsets of 84108	4A 01 04 00 01 00 00 00 8C 48 01 00
0147E0	ImageLayer	34732	Long	2, 1	2 (mask), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 84 48 01 00
						Next IFD offset 00 00 00 00
IFD 1 (Mask) Values longer than 4 bytes						
Offset	Description	Comments		Coding		
0147F0	DocumentName	Test case M06		54 65 73 74 20 43 61 73 65 20 4D 30 36 00		
014800	ImageDescription	TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20		
014810				4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00		
014820	Xresolution	400 pixels/inch		C8 00 00 00 01 00 00 00		
014828	Yresolution	400 pixels/inch		C8 00 00 00 01 00 00 00		
014830	XPosition	0 offset		00 00 00 00 C8 00 00 00		
014838	YPosition	0 offset		00 00 00 00 C8 00 00 00		
014840	Software	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65		
014850				66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E		
014860				74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32		
014870				32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39		
014880				00		
014884	ImageLayer	2 (mask), 1 (first image to be imaged)		02 00 00 00 01 00 00 00		
IFD 1 → SubIFD 0 → Child IFD 0 (Frgnd) Offset 84108 (0x1488cH) NextIFDOffset 84398 (0x149aeH)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
01488C	Number of Directory Entries	–	–	–	19 entries	13 00
01488E	NewSubfileType	254	Long	16	Child IFD (foreground) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
01489A	ImageWidth	256	Long	1728	1728 pels	00 01 04 00 01 00 00 00 C0 06 00 00
0148A6	ImageLength	257	Long	n/a	2200 lines	01 01 04 00 01 00 00 00 98 08 00 00
0148B2	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 76 49 01 00
0148BE	Compression	259	Short	7	No compression	03 01 03 00 01 00 00 00 01 00 00 00
0148CA	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0148D6	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
0148E2	StripOffsets	273	Long	n/a	98044 bytes	11 01 04 00 01 00 00 00 FC 7E 01 00
0148EE	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
0148FA	RowsPerStrip	278	Long	=ImageLength	2200 rows	16 01 04 00 01 00 00 00 98 08 00 00
014906	StripByteCounts	279	Long	n/a	0 bytes	17 01 04 00 01 00 00 00 00 00 00 00

014912	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 7E 49 01 00
01491E	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 86 49 01 00
01492A	XPosition	286	Rational	n/a	0 X-offset	1E 01 05 00 01 00 00 00 8E 49 01 00
014936	YPosition	287	Rational	n/a	0 Y-offset	1F 01 05 00 01 00 00 00 96 49 01 00
014942	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
01494E	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
01495A	DefaultImageColor	434	Short	black	84382 offset	B2 01 03 00 03 00 00 00 9E 49 01 00
014966	ImageLayer	34732	Long	3, 1	3 (foreground), 1 (first image to be imaged)	AC 87 04 00 02 00 00 00 A6 49 01 00
						Next IFD offset AE 49 01 00
IFD 1 → SubIFD 0 → Child IFD 0 (Frgnd) Values longer than 4 bytes						
Offset	Description		Comments		Coding	
014976	BitsPerSample		8, 8, 8		08 00 08 00 08 00	
01497E	Xresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
014986	Yresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
01498E	XPosition		3.600 offset		00 00 00 00 C8 00 00 00	
014996	YPosition		2.140 offset		00 00 00 00 C8 00 00 00	
01499E	DefaultImageColor		L*=100, a*=0, b*=3.92		FF 00 80 00 65 00	
0149A6	ImageLayer		3 (foreground), 1 (first image to be imaged)		03 00 00 00 01 00 00 00	
IFD 1 → SubIFD 0 → Child IFD 1 (Frgnd) Offset 84398 (0x149aeH) NextIFDOffset 0 (0x0H)						
Offset	Description	Tag code	Type	Minimum capabilities	Comments	Coding sample
0149AE	Number of Directory Entries	–	–	–	22 entries	16 00
0149B0	NewSubfileType	254	Long	16	Child IFD (foreground) of a single page of a multi-page	FE 00 04 00 01 00 00 00 10 00 00 00
0149BC	ImageWidth	256	Long	1728	1015 pels	00 01 04 00 01 00 00 00 F7 03 00 00
0149C8	ImageLength	257	Long	n/a	1174 lines	01 01 04 00 01 00 00 00 96 04 00 00
0149D4	BitsPerSample	258	Short	1	8, 8, 8 bit/sample	02 01 03 00 03 00 00 00 BC 4A 01 00
0149E0	Compression	259	Short	7	JPEG	03 01 03 00 01 00 00 00 07 00 00 00
0149EC	Photometric Interpretation	262	Short	10	ITU L*a*b*	06 01 03 00 01 00 00 00 0A 00 00 00
0149F8	FillOrder	266	Short	2	MSB first	0A 01 03 00 01 00 00 00 01 00 00 00
014A04	DocumentName	269	ASCII	n/a	Test case M06	0D 01 02 00 0E 00 00 00 C4 4A 01 00
014A10	ImageDescription	270	ASCII	n/a	TIFF-FX Profile M Test Sources	0E 01 02 00 1F 00 00 00 D4 4A 01 00
014A1C	StripOffsets	273	Long	n/a	98044 bytes	11 01 04 00 01 00 00 00 FC 7E 01 00
014A28	SamplesPerPixel	277	Short	1	3 sample/pixel	15 01 03 00 01 00 00 00 03 00 00 00
014A34	RowsPerStrip	278	Long	=ImageLength	1174 rows	16 01 04 00 01 00 00 00 96 04 00 00
014A40	StripByteCounts	279	Long	n/a	163988 bytes	17 01 04 00 01 00 00 00 94 80 02 00
014A4C	Xresolution	282	Rational	200	200 pixels/inch	1A 01 05 00 01 00 00 00 F4 4A 01 00
014A58	Yresolution	283	Rational	200	200 pixels/inch	1B 01 05 00 01 00 00 00 FC 4A 01 00
014A64	XPosition	286	Rational	n/a	1.185 X-offset	1E 01 05 00 01 00 00 00 04 4B 01 00

014A70	YPosition	287	Rational	n/a	1.345 Y-offset	1F 01 05 00 01 00 00 00 0C 4B 01 00
014A7C	ResolutionUnit	296	Short	2	inch	28 01 03 00 01 00 00 00 02 00 00 00
014A88	PageNumber	297	Short	n/a	2 of 2	29 01 03 00 02 00 00 00 01 00 02 00
014A94	Software	305	ASCII	n/a	Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99	31 01 02 00 41 00 00 00 14 4B 01 00
014AA0	ChromaSubSampling	530	Short	4:1:1	4:1:1	12 02 03 00 02 00 00 00 02 00 02 00
014AAC	ImageLayer	34732	Long	3, 1	3 (foreground), 2 (second image to be imaged)	AC 87 04 00 02 00 00 00 58 4B 01 00
						Next IFD offset 00 00 00 00
IFD 1 → SubIFD 0 → Child IFD 1 (Frgnd) Values longer than 4 bytes						
Offset	Description		Comments		Coding	
014ABC	BitsPerSample		8, 8, 8		08 00 08 00 08 00	
014AC4	DocumentName		Test Case M06		54 65 73 74 20 43 61 73 65 20 4D 30 36 00	
014AD4	ImageDescription		TIFF-FX Profile M Test Sources		54 49 46 46 2D 46 58 20 50 72 6F 66 69 6C 65 20	
014AE4					4D 20 54 65 73 74 20 53 6F 75 72 63 65 73 00	
014AF4	Xresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
014AFC	Yresolution		200 pixels/inch		C8 00 00 00 01 00 00 00	
014B04	XPosition		1.185 offset		ED 00 00 00 C8 00 00 00	
014B0C	YPosition		1.345 offset		0D 01 00 00 C8 00 00 00	
014B14	Software		Xerox TIFF-FX Reference Implementation Mon Feb 22 07:02:59 PM 99		58 65 72 6F 78 20 54 49 46 46 2D 46 58 20 52 65	
014B24					66 65 72 65 6E 63 65 20 49 6D 70 6C 65 6D 65 6E	
014B34					74 61 74 69 6F 6E 20 4D 6F 6E 20 46 65 62 20 32	
014B44					32 20 30 37 3A 30 32 3A 35 39 20 50 4D 20 39 39	
014B54					00	
014B58	ImageLayer		3 (foreground), 2 (second image to be imaged)		03 00 00 00 02 00 00 00	
Image data						
Offset	Description		Comments			
014b60H - 017ef9H	IFD 1 (Mask) Strip 0		Compressed data			
017efcH - 017efcH	IFD 1, Child IFD 0 (Frgnd) Strip 0		Compressed data			
017efcH - 03ff90H	IFD 1, Child IFD 1 (Frgnd) Strip 0		Compressed data			

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