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Amendment 1
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SERIES T: TERMINALS FOR TELEMATIC SERVICES

Procedures for document facsimile transmission in the general switched telephone network

Amendment 1

ITU-T Recommendation T.30 – Amendment 1

(Formerly CCITT Recommendation)

ITU-T Recommendation T.30

Procedures for document facsimile transmission in the general switched telephone network

Amendment 1

Summary

Amendment 1 to ITU-T T.30 (1999) includes:

1) Changes for:
   a) inclusion of a cellular network connection indication;
   b) introduction of 600 pels/25.4 mm × 600 lines/25.4 mm and 1200 pels/25.4 mm × 1200 pels/25.4 mm resolutions for gray scale and colour;
   c) double-sided printing capability;
   d) black and white mixed raster content capability;
   e) ITU-T T.45 run length colour encoding;
   f) application profile indications for ITU-T T.88;
   g) removal of duplication between Annexes G and H;
2) Addition of a new Annex K on procedure for V.21 duplex negotiations and call control in G3 facsimile;
3) Addition of a new Annex L on extended negotiations protocol for Group 3 facsimile.

Source

Amendment 1 to ITU-T Recommendation T.30 was prepared by ITU-T Study Group 8 (1997-2000) and approved under the WTSC Resolution 1 procedure on 10 February 2000.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

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The approval of ITU-T Recommendations is covered by the procedure laid down in WTSC Resolution 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 "Administration" 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, ITU had not 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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ITU-T Recommendation T.30

Procedures for document facsimile transmission in the general switched telephone network

AMENDMENT 1

1) Table 2

Replace Table 2 with the following:

Table 2/T.30

Bit No.	DIS/DTC	Note	DCS	Note
1	Store and forward Internet fax- Simple mode (ITU-T T.37)	60, 63	Store and forward Internet fax- Simple mode (ITU-T T.37)	60, 63
2	Reserved	1	Reserved	1
3	Real-time Internet fax (ITU-T T.38)	61, 63	Real-time Internet fax (ITU-T T.38)	61, 63
4	Reserved for 3rd Generation Mobile Network connection	1	Reserved for 3rd Generation Mobile Network connection	1
5	Reserved	1	Reserved	1
6	V.8 capabilities	23	Invalid	24
7	"0" = 256 octets preferred "1" = 64 octets preferred	23, 42	Invalid	24
8	Reserved	1	Reserved	1
9	Ready to transmit a facsimile document (polling)	18	Set to "0"	
10	Receiver fax operation	19	Receiver fax operation	20
11, 12, 13, 14	Data signalling rate		Data signalling rate	
0, 0, 0, 0	ITU-T V.27 *ter* fall-back mode		2400 bit/s, ITU-T V.27 *ter*	33
0, 1, 0, 0	ITU-T V.27 *ter*	3	4800 bit/s, ITU-T V.27 *ter*	
1, 0, 0, 0	ITU-T V.29		9600 bit/s, ITU-T V.29	
1, 1, 0, 0	ITU-T V.27 *ter* and V.29		7200 bit/s, ITU-T V.29	
0, 0, 1, 0	Not used		Invalid	31
0, 1, 1, 0	Reserved		Invalid	31
1, 0, 1, 0	Not used		Reserved	
1, 1, 1, 0	Invalid	32	Reserved	
0, 0, 0, 1	Not used		14 400 bit/s, ITU-T V.17	
0, 1, 0, 1	Reserved		12 000 bit/s, ITU-T V.17	
1, 0, 0, 1	Not used		9600 bit/s, ITU-T V.17	

Table 2/T.30 *(continued)*

Bit No.	DIS/DTC	Note	DCS	Note
1, 1, 0, 1	ITU-T V.27 *ter*, V.29, and V.17	31	7200 bit/s, ITU-T V.17	
0, 0, 1, 1	Not used		Reserved	
0, 1, 1, 1	Reserved		Reserved	
1, 0, 1, 1	Not used		Reserved	
1, 1, 1, 1	Reserved		Reserved	
15	R8 × 7.7 lines/mm and/or 200 × 200 pels/25.4 mm	10, 11, 13, 25, 34	R8 × 7.7 lines/mm or 200 × 200 pels/25.4 mm	10, 11, 13, 25, 34
16	Two dimensional coding capability		Two dimensional coding	
17, 18	Recording width capabilities	27	Recording width	27
(0,0)	Scan line length 215 mm ± 1%		Scan line length 215 mm ± 1%	
(0,1)	Scan line length 215 mm ± 1% and Scan line length 255 mm ± 1% and Scan line length 303 mm ± 1%		Scan line length 303 mm ± 1%	
(1,0)	Scan line length 215 mm ± 1% and Scan line length 255 mm ± 1%		Scan line length 255 mm ± 1%	
(1,1)	Invalid	6	Invalid	
19, 20	Recording length capability		Recording length	
(0,0)	A4 (297 mm)	2	A4 (297 mm)	2
(0,1)	Unlimited		Unlimited	
(1,0)	A4 (297 mm) and B4 (364 mm)		B4 (364 mm)	
(1,1)	Invalid		Invalid	
21, 22, 23	Minimum scan line time capability at the receiver	4, 8, 23	Minimum scan line time	8, 24
(0,0,0)	20 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$		20 ms	
(0,0,1)	40 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$		40 ms	
(0,1,0)	10 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$		10 ms	
(1,0,0)	5 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$		5 ms	
(0,1,1)	10 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$			
(1,1,0)	20 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$			
(1,0,1)	40 ms at 3.85 l/mm: $T_{7.7} = 1/2\ T_{3.85}$			
(1,1,1)	0 ms at 3.85 l/mm: $T_{7.7} = T_{3.85}$		0 ms	
24	Extend field	5	Extend field	5
25	Reserved	1, 41	Reserved	1, 41
26	Uncompressed mode		Uncompressed mode	

Table 2/T.30 *(continued)*

Bit No.	DIS/DTC	Note	DCS	Note
27	Error correction mode	17	Error correction mode	17
28	Set to "0"		Frame size 0 = 256 octets Frame size 1 = 64 octets	7 24
29	Reserved	1	Reserved	1
30	Reserved	1	Reserved	1
31	T.6 coding capability	9, 17	T.6 coding enabled	9, 17
32	Extend field	5	Extend field	5
33	Field not valid capability		Field not valid capability	
34	Multiple selective polling capability	52	Set to "0"	
35	Polled Subaddress	26, 44, 45	Set to "0"	
36	T.43 coding	17, 25, 34, 35, 37, 39, 40	T.43 coding	17, 25, 34, 35, 37, 39, 40
37	Plane interleave	25, 46	Plane interleave	25, 46
38	Voice coding with 32k ADPCM (ITU-T G.726)	58, 59	Voice coding with 32k ADPCM (ITU-T G.726)	17, 58, 59
39	Reserved for the use of extended voice coding	1	Reserved for the use of extended voice coding	1
40	Extend field	5	Extend field	5
41	R8 × 15.4 lines/mm	10, 62	R8 × 15.4 lines/mm	10, 62
42	300 × 300 pels/25.4 mm	34	300 × 300 pels/25.4 mm	34
43	R16 × 15.4 lines/mm and/or 400 × 400 pels/25.4 mm	10, 12, 13, 34	R16 × 15.4 lines/mm and/or 400 × 400 pels/25.4 mm	10, 12, 13, 34
44	Inch based resolution preferred	13, 14	Resolution type selection "0": metric based resolution "1": inch based resolution	13, 14
45	Metric based resolution preferred	13, 14	Don't care	
46	Minimum scan line time capability for higher resolutions "0": $T_{15.4} = T_{7.7}$ "1": $T_{15.4} = 1/2\ T_{7.7}$	15	Don't care	
47	Selective polling	26, 44	Set to "0"	
48	Extend field	5	Extend field	5
49	Subaddressing capability		Subaddressing transmission	26
50	Password	26	Sender Identification transmission	26
51	Ready to transmit a data file (polling)	17, 21	Set to "0"	

Table 2/T.30 *(continued)*

No.	DIS/DTC	Note	DCS	Note
52	Reserved	1	Reserved	1
53	Binary File Transfer (BFT)	16, 17, 21	Binary File Transfer (BFT)	16, 17
54	Document Transfer Mode (DTM)	17, 21	Document Transfer Mode (DTM)	17
55	Electronic Data Interchange (EDI)	17, 21	Electronic Data Interchange (EDI)	17
56	Extend field	5	Extend field	5
57	Basic Transfer Mode (BTM)	17, 21	Basic Transfer Mode (BTM)	17, 59
58	Reserved	1	Reserved	1
59	Ready to transmit a character or mixed mode document (polling)	17, 22	Set to "0"	
60	Character mode	17, 22	Character mode	17
61	Reserved	1	Reserved	1
62	Mixed mode (Annex E/T.4)	17, 22	Mixed mode (Annex E/T.4)	17, 22
63	Reserved	1	Reserved	1
64	Extend field	5	Extend field	5
65	Processable mode 26 (ITU-T T.505)	17, 22	Processable mode 26 (ITU-T T.505)	17, 22
66	Digital network capability	43	Digital network capability	43
67 (0) (1)	Duplex and half duplex capabilities Half duplex operation only Duplex and half duplex operation		Duplex and half duplex capabilities Half duplex operation only Duplex operation	
68	JPEG coding	17, 25, 34, 35, 39, 40	Full colour mode	17, 25, 34, 35, 39, 40
69	Full colour mode	25, 35	Full Colour mode	25, 35
70	Set to "0"	36	Preferred Huffman tables	25, 36
71	12 bits/pel component	25, 37	12 bits/pel component	25, 37
72	Extend field	5	Extend field	5
73	No subsampling (1:1:1)	25, 38	No subsampling (1:1:1)	25, 38
74	Custom illuminant	25, 39	Custom illuminant	25, 39
75	Custom gamut range	25, 40	Custom gamut range	25, 40
76	North American Letter (215.9 × 279.4 mm) capability	28	North American Letter (215.9 × 279.4 mm)	
77	North American Legal (215.9 × 355.6 mm) capability	28	North American Legal (215.9 × 355.6 mm)	

Table 2/T.30 *(continued)*

Bit No.	DIS/DTC	Note	DCS	Note
78	Single-progression sequential coding (ITU-T T.85) basic capability	17, 29, 30	Single-progression sequential coding (ITU-T T.85) basic	17, 29
79	Single-progression sequential coding (ITU-T T.85) optional L0 capability	17, 29, 30	Single-progression sequential coding (ITU-T T.85) optional L0	17, 29
80	Extend field	5	Extend field	5
81	HKM key management capability		HKM key management selected	
82	RSA key management capability		RSA key management selected	47
83	Override capability	53	Override mode selected	53
84	HFX40 cipher capability		HFX40 cipher selected	
85	Alternative cipher number 2 capability	56	Alternative cipher number 2 selected	56
86	Alternative cipher number 3 capability	56	Alternative cipher number 3 selected	56
87	HFX40-I hashing capability		HFX40-I hashing selected	
88	Extend field	5	Extend field	5
89	Alternative hashing system number 2 capability	57	Alternative hashing system number 2 selected	57
90	Alternative hashing system number 3 capability	57	Alternative hashing system number 3 selected	57
91	Reserved for future security features	1	Reserved for future security features	1
92	T.44 (Mixed Raster Content)	17, 50, 69	T.44 (Mixed Raster Content)	17, 50, 69
93	T.44 (Mixed Raster Content)	17, 50, 69	T.44 (Mixed Raster Content)	17, 50, 69
94	T.44 (Mixed Raster Content)	17, 50, 69	T.44 (Mixed Raster Content)	17, 50, 69
95	Page length maximum strip size for T.44 (Mixed Raster Content)	51	Page length maximum strip size for T.44 (Mixed Raster Content)	51
96	Extend field	5	Extend field	5
97	Colour/gray-scale 300 pels/25.4 mm × 300 lines/25.4 mm or 400 pels/25.4 mm × 400 lines/25.4 mm resolution	49	Colour/gray-scale 300 pels/25.4 mm × 300 lines/25.4 mm or 400 pels/25.4 mm × 400 lines/25.4 mm resolution	49
98	100 pels/25.4 mm × 100 lines/25.4 mm for colour/gray scale	10, 48	100 pels/25.4 mm × 100 lines/25.4 mm for colour/gray scale	10, 48
99	Simple Phase C BFT Negotiations capability	54, 55	Simple Phase C BFT Negotiations capability	54, 55
100	Extended BFT Negotiations capability		Set to "0"	

Table 2/T.30 *(continued)*

Bit No.	DIS/DTC	Note	DCS	Note
101	Internet Selective Polling Address (ISP)	26	Set to "0"	
102	Internet Routing Address (IRA)		Internet Routing Address (IRA) transmission	26
103	Reserved	1	Reserved	1
104	Extend field	5	Extend field	5
105	600 pels/25.4 mm × 600 lines/25.4 mm		600 pels/25.4 mm × 600 lines/25.4 mm	
106	1200 pels/25.4 mm × 1200 lines/25.4 mm		1200 pels/25.4 mm × 1200 lines/25.4 mm	
107	300 pels/25.4 mm × 600 lines/25.4 mm	62	300 pels/25.4 mm × 600 pels/25.4 mm	62
108	400 pels/25.4 mm × 800 lines/25.4 mm	62	400 pels/25.4 mm × 800 lines/25.4 mm	62
109	600 pels/25.4 mm × 1200 lines/25.4 mm	62	600 pels/25.4 mm × 1200 lines/25.4 mm	62
110	Colour/gray scale 600 pels/25.4 mm × 600 lines/25.4 mm resolution	64	Colour/gray scale 600 pels/25.4 mm × 600 lines/25.4 mm resolution	64
111	Colour/gray scale 1200 pels/25.4 mm × 1200 lines/25.4 mm resolution	65	Colour/gray scale 1200 pels/25.4 mm × 1200 lines/25.4 mm resolution	65
112	Double sided printing capability (alternate mode)	66, 67	Double sided printing capability (alternate mode)	67
113	Double sided printing capability (continuous mode)	66, 67, 68	Double sided printing capability (continuous mode)	67
114	Black and white mixed raster content profile (MRCbw)	50, 69	Not used set to "0"	50, 69
115	T.45 (run length colour encoding)	70	T.45 (run length colour encoding)	70
116	T.45 run length colour encoding	17	T.45 run length colour encoding	17
117, 118	Memory capacity	70		70
(0,0)	Not available		Not available	
(0,1)	Level 1		Level 1	
(1,0)	Level 2		Level 2	
(1,1)	Level 3		Level 3	
119	Reserved		Reserved	
120	Extend field		Extend field	

NOTE 1 – Bits that are indicated as "Reserved" shall be set to "0".

NOTE 2 – Standard facsimile terminals conforming to ITU-T T.4 must have the following capability: Paper length = 297 mm.

Table 2/T.30 *(continued)*

NOTE 3 – Where the DIS or DTC frame defines V.27 *ter* capabilities, the terminal may be assumed to be operable at either 4800 or 2400 bit/s.

Where the DIS or DTC frame defines V.29 capabilities, the terminal may be assumed to be operable at either 9600 or 7200 bit/s per ITU-T V.29; where it defines ITU-T V.17, the terminal may be assumed to be operable at 14 400 bit/s, 12 000 bit/s, 9600 bit/s or 7200 bit/s per ITU-T V.17.

NOTE 4 – $T_{7.7}$ and $T_{3.85}$ refer to the scan line times to be utilized when the vertical resolution is 7.7 lines/mm (or 200 lines/25.4 mm or 300 lines/25.4 mm) or 3.85 lines/mm, respectively (see bit 15 above). $T_{7.7} = 1/2\ T_{3.85}$ indicates that when the vertical resolution is 7.7 lines/mm or 200 lines/25.4 mm or 300 lines/25.4 mm, the scan line time can be decreased by half.

NOTE 5 – The standard FIF field for the DIS, DTC and DCS signals is 24 bits long. If the "extend field" bit(s) is a "1", the FIF field shall be extended by an additional 8 bits.

NOTE 6 – Existing terminals may send the invalid (1,1) condition for bits 17 and 18 of their DIS signal. If such signal is received, it should be interpreted as (0,1).

NOTE 7 – The values of bit No. 28 in the DCS command is valid only when the indication of the T.4 error correction mode is invoked by bit 27.

NOTE 8 – The optional T.4 error correction mode of operation requires 0 ms of the minimum scan line time capability. Bits 21-23 in DIS/DTC signals indicate the minimum scan line time of a receiver regardless of the availability of the error correction mode.

In case of error correction mode, the sender sends DCS signal with bits 21-23 set to 1, 1, 1 indicating 0 ms capability.

In case of normal transmission, the sender sends DCS signal with bits 21-23 set to the appropriateness according to the capabilities of the two terminals.

NOTE 9 – T.6 coding scheme capability specified by bit 31 is valid only when bit 27 (error correction mode) is set as a "1".

NOTE 10 – Resolutions of R4, R8 and R16 are defined as follows:

R4 = 864 pels/(215 mm ± 1%) for ISO A4, North American Letter and Legal.

R4 = 1024 pels/(255 mm ± 1%) for ISO B4.

R4 = 1216 pels/(303 mm ± 1%) for ISO A3.

R8 = 1728 pels/(215 mm ± 1%) for ISO A4, North American Legal and Letter.

R8 = 2048 pels/(255 mm ± 1%) for ISO B4

R8 = 2432 pels/(303 mm ± 1%) for ISO A3

R16 = 3456 pels/(215 mm ± 1%) for ISO A4, North American Letter and Legal.

R16 = 4096 pels/(255 mm ± 1%) for ISO B4

R16 = 4864 pels/(303 mm ± 1%) for ISO A3

NOTE 11 – Bit 15, when set to "1", is interpreted according to bit 44 and 45 as follows:

Bit 44	Bit 45	Interpretation
0	0	(invalid)
1	0	200 pels/25.4 mm × 200 lines/25.4 mm
0	1	R8 × 7.7 lines/mm
1	1	R8 × 7.7 lines/mm and 200 pels/25.4 mm × 200 lines/25.4 mm

"1" in bit 15 without bits 41, 42, 43, 44, 45 and 46 indicates R8 × 7.7 lines/mm.

Table 2/T.30 *(continued)*

NOTE 12 – Bit 43, when set to "1", is interpreted according to bit 44 and 45 as follows:

Bit 44	Bit 45	Interpretation
0	0	(invalid)
1	0	400 pels/25.4 mm × 400 lines/25.4 mm
0	1	R16 × 15.4 lines/mm
1	1	R16 × 15.4 lines/mm and 400 pels/25.4 mm × 400 lines/25.4 mm

NOTE 13 – Bits 44 and 45 are used only in conjunction with bits 15 and 43. Bit 44 in DCS, when used, shall correctly indicate the resolution of the transmitted document, which means that bit 44 in DCS may not always match the indication of bits 44 and 45 in DIS/DTC. Cross selection will cause the distortion and reduction of reproducible area.

If a receiver indicates in DIS that it prefers to receive metric based information, but the transmitter has only the equivalent inch based information (or vice versa), then communication shall still take place.

NOTE 14 – Bits 44 and 45 do not require the provision of any additional features on the terminal to indicate to the sending or receiving user whether the information was transmitted or received on a metric-metric, inch-inch, metric-inch, inch-metric basis.

NOTE 15 – $T_{15.4}$ refers to the scan line times to be utilized when the vertical resolution is 15.4 lines/mm, 400 lines/25.4 mm, 600 lines/25.4 mm and 1200 lines/25.4mm.

$T_{15.4} = 1/2\ T_{7.7}$ indicates that when $T_{7.7}$ is 10, 20 or 40 ms, the scan line time can be decreased by half in higher resolution mode.

When $T_{7.7}$ is 5 ms [i.e. (bit 21, bit 22, bit 23) = (1, 0, 0), (0, 1, 1)] or 0 ms [i.e. (1, 1, 1)], bit 46 in DIS/DTC should be set to "0" ($T_{15.4} = T_{7.7}$).

NOTE 16 – The binary file transfer protocol is described in ITU-T T.434.

NOTE 17 – When either bit of 31, 36, 38, 51, 53, 54, 55, 57, 59, 60, 62, 65, 68, 78, 79, 115 and 116 is set to "1", bit 27 shall also be set to "1". If the value of bits 92 to 94 is non-zero, then bit 27 shall be set to "1".

NOTE 18 – Bit 9 indicates that there is a facsimile document ready to be polled from the answering terminal. It is not an indication of a capability.

NOTE 19 – Bit 10 indicates that the answering terminal has receiving capabilities.

NOTE 20 – Bit 10 in DCS is a command to the receiving terminal to set itself in the receive mode.

NOTE 21 – Bit 51 indicates that there is a data file ready to be polled from the answering terminal. It is not an indication of a capability. This bit is used in conjunction with bits 53, 54, 55 and 57.

NOTE 22 – Bit 59 indicates that there is a character coded or mixed mode document ready to be polled from the answering terminal. It is not an indication of a capability. This bit is used in conjunction with bits 60, 62 and 65.

NOTE 23 – When the optional procedure defined in Annex C is used, in DIS/DTC bits 6 and 7 shall be set to "0" and bits 21 to 23 and 27 shall be set to "1".

NOTE 24 – When the optional procedure defined in Annex C is used, in DCS bits 6, 7 and 28 shall be set to "0" and bits 21 to 23 and 27 shall be set to "1".

NOTE 25 – The optional continuous-tone colour mode and gray-scale mode (JPEG mode) protocols and the optional lossless encoded colour and gray-scale mode (T.43 mode) are described in Annexes E and I respectively. If bit 68 in the DIS/DTC frame is set to "1", this indicates JPEG mode capability. If bits 36 and 68 are set to "1", this indicates that the T.43 capability is also available. Bit 36 in the DIS/DTC frame shall only be set to "1" when bit 68 is also set to "1". Additionally, then bits 15 and 27 in the DIS/DTC frame shall also be set to "1", if bit 68 or bits 36 and 68 are set to "1". Bit 15 indicates 200 pels/25.4 mm × 200 lines/25.4 mm resolution capability, which is basic for colour facsimile. Bit 27 indicates error correction mode capability, which is mandatory for colour facsimile. Bits 69 to 71, 73 to 75 and 92 to 94 are relevant only if bit 68 is set to "1". Bit 73 is relevant only for JPEG mode. Bits 69, 71, 74 and 75 are relevant for JPEG mode and/or T.43 mode. Bit 37 is relevant only when bit 36 is set to "1" – see also Notes 39 and 40.

Table 2/T.30 *(continued)*

NOTE 26 – To provide an error recovery mechanism, when PWD/SEP/SUB/SID/PSA/IRA/ISP frames are sent with DCS or DTC, bits 49, 102 and 50 in DCS or bits 47, 101, 50 and 35 in DTC shall be set to "1" with the following meaning:

Bit set to "1"	DIS	DTC	DCS
35	Polled SubAddress capability	Polled SubAddress transmission	Not allowed-set to "0"
47	Selective polling capability	Selective polling transmission	Not allowed-set to "0"
49	Subaddressing capability	Not allowed (Set to "0")	Subaddressing transmission
50	Password	Password transmission	Sender Identification transmission
101	Internet Selective Polling Address capability	Internet Selective Polling Address transmission	Not allowed-set to "0"
102	Internet Routing Address capability	Not allowed (Set to "0")	Internet Routing Address transmission

Terminals conforming to the 1993 version of this Recommendation may set the above bits to "0" even though PWD/SEP/SUB frames are transmitted.

NOTE 27 – The corresponding scan line lengths for inch based resolutions can be found in clause 3/T.4.

NOTE 28 – While using bits 76 and 77 in DIS/DTC, the terminal is required to be able to receive ISO A4 documents in every combination of bits 76 and 77. A4, B4 and A3 transmitters may ignore the settings of bits 76 and 77.

NOTE 29 – The coding scheme indicated by bits 78 and 79 is defined in ITU-T T.85.

NOTE 30 – When bit 79 in DIS is set to "1", bit 78 shall also be set to "1".

NOTE 31 – In the case of setting (1, 1, 0, 1) in DIS/DTC bits 11-14 in order to announce the capability to receive in ITU-T V.17, some terminals which conform to the 1994 version and earlier versions of this Recommendation recognize the capability to receive in ITU-T V.33 and may set (0, 0, 1, 0) or (0, 1, 1, 0) in DCS bits 11-14. Therefore, the terminal which has the capability to receive, using the modulation system defined in ITU-T V.17, may optionally support the capability to receive using the modulation system defined in ITU-T V.33.

NOTE 32 – Some terminals which conform to the 1994 and earlier versions of this Recommendation may have used this bit sequence to indicate use of the V.27*ter*, V.29 and V.33 modulation system.

NOTE 33 – When the modulation system defined in ITU-T V.34 is used, bits 11-14 in DCS are invalid and should be set to "0".

NOTE 34 – Setting bit 68 to "0" indicates that the called terminal's JPEG mode and T.43 mode are not available and it cannot decode JPEG or T.43 encoded data. In a DCS frame, setting bit 68 to "1" indicates that the calling terminal's JPEG mode is used and JPEG encoded image data are sent. The horizontal image size parameter X of the JPEG data stream shall conform to the values defined in clause 2/T.4. Setting bit 68 to "0" and bit 36 to "1" indicates that the calling terminal's T.43 mode is used and T.43 encoded image data are sent. In the DCS frame, if bit 68 or 36 is set to "1" or the value of bits 92 to 94 is non-zero, then bits 15 or 42 or 43 or 98 or 105 or 106 and 27 in the DCS frame shall also be set to "1". Bits 98, 42, 43, 105 and 106 indicate 100 × 100, 300 × 300 and 400 × 400, 600 × 600 and 1200 pels/25.4 mm × 1200 lines/25.4 mm resolution respectively. Setting bit 68 and 36 to "0" indicates neither the JPEG mode nor the T.43 mode is used, image is not encoded using JPEG nor T.43.

NOTE 35 – In a DIS/DTC frame, setting bit 69 to "1" indicates that the called terminal has full colour capability. It can accept full colour image data in CIELAB space. If bit 36 is also set to "1", it can also accept colour image defined in ITU-T T.43. Setting bit 69 to "0" and bit 68 or bits 36 and 68 to "1" indicates that the called terminal has gray-scale mode only, it accepts only the lightness component (the L* component) in the CIELAB representation for JPEG mode and for T.43 mode respectively. In a DCS frame, setting bits 68 and 69 to "1" indicates that the calling terminal sends image in full colour representation in the CIELAB space in JPEG mode. In a DCS frame, setting bits 36 and 69 to "1" indicates that the calling terminal sends colour image in T.43 mode. Setting bit 36 or 68 to "1" and bit 69 to "0" indicates that the calling terminal sends only the lightness component (the L* component) in the CIELAB representation for JPEG or T.43 mode respectively. Note that colour image will be transmitted only when bits 68 and 69 or 36 and 69 are both set to "1".

Table 2/T.30 *(continued)*

NOTE 36 – Bit 70 is called "Indication of default Huffman tables". A means is provided to indicate to the called terminal that the Huffman tables are the default tables. Default tables are specified only for the default image intensity resolution (8 bits/pel/component). The default Huffman tables are to be determined (for example, Tables K.3 to K.6/T.81). In a DIS/DTC frame, bit 70 is not used and is set to zero. In a DCS frame, setting bit 70 to 0 indicates that the calling terminal does not identify the Huffman tables that it uses to encode the image data as the default tables. Setting bit 70 to "1" indicates that the calling terminal identifies the Huffman tables that it uses to encode the image data as the default tables.

NOTE 37 – In a DIS/DTC frame, setting bit 71 to "0" indicates that the called terminal can only accept image data which has been digitised to 8 bits/pel/component for JPEG mode. This is also true for T.43 mode if bit 36 is also set to "1". Setting bit 71 to "1" indicates that the called terminal can also accept image data that are digitised to 12 bits/pel/component for JPEG mode. This is also true for T.43 mode if bit 36 is also set to "1". In a DCS frame, setting bit 71 to "0" indicates that the calling terminal's image data are digitised to 8 bits/pel/component for JPEG mode. This is also true for T.43 mode if bit 36 is also set to "1". Setting bit 71 to "1" indicates that the calling terminal transmits image data which has been digitised to 12 bits/pel/component for JPEG mode. This is also true for T.43 mode if bit 36 is also set to "1".

NOTE 38 – In a DIS/DTC frame, setting bit 73 to "0" indicates that the called terminal expects a 4:1:1 subsampling ratio of the chrominance components in the image data; the a* and b* components in the CIELAB colour space representation are subsampled four times to one against the L* (Lightness) component. The details are described in Annex E/T.4. Setting bit 73 to "1" indicates that the called terminal, as an option, accepts no subsampling in the chrominance components in the image data. In a DCS frame, setting bit 73 to "0" indicates that the called terminal uses a 4:1:1 subsampling ratio of the a* and b* components in the image data. Setting bit 73 to "1" indicates that the called terminal does no subsampling.

NOTE 39 – In a DIS/DTC frame, setting bit 74 to "0" indicates that the called terminal expects that the CIE Standard Illuminant D50 is used in the colour image data as specified in ITU-T T.42. Setting bit 74 to "1" indicates that the called terminal can also accept other illuminant types besides the D50 illuminant. Setting bit 68 to "1" indicates that the terminal has the JPEG coding capability as described in Annex E/T.4. Setting bit 36 to "1" indicates that the terminal has the colour coding capability as described in ITU-T T.43. In a DCS frame, setting bit 74 to "0" and bit 68 or bit 36 to "1", indicates the calling terminal uses the D50 illuminant in the colour image data representation a specified in ITU-T T.42. Setting bit 74 to "1" indicates that another type of illuminant is used. When bits 68 and 74 are set to "1" the specification is embedded into the JPEG syntax as described in Annex E/T.4. When bits 36 and 74 are set to "1" the specification is embedded into the T.43 syntax as described in ITU-T T.43.

NOTE 40 – In a DIS/DTC frame, setting bit 75 to "0" indicates that the called terminal expects that the colour image data are represented using the default gamut range as specified in ITU-T T.42. Setting bit 75 to "1" indicates that the called terminal can also accept other gamut ranges. Setting bit 68 to "1" indicates that the terminal has the JPEG coding capability, as described in Annex E/T.4. Setting bit 36 to "1" indicates that the terminal has the colour coding capability, as described in ITU-T T.43 . In a DCS frame, setting bit 75 to "0" and bit 68 or bit 36 to "1", indicates that the calling terminal uses the default gamut range as specified in ITU-T T.42. Setting bit 75 to "1" indicates that the calling terminal uses a different gamut range. When bits 68 and 75 are set to "1", the specification is embedded into the JPEG syntax as described in Annex E/T.4. When bits 36 and 75 are set to "1", the specification is embedded into the T.43 syntax as described in ITU-T T.43.

NOTE 41 – Some terminals which conform to the pre-1996 versions of this Recommendation may set this bit to "1". Such terminals will give an answering sequence as shown in Figure III.2.

NOTE 42 – It is understood that for backwards compatibility, a transmitting terminal may ignore the request for the 64 octet frame and therefore the receiving terminal must be prepared to handle 256 octet frames by some means.

NOTE 43 – See C.7.2

NOTE 44 – Clarification on the use of selective polling based on the settings of bit 47 and bit 35 is given in 5.3.6.1.2, item 5).

NOTE 45 – Clarification on the use of subaddress for polling based on the setting of bit 35 is given in 5.3.6.1.2, item 6).

NOTE 46 – In a DIS/DTC frame, setting bit 37 to "0" indicates that the called terminal can only accept image data that are interleaved by stripe interleave (128 line/stripe or less). Setting bit 37 to "1" indicates that the called terminal can also accept plane interleaved image data. In a DCS frame, setting bit 37 to "0" indicates that the calling terminal's image data are interleaved through stripe interleave. Setting bit 37 to "1" indicates that the calling terminal's image data are interleaved through plane interleave. The detail of both interleaving methods are described in ITU-T T.43.

NOTE 47 – The DCS is not emitted in the context of Annex H; FIF of DCS is included within the new signal "DEC' (see H.6.1) where the corresponding bit 82 must be set to "1".

Table 2/T.30 *(continued)*

NOTE 48 – In a DIS/DTC frame, setting bit 98 to "0" indicates that the called terminal does not have the capability to accept 100 pels/25.4 mm × 100 lines/25.4 mm spatial resolution for colour or gray-scale images. Setting bit 98 to "1" indicates that the called terminal does have the capability to accept 100 pels/25.4 mm × 100 lines/25.4 mm spatial resolution for colour or gray-scale images. Bit 98 is valid only when bit 68 is set to "1". In a DCS frame, setting bit 98 to "0" indicates that the calling terminal does not use 100 pels/25.4 mm × 100 lines/25.4 mm spatial resolution for colour or gray-scale images. Setting bit 98 to "1" indicates that the calling terminal uses 100 pels/25.4 mm × 100 lines/25.4 mm spatial resolution for colour or gray-scale images.

NOTE 49 – In a DIS/DTC frame, setting bit 97 to "0" indicates that the called terminal does not have the capability to accept 300 pels/25.4 mm × 300 lines/25.4 mm or 400 pels/25.4 mm × 400 lines/25.4 mm resolutions for colour/gray-scale images or T.44 Mixed Raster Content (MRC) mask layer. Setting bit 97 to "1" indicates that the called terminal does have the capability to accept 300 pels/25.4 mm × 300 lines/25.4 mm or 400 pels/25.4 mm × 400 lines/25.4 mm resolutions for colour/gray-scale images and MRC mask layer. Bit 97 is valid only when bits 68 and 42 or 43 (300 pels/25.4 mm × 300 lines/25.4 mm or 400 pels/25.4 mm × 400 lines/25.4 mm) are set to "1". In a DCS frame, setting bit 97 to "0" indicates that the calling terminal does not use 300 pels/25.4 mm × 300 lines/25.4 mm or 400 pels/25.4 mm × 400 lines/25.4 mm resolutions for colour/gray-scale images and mask layer. Setting bit 97 to "1" indicates that the calling terminal uses 300 pels/25.4 mm × 300 lines/25.4 mm or 400 pels/25.4 mm × 400 lines/25.4 mm resolutions for colour/gray-scale images and MRC mask layer. Bit 97 is valid only when bits 68 and 42 or 43 (300 pels/25.4 mm × 300 lines/25.4 mm and 400 pels/25.4 mm × 400 lines/25.4 mm) are set to "1".

NOTE 50 – In a DIS/DTC frame, setting the value of bits 92 through 94 to "0" indicates that the called terminal does not have the capability to accept T.44 Mixed Raster Content (MRC) pages. Setting the value of bits 92 through 94 to non-zero (> 0) indicates that the called terminal does have the capability to accept MRC pages. Bits 92 through 94 are valid only when bit 68 or 115 is set to "1". In a DCS frame, setting the value of bits 92 through 94 to "0" indicates that the calling terminal does not transmit MRC pages. Setting the value of bits 92 through 94 to non-zero (> 0) indicates that the calling terminal transmits MRC colour or black-and-white only pages. The non-zero value of bits 92 through 94, ranging from X'01' to X'07', identifies the greatest functional mode (performance level) of MRC that is supported, as per ITU-T T.44. For hexadecimal value interpretation, bit 94 is defined as the MSB while bit 92 is the LSB (e.g. 100 for mode X'01'). Mode value X'01' identifies the base mode of T.44, each incremental mode shall support the capabilities defined in the previous mode. In the DIS/DTC, setting the mode value > 0 together with bit 68 or 115 defines the capabilities, of the colour (as defined in T.44) or black-and-white only (MRCbw as defined in Annex H/T.4) profiles of MRC respectively, that are supported by the called terminal. In the DCS frame, the mode value may be set to any value less than or equal to that identified in the called terminals DIS/DTC frame. The mode value identified in the DCS frame defines the greatest MRC mode that will be applied to the transmitted data stream.

NOTE 51 – In a DIS/DTC frame, setting bit 95 to "0" indicates that the called terminal does not have the capability to accept page length maximum stripe size when receiving T.44 Mixed Raster Content (MRC) pages. Setting bit 95 to 1 indicates that the called terminal does have the capability to accept page length maximum stripe size when receiving MRC pages. Bit 95 is valid only when the value of bits 92 through 94 is set non-zero (> 0). In a DCS frame, setting bit 95 to 0 indicates that the calling terminal does not use page length maximum stripe size when transmitting MRC pages. Setting bit 95 to "1" indicates that the calling terminal uses page length maximum stripe size when transmitting MRC pages. Bit 95 is valid only when the value of bits 92 through 94 is non-zero (> 0).

NOTE 52 – If bit 34 in a DIS frame is set to "1", this indicates the transmitter has multiple selective polling capability. If bit 34 in a DTC frame is set to "1", this indicates additional selection of document continues after current one. The transmitter can send EOS after the transmission of the final page of current document only if bit 34 in the received DTC is set to "1".

NOTE 53 – Bit 83 is used in the scope of Annex G (see G.2.3) and Annex D/T.36 (see D.2/T.36).

NOTE 54 – Bit 99 indicates the use of the simple Phase C BFT negotiation method defined in Annex B. Some appropriate examples are given in Appendix V.

NOTE 55 – The BFT negotiations capability specified by bit 99 is valid only when bit 53 (binary file transfer) is set to "1".

NOTE 56 – Bits 85 and 86 are reserved for future enhancement to Annex D/T.36.

NOTE 57 – Bits 89 and 90 are reserved for future enhancement to Annex E/T.36.

NOTE 58 – Bits 38 and 39 are used in the scope of Annex B/T.4 (see B.4.5/T.4)

NOTE 59 – When bit 38 and 39 are set to "1", bit 57 shall also be set to "1"

NOTE 60 – Bit 1 set to "1" indicates that the terminal has the Simple mode capability defined in ITU-T T.37

NOTE 61 – Bit 3 set to "1" indicates that the terminal has the capability to communicate using ITU-T T.38.

NOTE 62 – Non-square resolutions are applicable only to black and white images.

Table 2/T.30 *(concluded)*

NOTE 63 – Internet address signals CIA, TSA or CSA can be sent and received when Internet capabilities, bit 1 or 3 of DIS, DCS and DTC, are indicated. When a terminal indicates Internet capabilities by DIS, DCS or DTC of bit 1 or 3, the recipient terminal may process or ignore these signals.

NOTE 64 – In a DIS/DTC frame, setting bit 110 to "0" indicates that the called terminal does not have the capability to accept 600 pels/25.4 mm × 600 lines/25.4 mm resolutions for colour/gray-scale images or T.44 Mixed Raster Content (MRC) mask layer. Setting bit 110 to "1" indicates that the called terminal does have the capability to accept up to 600 pels/25.4 mm × 600 lines/25.4 mm resolutions for colour/gray-scale images and MRC mask layer. Bit 110 is valid only when bits 68 and 105 (600 pels/25.4 mm × 600 lines/25.4 mm) are set to "1". In a DCS frame, setting bit 110 to 0 indicates that the calling terminal does not use 600 pels/25.4 mm × 600 lines/25.4 mm resolutions for colour/gray-scale images and mask layer. Setting bit 110 to "1" indicates that the calling terminal uses 600 pels/25.4 mm × 600 lines/25.4 mm resolutions for colour/gray-scale images and MRC mask layer. Bit 110 is valid only when bits 36 or 68 and 105 (600 pels/25.4 mm × 600 lines/25.4 mm) are set to "1".

NOTE 65 – In a DIS/DTC frame, setting bit 111 to "0" indicates that the called terminal does not have the capability to accept 1200 pels/25.4 mm × 1200 lines/25.4 mm resolutions for colour/gray-scale images or T.44 Mixed Raster Content (MRC) mask layer. Setting bit 111 to "1" indicates that the called terminal does have the capability to accept up to 1200 pels/25.4 mm × 1200 lines/25.4 mm resolutions for colour/gray-scale images and MRC mask layer. Bit 111 is valid only when bits 68 and 106 (1200 pels/25.4 mm × 1200 lines/25.4 mm) are set to "1". In a DCS frame, setting bit 111 to "0" indicates that the calling terminal does not use 1200 pels/25.4 mm × 1200 lines/25.4 mm resolutions for colour/gray-scale images and mask layer. Setting bit 111 to "1" indicates that the calling terminal uses 1200 pels/25.4 mm × 1200 lines/25.4 mm resolutions for colour/gray-scale images and MRC mask layer. Bit 111 is valid only when bits 36 or 68 and 106 (1200 pels/25.4 mm × 1200 lines/25.4 mm) are set to "1".

NOTE 66 – The receiving terminal may print the image data only on to one side even if this bit is set to "1".

NOTE 67 – Alternate mode is defined as transmission of a front page and a reverse page alternately. Continuous mode is defined as transmission all front pages and then of all reverse pages.

NOTE 68 – When bit 114 in DIS is set to "1", bit 113 shall be set to "1".

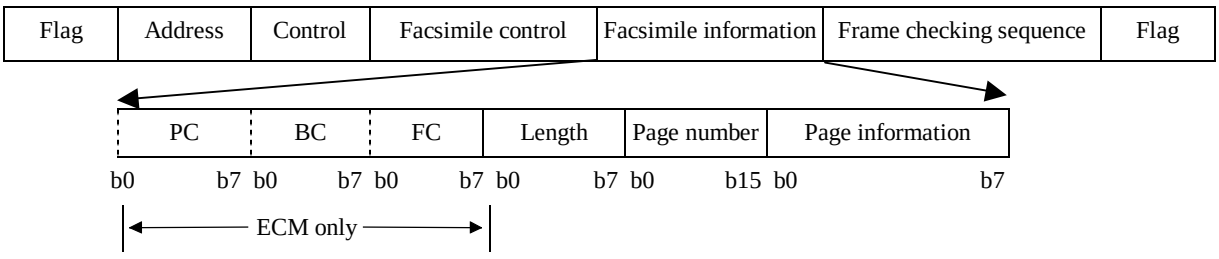
NOTE 69 – In a DIS/DTC frame, setting the value of bit 115 to "0" indicates that the called terminal does not have the capability to accept Annex H/T.4 black-and-white mixed raster content profile (MRCbw) pages. Setting the value of bit 115 to "1" and the value of bits 92 through 94 to non-zero (> 0) indicates that the called terminal does have the capability to accept MRCbw pages. The value of bits 92 through 94 determines the highest MRCbw mode supported. Interpretation of the values of bits 92 through 94 is defined in Note 50. In the DCS frame, bit 115 shall be set to "0" and the value of bits 92 through 94 shall determine the MRC modes as defined in Note 50.

NOTE 70 – In a DIS/DTC frame, setting the value of bits 117 through 118 to "0" indicates that the called terminal does not have the capability to provide notification of its memory capacity. Setting the value of bits 117 through 118 to non-zero (> 0) indicates that the called terminal does have the capability to provide notification of its memory capacity. In a DCS frame, setting the value of bits 117 through 118 to "0" indicates that the sending terminal does not use the memory consuming function. Setting the value of bits 117 through 118 to non-zero (> 0) indicates that the sending terminal is using the memory consuming function. Each value of the three non-zero values of bits 117 through 118 represents a different level of memory capacity or memory consumed.

2) Clause 5.3.6.1.6

Add new Note 3 to 5.3.6.1.6 to read as follows:

NOTE 3 – Post-message command coding format when applying double side mode is as follows:



One octet for length, two octets for page number and one octet for page information are required for Facsimile information. A page number shall start from 1. The example of the length is "03h" and page number is "06h" is as follows:

Length	Page number
1 1 0 0 0 0 0 0	0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0
b0 b7	b0 b15

The fourth octet is known as page information and the values which apply for this octet are shown in the table below. Bit 7 is an extended bit, which shall be set to "1" if there is additional page information octets

The receiving terminal shall receive unknown extended FIF data to keep the interoperability.

Bit n^{o}	Page information
0	Page value 0: front side / 1: reverse side
1	Reserved
2	Reserved
3	Reserved
4	Reserved
5	Reserved
6	Reserved
7	Extend bit – default "0"

3) Clause 5.3.6.2.7

Amend 5.3.6.2.7 to read as follows:

5.3.6.2.7 Non-standard capabilities (NSF, NSC, NSS)

When a non-standard capabilities FCF is utilized, it must be immediately followed by an FIF. This information field will consist of at least two octets. The first octet will contain an ITU-T country code (see Note below). Additional information could then be transmitted within the FIF field. This information is not specified and can be used to describe non-standard features, etc.

NOTE – The procedure for obtaining a registered ITU-T code is given in ITU-T T.35.

The country code shall be mapped to the FIF by mapping the most significant bit of the non-standard capabilities information to the most significant bit of the FIF. The order in which the bits are transmitted is from the most to the least significant bit (bit 8 to bit 1).

Note that some existing terminals may perform the bit mapping in the wrong order (bit 1 to bit 8). This may result in these terminals masquerading as a terminal with a different country code, possibly causing erroneous operation.

4) Annex B

Replace Annex B with the following:

ANNEX B

BFT diagnostic message

B.1 Introduction

This annex defines the signals and procedures which shall be used when conducting Binary File Transfer (BFT) or BFT negotiation operations within Group 3 facsimile. The syntax and use of the file diagnostic message (FDM) frame within Group 3 facsimile are defined. The methods which are described shall be applicable when using the Binary File Transfer format defined within ITU-T T.434. The purpose of BFT negotiations within Group 3 facsimile is to confirm that the attributes of a file transfer request will be acceptable to the receiver prior to the actual transfer of binary file data.

B.2 Normative References

The following ITU-T Recommendations contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations indicated below. A list of the currently valid ITU-T Recommendations is regularly published.

– ITU-T T.434 (1999) *Binary file transfer format for the telematic services.*

– ITU-T X.680 (1997) | ISO/IEC 8824-1:1998, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation.*

B.3 Definitions

The *File Diagnostic Message (FDM) frame* is an optional post-message response which may be sent by the receiver. It provides the transmitter with diagnostic information concerning the current transfer taking place. The semantics and the syntax of the FDM are described in ITU-T T.434 and extended for use in Group 3 facsimile within this annex (see B.8.2.1).

B.4 Signals and Components for BFT file transfer operations

B.4.1 Diagnostic messages in Group 3 facsimile

The file diagnostic message may be used during BFT file transfer operations or as part of BFT negotiations within Phase C of the facsimile procedure. The syntax and procedures for use of diagnostic messages within Group 3 facsimile file transfer procedures are defined below. The use of diagnostic messages during BFT negotiations in Phase C is defined in B.6.3.1.

B.4.2 Use of diagnostic messages during file transfer operations.

The diagnostic information may be composed of one or more messages. Each message is informative, transient or permanent. An informative message does not require recovery and does not affect the current state of the BFT. A transient message may not re-occur if the sequence of events is repeated but does imply the failure of the present BFT being performed. A permanent message is sent every time the sequence of events is repeated, and implies the failure of at least the present BFT being performed.

A diagnostic message may be sent in place of an MCF frame. The message may be sent using one or more HDLC frames. If more than one HDLC frame is used, only the last one will have the control field set for a final frame. The encapsulation of the diagnostic information within a frame is completely independent of attribute boundaries. However, each frame must meet the transmission requirements of this Recommendation.

If the transmitter receives a transient or permanent message, it should review the set-up for the current binary file being transmitted. Control will continue as though four PPRs were received (emission of CTC command).

B.4.3 Syntax of FDM Facsimile Information field

The syntax for the FDM Facsimile Information field is defined in B.8.2.

B.5 Service Models for BFT Negotiations

There are two service models for Binary File Transfer negotiations within Group 3 facsimile. The two models are:

1) File Transfer Request.
2) Identification of Capabilities.

Depending upon the application, elements of one or both service models may be used in order to successfully complete a BFT negotiation. The two services models are defined below.

B.5.1 File Transfer Request

When this service model is used, the facsimile transmitter makes a File Transfer request and the receiver responds with either a positive or negative acknowledgement. If the initial request is not accepted, the transmitter may choose to make additional requests.

B.5.2 Identification of Capabilities

In this service model, the called facsimile terminal identifies its file transfer capabilities, optionally including a list of support file types, and then the sender makes a selection from the list of supported capabilities.

B.6 Signals and Components for BFT Negotiations

It is possible to conduct Binary File Transfer negotiations via either a simple Phase C mode, using the traditional DIS/DTC/DCS negotiations or in an extended, Phase B, mode, using extended signals. The signals and settings which are used for the simple mode and the extended mode are defined below.

B.6.1 Settings for DIS/DTC bits

A receiver shall indicate support for the simple Phase C method by setting bit 99 within the DIS or DTC to "1". A transmitter may indicate the intention to proceed with a file request using the simple Phase C method by setting bit 99 within the DCS.

A receiver shall indicate support for the extended Phase B method, by setting bit 100 in the DIS or DTC to "1", and by using the extended settings as shown in next section.

B.6.2 Settings for Extended Signals

Extended signals protocol may optionally be used to conduct Binary File Transfer negotiations that support extended features. The extended features may include:

1) Identification of BFT Capabilities.
2) Conducting single or multi-pass BFT negotiations via the file request method within Phase B of the Group 3 facsimile procedure.

The use of the extended signals to select further BFT negotiations method via the Phase C method is for further study.

The following signals are used for Phase B negotiations:

– FNV, RNR and RR as defined in the main body of this Recommendation (see 5.3).
– DES, DER, DTR, DEC, TNR, TR, DNK as defined in Annex H (see H.6.1) .

Supergroups

The following Supergroup 8 bit code should be used to introduce the groups which are applicable for extended Binary File Transfer Negotiations: "0000 0100".

Groups

The groups which may be used for extended Binary File Transfer Negotiations are shown below.

Table B.1/T.30 – Groups for Binary File Transfer Negotiations

Group code	Name	Data content	Description
0000 0001	Negotiations	Bit settings defined in Table B.2	Define bit settings for Phase B
0000 0010	Transfer Request	See guidelines in B.7.1	Transmitter presents tags for a file transfer request.
0000 0011	File Types	See guidelines in B.7.2	Receiver presents a list of supported binary file types.
0000 0101	Media types	See guidelines in B.7.2	Receiver presents a list of supported media methods
0000 0100	Compression Types	See guidelines in B.7.2	Receiver presents a list of supported compression methods.
0000 0101	Capabilities Request	Bit settings as defined in Table B.3	Request to see if receiver supports specific lists of capabilities
NOTE – The unused bits of this value octet are set to "0" by default.			

Table B.2/T.30 – Coding of the value octet for the negotiations group

Meaning of Codes	Coding of the value octet of the negotiations group
Reserved for Simple Phase C BFT Negotiations Capability/Command	Bit No. 7 6 5 4 3 2 1 0 1 x x x x x x x
Extended BFT Negotiations Capability/Command	Bit No. 7 6 5 4 3 2 1 0 x 1 x x x x x x
Bits 0 to 5 are reserved for future use	Bit No. 7 6 5 4 3 2 1 0 x x x x x x x x
NOTE – The unused bits of this value octet are set to "0" by default.	

Table B.3/T.30 – Coding of the value octet for the Capabilities Request group

Meaning of Codes	Coding of the value octet of the negotiations group
Request List of Supported File Types	Bit No. 7 6 5 4 3 2 1 0 1 x x x x x x x
Request list of Supported Compression Types	Bit No. 7 6 5 4 3 2 1 0 x 1 x x x x x x
Request List of Supported Media Types	Bit No. 7 6 5 4 3 2 1 0 x x 1 x x x x x
Bits 0 to 4 are reserved for future use	Bit No. 7 6 5 4 3 2 1 0 x x x x x x x x

B.6.3 Use of Group 3 Fax Signals for BFT Negotiations

B.6.3.1 Simple Phase C Method

The Simple Phase C method for BFT negotiations may be selected using the traditional DIS/DTC negotiations method. A file transfer request using the Simple Phase C method is submitted by presenting BFT negotiations data within Facsimile Coded Data frames available within Group 3 error correction mode. The MCF (message confirmation) signal is used to accept the file request and the File Diagnostic Message (FDM) is used to reject the file request. The syntax of the FIF of the FDM signal for Group 3 facsimile is defined in B.8.2.1.

B.6.3.2 Extended Method – Phase B

A facsimile receiver may identify its BFT Negotiations capabilities, optionally including lists of supported file types and values for other BFT attributes, using the DES signal. Where applicable, for polling operations, a terminal may identify its BFT negotiations capabilities using the DTR signal.

The following extended signals may be used when conducting file transfer negotiations within Phase B: DES, DEC, DER, DTR.

The FNV signal shall be used for the purpose of a negative acknowledgement, when it is necessary to reject all or part of a BFT file request via Phase B. Per Annex H, when all extended negotiations are complete, the CFR signal is issued by the receiver.

The following signals may be used for flow control during Phase B, per the procedures defined within Annex H.6.3: TNR, TR, RNR, RR. The FNV and DNK signals provide error control features as defined within Annex H.6.

B.7 Procedures for BFT Negotiations

B.7.1 File Transfer Request

B.7.1.1 Phase C Method

A receiver shall indicate support for the Phase C method by setting bit 99 within the DIS or DTC to "1". A transmitter may indicate the intention to proceed with a file request using the Phase C method by setting bit 99 within the DCS.

B.7.1.2 Phase B Method.

A transmitting terminal may issue a file transfer request within Phase B by using either the DER or DEC signal, where the FIF shall include the BFT Negotiations supergroup and the Transfer Request group. The data content of the Transfer Request group shall consist of all or a subset of the T.434 tags for the proposed file transfer (see B.7.2.1). The DER signal shall be used where additional information is needed from the receiver before completing the negotiation. The DEC signal shall be used when issuing a command where further information is not requested from the receiver.

B.7.2 Identification of Capabilities

A called or receiving terminal may identify its BFT capabilities using the DES signal (or the DTR signal when polled operations are to be requested). The capabilities are contained within the Facsimile Information Field of the DES/DTR and are encoded using the BFT supergroup and one or more related groups. The terminal indicates support for BFT negotiations using the Negotiations group. The terminal may indicate support for specific capabilities using the following groups:

1) File Types – list of supported BFT file types.
2) Compression Types – list of supported BFT compression types.
3) Media Types – list of supported BFT media types.

NOTE – Identification of Capabilities is only available with the Phase B method.

B.7.3 BFT File Transfer Response

B.7.3.1 Simple Phase C Method

The receiver indicates acceptance of a file transfer request by issuing an MCF signal. The receiver may reject a file transfer request by issuing an FDM signal containing a T.434 diagnostic message code indicating the reason for the rejection. The receiver may optionally return the T.434 tags and values which are not accepted as part of the FDM diagnostic information.

B.7.3.2 Enhanced Phase B Method

The receiver indicates acceptance of a file transfer request by issuing a DES signal in response to a request made via the DER signal or a CFR in response to the DEC command. The receiver may reject a file transfer request by issuing an FNV signal with the BFT negotiations reason code set and is required to return a T.434 diagnostic message code indicating the reason for the rejection. The receiver may optionally return the T.434 tags and values which are not accepted as part of the FNV diagnostic information.

B.8 Presentation of BFT Negotiations Data

This clause offers rules on how BFT data should be presented during BFT negotiations and syntax for the related signals.

B.8.1 BFT File Transfer Request

For a binary file transfer request, the full ASN.1 coding for a BINARY-DATA-Message shall be used as defined in ITU-T T.434. All or a subset of the tags may be presented during the request. The data-contents tag, length and value may be omitted. Only definite length coding shall be used.

B.8.1.1 Phase C Method File Transfer Request

Syntax for Phase C Method Transfer Request:

Phase C Signal ::= <T.434 Binary Data Message>

B.8.1.2 Phase B Method File Transfer Request

Syntax for Phase B Method Transfer Request:

Phase B Method Signal: DER or DEC.

Group Structure:

Tag Encoded Data ::=

<BFT Negotiations SG><SG Length>< Transfer Request Group Tag><Group Length><Group Value>

<Group Value> ::= <T.434 Binary Data Message>

B.8.2 BFT File Transfer Response

For a response to a BFT File Transfer request, the following presentation rules apply:

1) Only definite length coding is permitted;
2) If multiple tags are to be returned, use the "IMPLICIT SEQUENCE OF SEQUENCE" coding;
3) If only a single tag is to be returned, only present the ASN.1 syntax for that tag (and data as applicable).

B.8.2.1 Phase C Method File Transfer Response

Phase C Method Signals: FDM, MCF.

Syntax for FDM Response

FIF ::= <Diagnostic Code>[<Frame Number><Diagnostic Information>]

where the <Diagnostic Information> ::= <Length><Rejected T.434 data>

The structure of the octets of the FIF for the FDM frame shall be as follows:

Octet	Contents	Requirements	Additional Comments
First	Diagnostic Code	Mandatory	Values defined in Table B.3/T.434
Second	Frame Number	Optional	To allow multi-frame responses.
Additional Octets	Diagnostic Information	Optional	Structure for rejected T.434 data

The format of the rejected T.434 data shall follow the rules defined in B.8.2.

B.8.2.2 Phase B Method File Transfer Response

Phase B Method Signals: FNV, DES, CFR.

Syntax for FNV Response.

FNV bit setting for BFT Negotiations Rejection: bit n

FIF ::= <first octet><extend octet><frame_number><FDM_diagnostic_code><length><rejected_T434_data>

The rejected T.434 data are coded based on the presentation rules for responses. The values for the FDM_diagnostic_code are contained in Table B.3/T.434.

B.8.3 Lists of Capabilities

For lists of capabilities of a single attribute, called terminals or receivers use the ASN.1 "OF" syntax, followed by the list of tags and values. The following rules apply:

Only definite length coding is permitted.

Fax transmitters may make a specific request for lists of capabilities using the "Capabilities Request" group, whose structure and syntax is defined in B.8.4.

B.8.3.1 Syntax for File Types Capability List

Phase B Method signal: DES or DTR.

Group Structure:

Tag Encoded Data ::=

<BFT Negotiations SG><SG Length><File Types Group Tag><Group Length><Group Value>

<Group Value> ::= <SEQUENCE OF OBJECT IDENTIFIER >

B.8.3.2 Syntax for Compression Types Capability List

Phase B Method signal: DES or DTR.

Group Structure:

Tag Encoded Data ::=

<BFT Negotiations SG><SG Length><Compression Types Group Tag><Group Length><Group Value>

<Group Value> ::= <SEQUENCE OF OBJECT IDENTIFIER >

B.8.3.3 Syntax for Media Types Capability List

B Method signal: DES or DTR.

Group Structure:

Tag Encoded Data ::=

<BFT Negotiations SG><SG Length><Media Types Group Tag><Group Length><Group Value>

<Group Value> ::= <SEQUENCE OF Mime-Media-Type-Attribute >

NOTE – The syntax of the Mime-Media-Type-Attribute is defined in ITU-T T.434.

B.8.4 Capabilities Request

Transmitters may make a specific request for lists of capabilities using the "Capabilities Request" group. One or more requests may be made at a time, depending upon the bit settings for the group value octet.

B.8.4.1 Syntax for Capabilities Request

B Method signal: DER.

Group Structure:

Tag Encoded Data ::=

<BFT Negotiations SG><SG Length><Capabilities Request Group Tag><Group Length><Group Value>

The group value is a single octet as defined in Table B.3.

5) Annex H

In Annex H for all occurrences, replace the word "faultily" with "improperly"

6) Annex J

Replace Annex J with the following:

ANNEX J

Procedure for Group 3 document facsimile transmission of Mixed Raster Content (MRC) images

J.1 Scope

The method for Mixed Raster Content (MRC) image representation is defined in ITU-T T.44. Together with Annex H/T.4, this Annex provides specification for the application of MRC in Group 3 facsimile. Unconstrained MRC, as defined in T.44, shall be applied as a colour option of Annex E/T.4 (i.e. Annex E/T.4 shall be implemented in unconstrained MRC applications). Black-and-white constrained MRC, as defined in Annex H/T.4, shall be implemented in non-colour applications (i.e. applications that do not implement Annex E/T.4). MRC defines a means to efficiently represent raster-oriented pages that contain a mixture of multi-level (e.g. continuous-tone and palettized colour) and bi-level (e.g. text and line-art) images by combining different encodings, spatial and colour resolutions on a single page. More than one of the multi-level encodings (e.g. T.81 and T.82 as per ITU-T T.43) and/or bi-level encodings (e.g. T.6 and T.4, one and two-dimensional) which are negotiated (as defined within this Annex) may be combined within a page, however, only bi-level encodings may be used in the MRC mask layer. Similarly more than one of the square spatial resolutions (same resolution in both horizontal and vertical direction) and colour resolutions (i.e. bits/pels/component and chrominance subsampling) which are negotiated (as defined within this Annex) may be combined within a page. This Annex does not introduce new encodings or resolutions. The method of image segmentation is beyond the scope of this Annex, segmentation is left to the manufacturer's implementations.

J.2 References

The following ITU-T Recommendations and other references contain provisions, which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

The references of Recommendation T.44 apply to this annex, along with the following additional references:

– ITU-T T.4 (1999), *Standardization of Group 3 facsimile terminals for document transmission.*

– ITU-T T.44 (1999), *Mixed Raster Content (MRC).*

J.3 Definitions

The definitions in ITU-T T.44 apply to this annex.

J.4 Image representation

This Annex makes provision for encapsulating two or more ITU-T encodings, spatial and colour resolutions as defined in ITU-T T.44 "Mixed Raster Content (MRC)". This provision marks a significant departure from normal T.30 procedures that typically permits only a single encoding, spatial and colour resolution within a page.

A page is composed from a set of page-wide stripes of image data, which are coded independently. The stripes are transmitted sequentially from the top to the bottom of the page. Data is transmitted in a bit stream of least to most significant bit order.

The different segments of the raster data are processed according to their individual attributes; text and line-art data (bi-level data), pictures and colour gradients (multi-level data). These different data types (bi-level and multi-level) are placed in separate layers/planes within the page and processed appropriately. The spatial details associate with text and line-art data is in the mask layer(s) (odd numbered layers) while the colour details of the text and line-art data is in the image layers (odd numbered layers such as the "foreground" layer). The continuous-tone colours associated with pictures and colour sweeps are in the lower "background" layer. The process of image regeneration is controlled by the bi-level mask layer(s) selecting whether pixels from the image layer below, such as background (e.g. contone) or image layer above, such as foreground (e.g. text/line-art colour) will be reproduced.

The stripes are composed of one or more layers. No more than 3 types of stripes shall be used when applying the base mode (Mode 1) or Mode 2 of ITU-T T.44. Mode 3 defines provisions for more than three, up to N (where N is an integer), types of stripes. Stripe types are classified according to their layer (image type) content:

- N-layer stripe (NLS) where N is an integer, so referenced since it contains more than three layers.
- 3-layer stripe (3LS), so referenced since it contains all three of the foreground, mask and background layers.
- 2-layer stripe (2LS), so referenced since it contains coded data for two of the three layers (the third is set to a fixed value). The two layers may be mask and foreground or mask and background layers.
- 1-layer stripe (1LS), so referenced since it contains coded data for only one of the three layers (the other two are set to fixed values). The one layer may be mask, foreground or background. The 1LS is appropriate when addressing an image that contains one of monochrome text/line-art, contone image or possibly richly coloured graphics.

Each layer is coded using a recommended ITU-T encoding, spatial and colour resolution. A different encoding and colour resolution may be applied within each layer. The square spatial resolutions (same resolution in both horizontal and vertical direction) of Table 2/T.30 are available for use in this annex. The resolution of the main mask layer is fixed for the entire page. In general, it is possible to define lower spatial resolution for other layers. Within a stripe, varying spatial resolutions may be combined only when the resolutions of the other layers are integral factors of the main mask resolution. For example, if the main mask resolution is 400 pels/25.4 mm, the background and foreground layer may each be either 100, 200 or 400 pels/25.4 mm. The main mask resolution is specified in the page header. The resolutions of the other layers are specified in the layer data.

These encodings, spatial and colour resolutions are selected from a set that is negotiated at the start of the session.

Information required to decode the page, such as coding types available for use within the layers, is specified within the page header (start of page marker segment). Maximum Stripe height shall be negotiated at the start of the session. Mode 1 requires the actual applied stripe height to be specified within the stripe header (start of stripe marker segment) while other modes require its specification within the layer data structure. Information required to decode a layer is included in the stripe header and the layer data.

The main mask (layer 2) shall be transmitted first, followed by the background (layer 1) the foreground (layer 3), layer 4, layer 5 ..., layer N.. Details of the syntax are described in ITU-T T.44.

The use of error correction mode (ECM) for error free transmission, as defined in Annex A/T.4 and this Recommendation, is mandatory for the procedure specified in ITU-T T.44. Under the ECM mode of transmission the encoded image data sequence, associated headers and the layer data are embedded in the Facsimile Coded Data (FCD) part of the HDLC (High Level Data Link Control) transmission frames that are specified in Annex A. In alignment with Annex A/T.4, to complete the last frame, pad characters (X'00', the null character) may be added after ending marker within the last ECM frame of the page.

J.4.1 Black-and-White only or colour representation

The unconstrained MRC provisions accommodating use of multi-level and/or bi-level coders within a page shall only be implemented when the facsimile base colour mode, as defined in Annex E/T.4, is also implemented (i.e. Baseline JPEG is implemented). In other words, unconstrained MRC is a colour option of Annex E/T.4. When Annex E/T.4 is not implemented, then only the bi-level coder constrained provisions of MRC, as defined in the " Black-and-White Mixed Raster Content Profile (MRCbw)" clause 4 of Annex H/T.4, shall be implemented. The MH (T.4 one-dimensional) coder is the only required coder when implementing MRCbw.

All modes of MRC are available for use with Black-and-White Mixed Raster Content Profile, however, use of Modes 2 or higher modes is strongly recommended.

J.4.2 Shared data representation

MRC Mode 4 requires implementation of the SDMx (Share Data) marker segment provision to share coding information between pages, stripes or layers. The SDMx marker segment provision may be used with any encoder that benefits from sharing information between pages, stripes or layers. The JBIG2 encoder, however, shall only be used in combination with the SDMx marker segment provision.

J.4.3 Colour tag representation

The MRC Mode 4 optional colour tag provisions may be implemented in the representation of foreground colour. The T.45 "Run-length Encoder" shall be used to code the colour values of the foreground colour tags. Colour tags shall only be used with foreground layers that are associated with JBIG2 encoded mask layers.

J.5 Layer transmission order

In multi-layer stripes, the bi-level main mask data is transmitted first, followed by the background layer, the foreground layer, layer 4, layer 5, ..., layer N. In a multi-layer stripe without a background layer, the bi-level main mask image data is transmitted first, followed by the foreground, layer 4, layer 5, ..., layer N.

J.6 Negotiation

Negotiations to use the MRC (T.44) procedure, accommodating the transmission and reception of pages with mixed coding (i.e. encoding method, spatial and colour resolution, and other encoding parameters) and/or JBIG2 coding, shall be invoked through the setting of a sequence of bits in the DIS/DTC and DCS frames during the T.30 pre-message procedure (Phase B) . This optional MRC procedure is only available when the base colour encoding mode, as defined in ITU-T T.42, Annex E/T.4 and Annex E, or the Black-and-White MRC Profile is available, as indicated by the setting of Table 2 bit 68 to "1" or bit 115 to "1" respectively. Provision is made, via the value of Table 2 bits 92-94, to negotiate one of the many modes (performance level) of ITU-T T.44 to be implemented during a transmission session. Table 2,

Note 50, specifies the T.44 modes that are currently available for negotiations. Modes 1 and 2 make provision to apply one encoding scheme, one spatial and one colour resolution within each of the three layers of a stripe. Mode 3 and higher modes make provision to apply one encoding scheme, one spatial and one colour resolution within each of N layers per stripe, where N is an integer. Consult ITU-T T.44 to determine all the provisions made available by each mode.

Under the MRC procedure any of the different multi-level and bi-level coding methods, negotiated in Phase B, may be used in each of the layers. A bi-level coder must be used for the mask layer(s). Multi-level and bi-level encodings such as defined in: ITU-T T.42, Annex E/T.4 and Annex E; ITU-T T.43, Annex G/T.4 and Annex I; ITU-T T.6 and T.4 are available. Multiple coding methods may be negotiated for use during Phase B by activating more than one coding related bits in the DCS. The coding bits activated in the DCS must be a subset of those activated in the DIS. Different colour resolutions and/or subsamplings may be used between layers in the event that the DIS indicates 12 bits/pel component and/or no subsampling (1:1:1) is available. If the DCS indicates 12 bits/pel component then 8 bits/pel component may also be sent (e.g. 12 applied to the background while 8 is applied to the foreground, 12 applied to one page while 8 is applied to another). In the same manner, if the DCS indicates no subsampling then subsampling may be applied. These combinations are possible since the receiver is required to support both base modes. Additionally the applied coder, bit resolution and subsampling are identified in the layer data stream.

Multiple spatial resolutions may be negotiated for use during Phase B by activating more than one resolution related bits in the DCS. The resolution bits activated in the DCS must be a subset of those activated in the DIS. All layer resolutions must be an integral factor of the main mask layer resolution. Resolution may vary between mask layers, as long as the mask layer resolution is one of the set identified in the DCS. The main mask layer resolution is identified in the start of page marker segment.

Maximum stripe size may be negotiated between the default size of 256 lines maximum and the full height of the page. This negotiated stripe size maximum may only be changed following EOM and DIS/DCS negotiations.

J.7 Application requirements summary

1) Only bi-level ITU-T coders shall be used in mask layers (i.e. even numbered layers).
2) The Black-and-White MRC Profile, defined in Annex H/T.4, shall contain only mask layer data. The colours of the background layer (i.e. layer 1) and the foreground layers (i.e. odd numbered layers greater than one) shall be fixed to black and white respectively.
3) Coders may vary between layers and between stripes within a layer, however, the main mask coder shall be fixed for the entire page.
4) All implementations shall include the MH (T.4 one-dimensional) bi-level coder, other ITU-T bi-level coders may be used.
5) Implementations other than Black-and-White MRC Profile shall include the Baseline JPEG (T.81, as defined im Annex E/T.4) multi-level coder, other multi-level coders may be used within the image layers (i.e. odd numbered layers).
6) Only square (i.e. same resolution value in vertical and horizontal direction) ITU-T spatial resolutions shall be used.
7) Spatial and colour resolution may vary between layers and between stripes within a layer, however, the spatial resolution of all layers shall be integral factors of the main mask layer resolution and the main mask resolution shall be fixed for the entire page.
8) Dimensions of the main mask layer shall be such that the main mask layer(s) cover the entire page (i.e. each stripe has a mask layer that has a zero horizontal offset, the mask layer is always the page width, the stripe size is defined by the mask layer, and there are stripes that traverse the entire page height).
9) Pages may be subdivided into one or more contiguous horizontal stripes.
10) Maximum stripe heights of 256 lines or full page shall be accommodated.

11) Stripe width shall span the width of the page.

12) Dimensions of the main mask layer within a stripe shall be the same as the stripe dimensions.

13) Dimensions of other layers within a stripe may be the same as or less than the stripe dimensions.

14) A maximum of three (3) layers may be used in Mode 1 and Mode 2, while the number of layers are unrestricted in Mode 3 and higher level modes.

15) Error Correction Mode (ECM) shall be used during all transmissions.

16) Stripe transmission order within a page shall be in order of increasing stripe numbers.

17) Layer transmission order within a stripe shall be main mask layer (i.e. layer 2) first, followed by the background layer (i.e. layer 1), then the foreground layer (i.e. layer 3) and any other layers in order of increasing layer numbers (i.e. layers 4, 5, 6, 7, …, N). In the event that there is no background layer then the foreground layer shall immediately follow the main mask layer and any other layers in order of increasing layer numbers.

18) Layers shall be recombined and rendered in ascending order of layer numbers (i.e. layer 1 is rendered first, next layer 3 on top of layer 1, then layer 5 on top of the 1 and 3 combination, and so on until all layers have been rendered).

19) Mode 2 and higher mode implementations shall use the Start of Layer Coded Data (SLC) marker segment to specify information required to decode the coded layer data, such as layer coder, resolution, width, height, base colour and offset. Mode 1 implementations shall specify this information in the Start of Stripe (SOSt) marker segment.

20) Mode 4 and higher mode implementations may use the Shared Data (SDMx) marker segment to accommodate sharing of coding information between pages.

21) A JBIG2 encoded stream shall only be used in combination with the Mode 4 SDMx marker segment provision.

22) Shared data create (SDMc) marker segments must appear before the data stream (JBIG2) that uses the shared resources.

23) Shared data disposition (SDMd) marker segments identifying "use" of previously declared shared data resource(s) must appear before the layer in which the resource(s) is(are) used, and not before other layers. In other words, SDMd marker segments appear between layers and prior only to the layer that it will be used for. This could be between the SLC and EOH (unambiguously) or before or after the SOSt, if the use is for the first layer. Implementations must accommodate any of these placements.

24) The Black-and-White Mixed Raster Content Profile (MRCbw) (per Annex H/T.4) shall be used for black-and-white only applications of JBIG2.

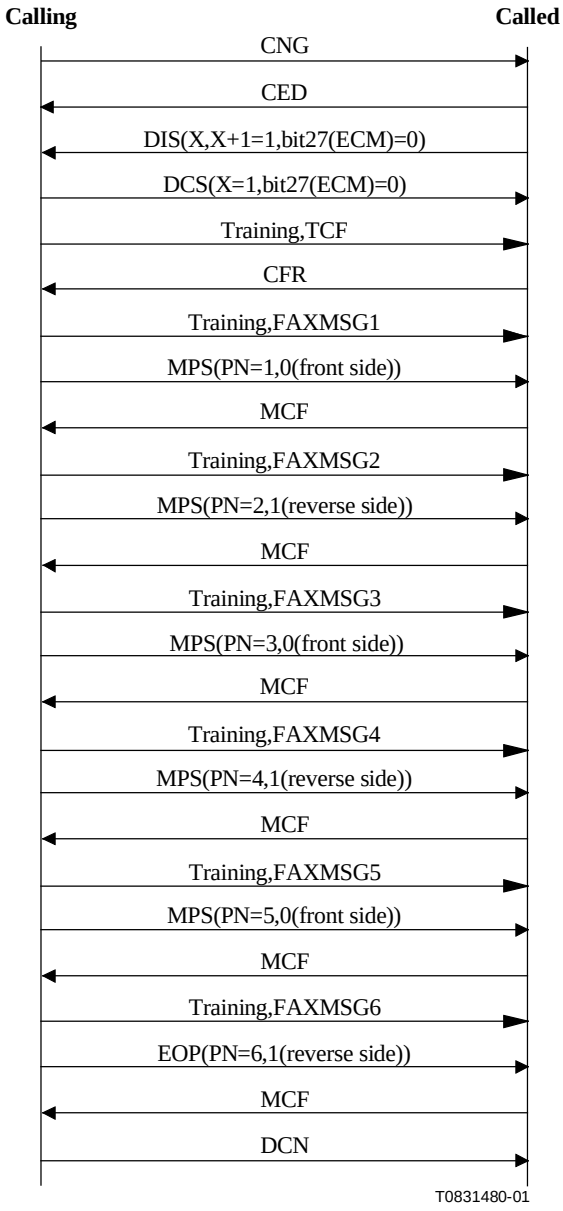
25) Mode 4 and higher mode implementations may use T.45 "Run-length Colour Encoder" and colour tags provisions to code foreground layers, as defined in Annex B/T.44 and Annex H/T.4, only when JBIG2 is used to code the corresponding mask layers.

26) Unknown marker segments should be skipped (i.e. unknown APP1, APP3, and APP13 identifiers).

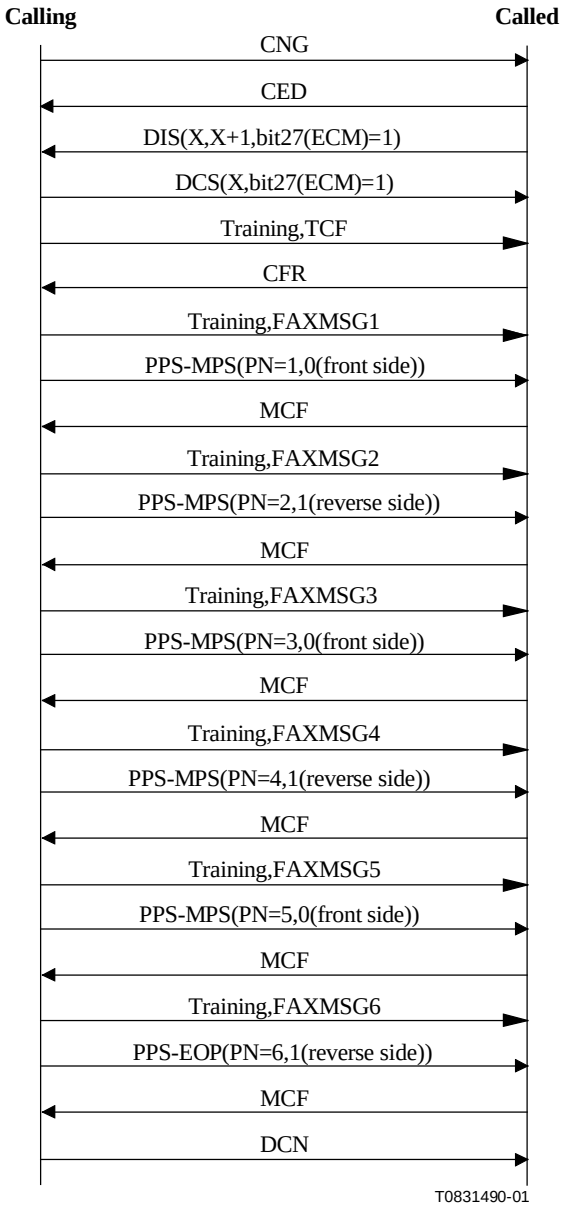
7) Appendix I

Add the following figures to Appendix I:

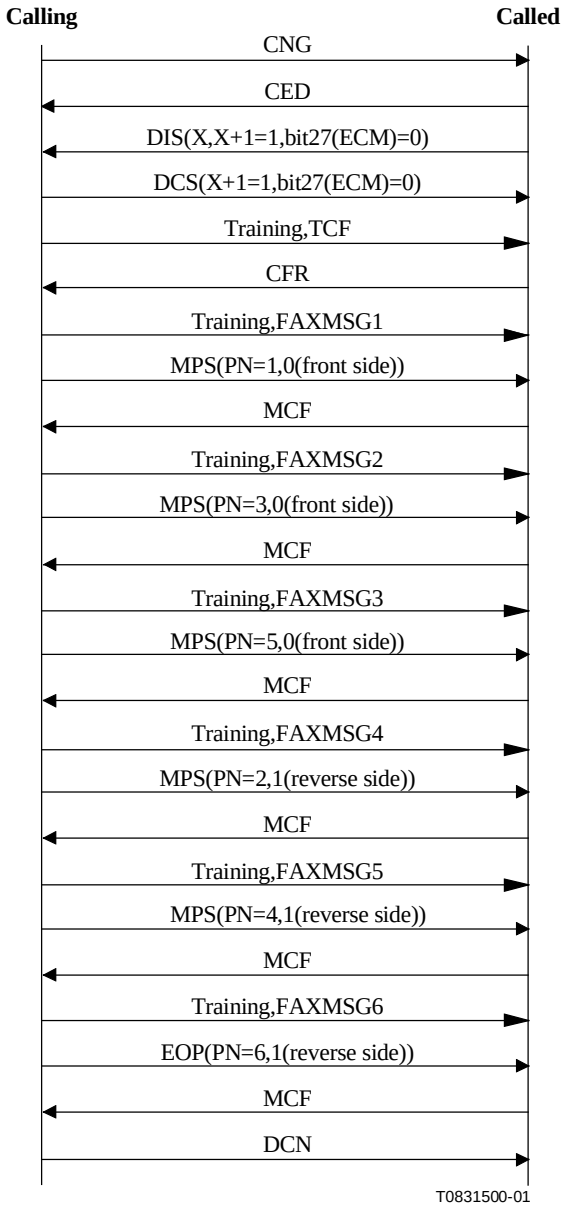
a) Alternate mode with non-ECM



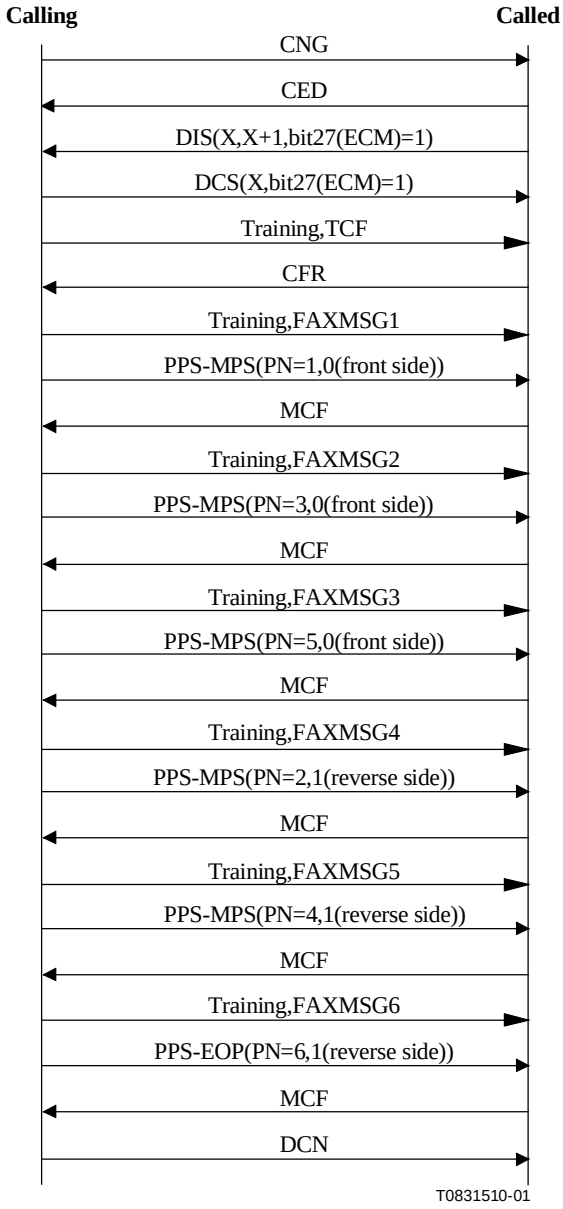
b) Alternate mode with ECM



c) Continuous mode with non-ECM



d) Continuous mode with ECM



8) Appendix VIII

Add the following new Appendix VIII:

APPENDIX VIII

Examples for Internet Routing/Polling

NOTE – Signals indicated in parenthesis are optional.

VIII.1 Internet Routing using E-Mail Fax through Onramp and Offramp gateways

Table VIII.1/T.30 – Phase 1: calling facsimile terminal to the onramp gateway communication via T.30.

Calling terminal	Onramp Gateway
1) Traditional facsimile user sets document in standard facsimile terminal with IRA option	
2) Facsimile user introduces the international telephone number of the designated terminal to IRA. e.g. IRA:+41 1234 5678 Alternatively an E-Mail Address of the designated terminal (PC Email client, Internet Aware Facsimile terminal or standard facsimile terminal with optional Internet Address Exchange Protocol), e.g. ifax@ties.itu.int can be used, which is not applicable to this example.	
3) Facsimile user introduces optional additional information for the called destination: (SUB) eg. SUB:130 (SID)	
4) Facsimile user selects Internet-Provider or accepts the pre-set one (local function).	
5) Facsimile user starts terminal. Terminal detects dial tone and dials telephone number of the gateway.	
	6) Gateway detects ring and answers the call Transmit CED/Begin facsimile procedure
	7) (Transmit CSI) Transmit DIS with IRA-bit set; optional SUB- and SID-bits set.
8) DIS detected	
9) (Transmit TSI) (Transmit SUB:130) (Transmit SID) Transmit IRA:+41 1234 5678 Transmit DCS with IRA(/SUB/SID)-bit(s) set	
10) Continue with normal facsimile procedure (transmit fax message)	11) Continue with normal facsimile procedure (receive fax message)
	12) Send Phase D confirmation to the calling facsimile terminal.
13) Receive in Phase D confirmation from the onramp gateway	
14) Switch back to telephone.	15) Switch back to telephone.

Table VIII.2/T.30 – Phase 2: onramp gateway to offramp gateway communication via T.37

Onramp Gateway	Offramp Gateway/Internet aware facsimile terminal
1) Communicate in T.37 mode of operation; map relevant information where applicable: IRA/(SUB) → E-Mail Address conforms to RFC 2304 eg. IRA:+41 1234 5678, SUB:130 are designated by facsimile user, then E-Mail Address is FAX=+4112345678/T33S=130@faxworld.org where the domain name "faxworld.org" is generated in the onramp gateway by the appropriate method, and the method is outside the scope of this appendix. Information from the following signals may be used for access or authentication purposes locally at the onramp gateway: (TSI) (SID)	2) Communicate in T.37 mode of operation; receive left hand side of E-Mail Address.: Left hand side of E-Mail Address → Phone number to be dialed: +41 1234 5678 // (SUB:130)

Table VIII.3/T.30 – Phase 3: offramp gateway communication to the called facsimile terminal via T.30

Offramp Gateway	Called facsimile terminal
1) Gateway switches to line. Gateway detects dial tone, takes telephone number: +41 1234 5678 from left hand side of E-Mail Address and dials this number.	
	2) Facsimile terminal detects ring and answers the call Transmit CED/Begin facsimile procedure
	3) (Transmit CSI) Transmit DIS; optional SUB- and SID-bits set.
4) DIS detected	
5) (Transmit TSI of the offramp gateway) (Transmit SUB:130 extracted from left hand side of E-Mail Address) (Transmit SID of the offramp gateway) Transmit DCS (with SUB/SID)-bit(s) set	
6) Continue with normal facsimile procedure (transmit fax message)	7) Continue with normal facsimile procedure (receive fax message)
	8) Send Phase D confirmation to the calling offramp gateway
9) Receive in Phase D confirmation from the called facsimile terminal.	
10) Switch back to telephone.	11) Switch back to telephone.

VIII.2 Internet Routing using real-time Fax

For further study.

VIII.3 Internet Polling

For further study.

SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series B	Means of expression: definitions, symbols, classification
Series C	General telecommunication statistics
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
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