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T.503
Amendment 3
(07/97)

SERIES T: TERMINALS FOR TELEMATIC SERVICES

A document application profile for the interchange of Group 4 facsimile documents

Amendment 3: Annex C – Extension for colour and gray-scale image documents using Recommendation T.43

ITU-T Recommendation T.503 – Amendment 3

(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.503

A DOCUMENT APPLICATION PROFILE FOR THE INTERCHANGE OF GROUP 4 FACSIMILE DOCUMENTS

AMENDMENT 3

ANNEX C

**Extension for colour and gray-scale image documents
using Recommendation T.43**

Summary

Recommendation T.503 defines the document application profile for the interchange of Group 4 facsimile documents. This amendment contains a new Annex C for colour and gray-scale extension using the lossless coding scheme defined in Recommendation T.43.

FOREWORD

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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 "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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A DOCUMENT APPLICATION PROFILE FOR THE INTERCHANGE OF GROUP 4 FACSIMILE DOCUMENTS

AMENDMENT 3

ANNEX C

Extension for colour and gray-scale image documents using Recommendation T.43

(Geneva, 1997)

C.1   Introduction

This annex defines a document application profile in order to interchange colour and gray-scale image documents using the lossless coding scheme defined in Recommendation T.43 as an option of Group 4 facsimile documents.

Three types of image such as one bit per colour CMY(K) or RGB image, palettized colour image, and continuous-tone colour/gray-scale image are supported in this document application profile.

Its purpose is to specify an interchange format suitable for the interchange of Group 4 colour and gray-scale image facsimile documents using lossless coding schemes.

Colour and gray-scale image documents are interchanged in a formatted form, which enables the receiver to display or print the document as intended by the originator.

It is assumed that, when negotiation is performed by the service using this document application profile, all non-basic and additional features are subject to negotiation.

C.2   References

In addition to the references of Recommendation T.503, the following references are required in order to implement this annex.

–   ITU-T Recommendation T.42 (1996), *Continuous tone colour representation method for facsimile*.

–   ITU-T Recommendation T.43 (1997), *Colour and gray-scale image representations using lossless coding scheme for facsimile*.

–   ITU-T Recommendation T.82 (1993) | ISO/IEC 11544:1993, *Information technology – Coded representation of picture and audio information – Progressive bi-level image compression*. (Commonly referred to as JBIG standard)

C.3   Definitions

In addition to the definitions of Recommendation T.503, the definitions in Recommendations T.411, T.82, T.42 and T.43 apply to this annex, unless explicitly amended.

C.3.1   JBIG: Joint Bi-level Image Experts Group, and also shorthand for the encoding method, described in Recommendation T.82, which was defined by this group.

C.4   Characteristics supported by this document application profile

C.4.1   Overview

A lossless encoded Group 4 colour and gray-scale image facsimile document is the result of a formatting process and therefore the purpose of this document application profile is to allow transfer of the complete layout of the document using lossless coding schemes defined in Recommendation T.43.

Only one category of content is allowed within the same page, namely: raster graphics content as used by facsimile Group 4 apparatus.

The purpose of this document application profile is to allow transfer of the complete colour and gray-scale information of the lossless encoded colour and gray-scale image document.

This subclause specifies the functional description of colour and gray-scale related features supported by this document application profile. Other functional descriptions are specified in Recommendation T.503.

C.4.2 Colour representation and encoding methods

Three image types are used for this document application profile, namely, one bit per colour RGB/CMY(K) image, palettized colour image, and continuous-tone colour/gray-scale image. These images are encoded by the lossless coding scheme defined in Recommendation T.82 (JBIG). Colour representation, bit-plane decomposition and coding schemes of these types of images are defined in Recommendations T.43 and T.42.

C.4.2.1 One bit per colour CMY(K) or RGB image

This type of image is expressed by the precision of 1 bit/colour component using CMY(K) or RGB colour primaries. For this type of image, it is considered to be more desirable to map each colour onto one of the primary colours of receiver's side, rather than trying to reproduce the original colour by sending the coordinates in CIELAB space. The detail specification for this mode such as colour transmission order is defined in Recommendation T.43.

In one bit per colour image using three or four primaries [CMY(K) or RGB], 8 or 16 kinds of colours can be expressed. The colour representation is defined in Tables C.1/T.43 to C.3/T.43. Encoders can encode using either 3 or 4 bit-planes, and decoders shall support both 3 and 4 bit-planes. The bits per colour component attribute value of this mode shall be (1,1,1,1).

C.4.2.2 Palettized colour image

In this type of image, the colour image is expressed by colour indices of the palette table, in which each entry is expressed by the combination of three values of CIELAB colour components defined in Recommendation T.42. The number of indices of palettized colour is classified into two classes: 12 bits or less indices and up to 16 bits indices. Each colour component value precision is also classified into two classes, 8 bits/component precision and 12 bits/component precision.

The resultant coding sub-mode of palettized colour image is classified into two classes by the combination of these two parameters. The first one is basic palettized colour sub-mode, in which the number of indices of palettized colour is 12 bits or less and colour co-ordinate precision is 8 bits/component. The other is the extended palettized colour sub-mode, in which either the number of indices of palettized colour is 13 to 16 bits and 8 bits/component precision table or 16 bits or less and 12 bits/component precision table. A more detailed specification for the palettized colour image is defined in Recommendation T.43.

C.4.2.3 Continuous-tone colour and gray-scale image

In this type of image, the colour image is represented by CIELAB colour space specified in Recommendation T.42, and the gray-scale image is represented by only L* component of CIELAB colour space specified in Recommendation T.42. Two classes are specified for its data precision: 8 bits or less per component and 9 to 12 bits/component precision. In order to obtain high encoding efficiency, Gray code conversion is applied for this type of image in bit-plane coding. Detailed coding specification for this type of image is defined in Recommendation T.43.

C.4.3 Coding mode classification

As described above, the three types of image are further divided into 7 coding sub-mode classes as shown in Table C.1. However, for the sake of easy negotiation, the supporting rule for coding sub-mode classes are established as described in Table C.2, in which two coding mode classes are defined for colour and gray-scale modes respectively.

Table C.1/T.503 – Image mode and bits per colour component attribute

Image type	Coding sub-mode class	Image specification	Number of bit-planes to be coded
One bit per colour image	One bit per colour image	One bit per colour image using RGB or CMY(K) primaries	CMYK image: 4 bit-planes CMY image: 3 bit-planes RGB image: 3 bit-planes

Palettized colour image	Basic palettized colour	Palettized image using 12 bits or less entries and 8 bits/comp. precision table	1 to 12 bit-planes
			(palette-table:
			    up to 4096 entries
			    3 octets/entry)

	Extended palettized colour	Palettized image using 13 to 16 bits entries and 8 bits/comp. precision table
		
		or
		16 bits or less entries and 12 bits/comp. precision table
			13 to 16 bit-planes
			(palette-table:
			    4097 to 65 536 entries
			    3 octets/entries)
			or
			1 to 16 bit-planes
			(palette-table:
			    up to 65 536 entries
			    6 octets/entry)

Continuous-tone image	Colour
	    8 bits/comp. colour
	    12 bits/comp. colour
	
	Gray-scale
	    8 bits gray-scale
	    12 bits gray-scale
		2 to 8 bits/comp.
		9 to 12 bits/comp.
		colour image
		
		2 to 8 bits
		9 to 12 bits
		gray-scale image
			2*3 to 8*3 bit-planes
			9*3 to 12*3 bit-planes
			
			2 to 8 bit-planes
			9 to 12 bit-planes

Table C.2/T.503 – Colour and gray-scale coding mode classification

Coding		Bits per colour component value	Mode class	Supporting coding sub-mode classes
Gray-scale	8 bits	(8,0,0)	Basic and default	8 bits gray-scale image
	12 bits	(12,0,0)	Optional	8 bits gray-scale image 12 bits gray-scale image
Colour	8 bits	(8,8,8)	Optional	One bit per colour image Basic palette colour image 8 bits gray-scale image 8 bits/comp. colour image
	12 bits	(12,12,12)	Optional	One bit per colour image Basic palette colour image 8 bits gray-scale image 8 bits/comp. colour image Extended palettized colour image 12 bits gray-scale image 12 bits/comp. colour image

C.5   Definition of the document application profile

C.5.1   Overview

The document architecture level is defined as in Recommendation T.503.

The content architecture level is raster graphics formatted content architecture level. In this annex, it is defined in Table 5/T.503 and Table C.3

The coding scheme to be used is defined in Recommendation T.43 in which Recommendation T.82 (JBIG) coding method is used for lossless coding. It is indicated as Recommendation T.43 in the document profile.

The document profile level used in this document application profile is defined in Table C.3. Every document interchanged in accordance with this document application profile must include a document profile. Every non-basic and additional attribute value used in a document must be indicated in the document profile.

The interchange format class used in this document application profile is "B", as defined in Recommendation T.415.

Document structure, the attributes applicable to layout components, and the allowable attribute values for object descriptions are defined in Table C.3.

Table C.3/T.503 – Document profile attributes

Attribute	Class	Permissible value	Default
Document profile descriptor	M		
Specific layout structure	m	Present	–
Document characteristics	M		
Document application profile	m	Group 4 fax colour extension for lossless coding 08H (Note 1)	–
Document architecture class	m	Formatted	–
Non-basic document characteristics	M		
Type of coding	m	Rec. T.43	(Note 2)
Page dimensions	nm	(Table 1/T.503)	ISO A4 (9920, 14 030 fixed or variable)
Raster graphics coding attributes	NM		
Bit per colour component	nm	(8,8,8): 8 bits colour (12,0,0): 12 bits gray-scale (12,12,12): 12 bits colour	(8,0,0) 8 bits gray-scale
Interleaving	nm	Plane	Stripe (128 line) (Note 3)
Raster graphics presentation attributes	NM		
Pel transmission density	nm	(Table 1/T.503)	6 BMU
Additional document characteristics	NM		
Colour space list	NM		
Colour space	NM		
Colour space id	m	1	–
Colour space type	m	CIELAB	–
Colour data scaling	nm	(Table B.4)	(Table B.4)
Calibration data	nm	(Table B.4)	(Table B.4)

NOTE 1 – The identifier "08H" means colour or gray-scale extension using the lossless coding scheme defined in Recommendation T.43 for Group 4 facsimile, and it shall be used as "0208H". In the case where the terminal can use JPEG colour extension and Recommendation T.43 extension, the identifier shall be used as "020508H".

NOTE 2 – The coding scheme in Recommendation T.43 is indicated by object ID {0 0 20 43 0}.

NOTE 3 – If stripe interleave is specified, it indicates that the terminal has the capability to interchange the coded image data in stripe interleave format with equal or less than 128 lines per stripe. In order to use more than 128 lines per stripe format, plane interleave shall be specified.

C.5.2 Content architecture for colour and gray-scale image using the lossless coding scheme

The following raster graphics content architecture is used in this document application profile.

C.5.2.1 Raster graphic content architecture level

The type of coding to be used is Recommendation T.43.

Its use is agreed by prior negotiation and is indicated in the document profile.

The presentation attributes that may be used are defined in Recommendation T.503.

C.5.2.2 Coding attributes

Attributes applicable to content portions are defined in Table C.4.

Colour and gray-scale raster graphic contents are coded by Recommendation T.43. Recommendation T.43 is the permissible and basic value. Coding procedure is defined in Recommendation T.43.

Table C.4/T.503 – Attributes applicable to content portions

Attribute	Qualifier	Basic value	Default value	Non-basic value
Content identifier	nm	As defined in Rec. T.412	None	None
Type of coding	m	Rec. T.43	None	None
Raster graphics coding attribute				
Number of pels per line	d	As defined in Table 3/T.563	As defined in Table 3/T.563	None
Number of discarded pels	d	As defined in Table 3/T.563	As defined in Table 3/T.563	None
Bit per colour component	d	(8,0,0)	(8,0,0)	(8,8,8), (12,0,0), (12,12,12)
Interleaving	d	Stripe	Stripe	Plane (Note)
Content information	m	Octet strings (T.43)	None	None
NOTE – If stripe interleave is specified, it indicates that the terminal has the capability to interchange the coded image data in stripe interleave format with equal or less than 128 lines per stripe. In order to use more than 128 lines per stripe format, plane interleave shall be specified.				

C.6 Definition of the document application profile for soft-copy communication

For further study.

C.7 ASN.1 definition for Annex C/T.503

This abstract syntax definition of user data conveyed by session PDU is used for Group 4 colour and gray-scale facsimile document communication, using this annex, Recommendation T.521 "Communication Application Profile BT0 for Document Bulk Transfer based on The Session service", and Recommendation T.563 "Terminal Characteristics for Group 4 Facsimile Apparatus".

In this subclause, one part different from B.9/T.503 is defined. Another part is identical with B.9/T.503.

In the coded example, "LL" means octet length of the object that contains variable length data such as coded image data.

C.7.1   User data conveyed by SUD in CDCL/RDCLP

```
APDU         ::= CHOICE {
        [4] IMPLICIT ApplicationCapabilities }
```

```
ApplicationCapabilities   ::= SET  {
     documentApplicationProfile   [0]  IMPLICIT OCTET STRING,
        -- '0208'H document application profile for T.503 and this annex

     documentArchitectureClass    [1]  IMPLICIT OCTET STRING,
        -- '00'H FDA--
     nonBasicDocCharacteristics   [2]  IMPLICIT NonBasicDocCharacteristics,
     additional-doc-characteristics [9]  IMPLICIT Additional-Doc-Characteristics        OPTIONAL }
```

```
NonBasicDocCharacteristics::= SET  {
     page-dimensions              [2]  IMPLICIT SET OF Dimension-Pair               OPTIONAL,
     ra-gr-coding-attributes      [3]  IMPLICIT SET OF Ra-Gr-Coding-Attribute       OPTIONAL,
     ra-gr-presentation-features  [4]  IMPLICIT SET OF Ra-Gr-Presentation-Features  OPTIONAL,
     types-of-coding              [29] IMPLICIT SET OF Type-of-Coding               }
```

```
Dimension-Pair  ::= SEQUENCE  {
     horizontal                   [0] IMPLICIT INTEGER,
     vertical                     CHOICE {
          fixed                        [0] IMPLICIT INTEGER,
          variable                     [1] IMPLICIT INTEGER } }
```
             -- North American letter   = (10200,13200 fixed or variable)

             -- ISO B4   = (11811,16677 fixed or variable)

             -- ISO A3   = (14030,19840 fixed or variable)

             -- Japanese legal   = (12141,17196 fixed or variable)

             -- Japanese letter   = (8598,12141 fixed or variable)

             -- North American legal   = (10200,16800 fixed or variable)

             -- North American ledger   = (13200,20400 fixed or variable)

             -- ISO A4   = (9920,14030 fixed or variable)

-- default value is ISO A4   = (9920,14030 fixed)

-- basic value is ISO A4   = (9920,14030 fixed or variable)

```
Ra-Gr-Coding-Attribute   ::= CHOICE {
     bit-per-colour-component     [4] Bit-Per-Colour-Component              OPTIONAL,
     interleaving                 [5] IMPLICIT INTEGER { plane(2), stripe(3) } OPTIONAL,
```
                     -- default and basic value is stripe(3).

                     -- If stripe interleave is specified, it indicates that the terminal has the capability to
                     -- interchange the coded image data in stripe interleave format with equal or less
                     -- than 128 lines per stripe. In order to use more than 128 lines per stripe format,
                     -- plane interleave shall be specified.
```
     subsampling                  [10] IMPLICIT Subsampling                 OPTIONAL}
```

```
Bit-Per-Colour-Component::= CHOICE {
     single-integer               INTEGER,
     component-list               SEQUENCE OF INTEGER }
```
             --   gray-scale 8 bits   = (8,0,0)

             --   colour 8 bits   = (8,8,8)

             --   gray-scale 12 bits   = (12,0,0)

             --   colour 12 bits   = (12,12,12)

         -- default and basic value is gray-scale 8 bits for this annex.

```
Subsampling                  ::= OCTET STRINGS
     --    1:1:1         ((1,1),(1,1),(1,1))   :      '11 11 11'H
```
     -- this version only support 1:1:1 ((1,1),(1,1),(1,1)) for continuous-tone colour mode --

```
Ra-Gr-Presentation-Features    ::= CHOICE {
     pel-transmission-density     [11] IMPLICIT Pel-Transmission-Density }
```

Pel-Transmission-Density ::= INTEGER {

                             p4 (3),   *-- 4 BMU (300 pels/25.4 mm)*

                             p3 (4),   *-- 3 BMU (400 pels/25.4 mm)*

                             (p6 (1))}   *-- 6 BMU (200 pels/25.4 mm)*

                 -- default and basic value is p6 (1)

Type-of-Coding   **::= CHOICE { [6] IMPLICIT OBJECT IDENTIFIER }**

                 -- t.43 {0 0 20 43 0}

                 -- basic value is t.43 for this annex

Additional-Doc-Characteristics ::= SET {
    colour-spaces-list   **[1] IMPLICIT SET OF Colour-Spaces OPTIONAL}**

Colour-Space   **::= SET {**
    colour-space-id   **[0] IMPLICIT INTEGER,**
    colour-space-type   **[1] IMPLICIT Colour-Space-Type,**
    colour-data-scaling   **[4] IMPLICIT Colour-Data-Scaling OPTIONAL }**

Colour-Space-Type   **::= INTEGER   { cielab(4)}**

Colour-Data-Scaling   **::= SET {**
    first-component   **[0] IMPLICIT Scale-and-Offset,**
    second-component   **[1] IMPLICIT Scale-and-Offset,**
    third-component   **[2] IMPLICIT Scale-and-Offset }**

Scale-and-Offset   **::= SET {**
    colour-scale   **[0] REAL,**
    colour-offset   **[1] REAL }**

 -- default and basic values for CIELAB components are as follows:

--	*scale*	*offset*
-- first-component	*2.55(255/100)*	*0*
-- second-component	*1.5(255/170)*	*128*
-- third-component	*1.275(255/200)*	*96*

Coded example [8 bits colour mode (one bit/colour, basic palettized colour and 8 bit/colour continuous-tone image mode) using Recommendation T.43 coding and CIELAB space]:

```
A4  81  80                    ApplicationCapabilities    length = 128
    80  02  02  08            documentApplicationProfile = T.503 and this annex
    81  01  00               documentArchitectureClass = FDA
    A2  3A                        nonBasicDocCharacteristics
        A2  14                        page-dimensions
            30  08                        SEQUENCE              (ISO B4 variable)
                80  02  2F23          horizontal = 11811 BMU
                81  02  4125          vertical = variable 16677 BMU
            30  08                        SEQUENCE              (ISO A3 variable)
                80  02  36CE              horizontal = 14030 BMU
                81  02  4D80              vertical = variable 19840 BMU
        A3  12                        ra-gr-coding-attributes
        A4  0B  30  09                    bit-per-colour-component = (8,8,8) (colour 8 bits)
                02  01  08
                02  01  08
                02  01  08
        8A  03  111111   subsampling = '11 11 11'H ((1,1),(1,1),(1,1))
        A4  06                        ra-gr-presentation-features
        8B  01  03             pel-transmission-density = 3  (300 pels/25.4 mm)
        8B  01  04             pel-transmission-density = 4  (400 pels/25.4 mm)
        BD  06                     type-of coding
        86  04  00 14 2B 00                    = {0 0 20 43 00} (t.43)
                                      2B is the hexadecimal notation of rec. number 43 of T.43
    A9  3C                        additional-doc-characteristics
        A1  3A                    colour-space-list
            30  38                   colour space SET
                80  01  02                    colour-space-id = 1
                81  01  04                    colour-space-type = 4 (CIELAB)
                A4  30                        colour-data-scaling    (non basic value case)
                    A0  0C                            first-component  L* = [0, 95]
                        A0  06                            colour-scale = 2.684 (255/95)
                            09  04  A0  FD  2A  F2
-- REAL length=4 binary encoding(base=16) exponent=–3 mantissa='2AF2'H
                        A1  02                        colour-offset = 0
                            09  00
-- REAL length=0 (this means real value is '0')
                    A1  0F                        second-component  a* = [–85, 85]
                        A0  06                            colour-scale = 1.5 (255/170)
                            09  04  A0  FD  18  00
                        A1  05                        colour-offset = 128
                            09  03  A0  00  80
                    A2  0F                        third-component    b* = [–75, 125]
                        A0  06                            colour-scale = 1.275 (255/200)
                            09  04  A0  FD  14  66
                        A1  05                        colour-offset = 96
                            09  03  A0  00  60
```

C.7.2   User data conveyed by SUD in CDS

S-ACTIVITY-START-user-data::= CHOICE {

                         [4] IMPLICIT DocumentCharacteristics }

DocumentCharacteristics ::= SET {

      documentApplicationProfile   **[0] IMPLICIT OCTET STRING,**
           -- '08'H for this annex
      documentArchitectureClass   **[1] IMPLICIT OCTET STRING,**
           -- '00'H FDA
      nonBasicDocCharacteristics   **[2] IMPLICIT NonBasicDocCharacteristics,**
      additional-doc-characteristics   **[9] IMPLICIT Additional-Doc-Characteristics**   **OPTIONAL }**
                          -- See Sec. C.7.1 (except documentApplicationProfile)

C.7.3   Content Portion conveyed by CSUI/CDUI

Interchange-Data-Element   **::= CHOICE {**

      content-portion   **[3] IMPLICIT Text-Unit }**

Text-Unit   **::= SEQUENCE {**

      content-portion-attributes   **Content-Portion-Attributes**   **OPTIONAL,**
      content-information   **Content-Information}**

Content-Portion-Attributes   **::= SET {**

      content-identifier-layout   **Content-Portion-Identifier**   **OPTIONAL,**
      type-of-coding   **Type-of-Coding,**   *-- mandatory for this annex*
      coding-attributes   **CHOICE {**
          raster-gr-coding-attributes   **[2] IMPLICIT Raster-Gr-Coding-Attributes}**
                                 OPTIONAL}

Content-Portion-Identifier ::= [APPLICATION 0] IMPLICIT PrintableString

     -- only digits and space are used in the present version of the
     -- standard; other characters are reserved for extensions.

Type-of-Coding   **::= CHOICE { [6] IMPLICIT OBJECT IDENTIFIER }**

                    -- t.43 {0 0 20 43 00}
                    -- basic and permissible value is t.43 for this annex

Raster-Gr-Coding-Attributes   **::= SET {**

      number-of-pels-per-line   **[0] IMPLICIT INTEGER**   **OPTIONAL,**
      number-of-discarded-pels   **[3] IMPLICIT INTEGER**   **OPTIONAL,**
      bit-per-colour-component   **[4] Bit-Per-Colour-Component**   **OPTIONAL,**
      interleaving   **[5] IMPLICIT INTEGER {plane(2), stripe(3)}**
                                     OPTIONAL,
          -- default and basic value is stripe(3) for this annex.
          -- If stripe interleave is specified, it indicates that the terminal has the capability to interchange
          -- the coded image data in stripe interleave format with equal or less than 128 lines per stripe.
          -- In order to use more than 128 lines per stripe format, plane interleave shall be specified.
      subsampling   **[10] IMPLICIT Subsampling**   **OPTIONAL }**

Bit-Per-Colour-Component::= CHOICE {

      single-integer   **INTEGER,**
      component-list   **SEQUENCE OF INTEGER }**
          --   *gray-scale 8 bits*   *= (8,0,0)*
          --   *colour 8 bits*   *= (8,8,8)*
          --   *gray-scale 12 bits*   *= (12,0,0)*
          --   *colour 12 bits*   *= (12,12,12)*
     -- default and basic value is gray-scale 8 bits for this annex.

Subsampling   **::= OCTET STRINGS**

     -- 1:1:1   *((1,1),(1,1),(1,1)):*   *'11 11 11'H*
     -- this version only support 1:1:1 ((1,1),(1,1),(1,1)) for continuous-tone colour mode --

Coded example 1 (lossless continuous-tone colour 8 bits/component case, plane interleave):

```
A3   LL        content-portion  Text-Unit
     31  24        content-portion-attributes
         86   04   00 14 2B 00    type-of-coding = {0 0 20 43 00} (t.43)
         A2   1C        coding-attributes
              80   02   09   80           number-of-pels-per-line = 2432(ISO A3)
              83   01   2F                 number-of-discarded-pels = 47         (ISO A3)
              A4   0B   30   09              bit-per-colour-component = (8,8,8) (colour 8 bits)
                        02   01   08
                        02   01   08
                        02   01   08
              A5   01   02                 interleaving-format = 2 (plane)
              8A   03   11   11   11      subsampling = '11 11 11'H (1:1:1)
     24        80        content-information  OCTET STRING (constructed)
              04   LL        XXXX(t.43 string)XXXX          OCTET STRING
                                                                (primitive)
              04   LL        XXXX(t.43 string)XXXX          OCTET STRING
                                                                (primitive)
              00   00                 EOC
              00   00                 EOC
              (no subsampled Recommendation T.43 coded 8 bits/comp. colour data)
```

Coded example 2 (continuous-tone colour, stripe interleave):

–   actual number of bit-planes are 11, 8 and 8 for L*, a* and b* respectively

–   use 12 bits/comp. mode

```
A3   LL        content-portion  Text-Unit
     31  18        content-portion-attributes
         86   04   00 14 2B 00    type-of-coding = {0 0 20 43 00} (t.43)
         A2   10        coding-attributes
              A4   0B   30   09        bit-per-colour-component = (12,12,12) (colour 12 bits)
                        02   01   0C
                        02   01   0C
                        02   01   0C
              A5   01   03           interleaving-format = 3 (stripe (128 lines))
     04        LL        XXXXXX(t.43)XXXXXX                OCTET STRING
                                                                (primitive)
              (no subsampled Recommendation T.43 coded colour data: 11, 8 and 8 bit-planes for L*, a* and b* respectively,
              total 27 bit-planes)
```

Coded example 3 (one bit per colour and stripe interleave case):

```
A3   LL        content-portion  Text-Unit
     31   15        content-portion-attributes
          86   04   00 14 2B 00      type-of-coding = {0 0 20 43 00} (t.43)
          A2   0D        coding-attributes
               A4   0B   30   09              bit-per-colour-component = (8,8,8)
                              02    01    08      (8 bits per component colour mode)
                              02    01    08
                              02    01    08
     04   LL        XXXXX(t.43 string)XXXXX                OCTET STRING
                                                              (primitive)
                    (one bit per colour image Recommendation T.43 coded data)
```

Coded example 4 (extended palettized colour image, stripe interleave):

–   number of palette colour table entries is 200, then number of bit-planes is 8

–   use 12 bits/comp. precision palette table

```
A3   LL        content-portion Text-Unit
     31   1A        content-portion-attributes
          86   04   00 14 2B 00   type-of-coding = {0 0 20 43 00} (t.43)
          A2   10        coding-attributes
               A4   0B   30   09                  bit-per-colour-component = (12,12,12) (colour 12 bits)
                              02    01    0C
                              02    01    0C
                              02    01    0C
               A5   01   03              interleaving-format = 3 (stripe (128 lines))
     04   LL        XXXXXX(t.43 string)XXXXXX                OCTET STRING
                                                              (primitive)
                    (Recommendation T.43 coded 8 bit-planes palettized colour image data with 200 entries 12 bit/comp. precision
                    palette table)
```

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