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MESSAGE HANDLING SYSTEMS

MESSAGE HANDLING SYSTEMS: ENCODED INFORMATION TYPE CONVERSION RULES

ITU-T Recommendation X.408

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation X.408 was published in Fascicle VIII.7 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 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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Recommendation X.408

MESSAGE HANDLING SYSTEMS: ENCODED INFORMATION TYPE CONVERSION RULES

(Malaga-Torremolinos, 1984; amended at Melbourne, 1988)

The establishment in various countries of telematic services and computer-based store-and-forward message services in association with public data networks creates a need to produce standards to facilitate international message exchange between subscribers to such services.

The CCITT,

considering

- (a) the need for interpersonal messaging and message transfer services;
- (b) the need to transfer messages of different types having a large variety of formats;
- (c) that the F-series of Recommendations defines telematic services;
- (d) that the T-series of Recommendations defines terminal equipment and control procedures for telematic services;
- (e) that the V-series of Recommendations provides the means for data communication over the telephone network;
- (f) that Recommendation X.200 defines the reference model of open systems interconnection for CCITT applications;
- (g) that a set of Recommendations describes various aspects of message handling X.400, X.402, X.403, X.407, X.408, X.411, X.413, X.419 and X.420;
- (h) that the CCITT and ISO have drawn up a suitable set of conversion rules;
- (i) that, for specific user applications, some variations may be developed and applied by bilateral agreement,

unanimously declares the view

- (1) that the purpose and scope of this Recommendation are described in § 1;
- (2) that general aspects of the rules for converting between encoded information types are described in § 2;
- (3) that conversion rules for particular encoded information types are defined in subsequent sections.

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1 **Purpose and scope**

This is one of a set of Recommendations for Message Handling. The entire set provides a comprehensive specification for Message Handling comprising any number of cooperating open systems.

This Recommendation specifies the algorithms the MHS uses when converting between different types of encoded information.

Other aspects of Message Handling are defined in other Recommendations. The overall system and services of Message Handling is specified in Recommendation X.400. The overall architecture of the MHS is defined in Recommendation X.402. The conformance testing of MHS components is described in Recommendation X.403. The conventions used in the definition of the abstract services provided by MHS components are defined in Recommendation X.407. The abstract service the MTS provides and the procedures that govern its distributed operation are defined in Recommendation X.411. The abstract service the MS provides is defined in Recommendation X.413. The application protocols that govern the interaction of MHS components are specified in Recommendation X.419. The interpersonal Messaging System, an application of Message Handling, is specified in Recommendation X.420.

Paragraph 2 of this Recommendation describes the general aspects of conversion for the MHS. In §§ 3 to 10, particular conversion rules are defined. Annex A provides code conversion tables. Annex B lists the abbreviations used.

2 **General aspects of conversion**

Among the data elements subject to conversion are the subject and body of a message. The conversion has two aspects, format and code. The aspect of control is described elsewhere in the relevant Recommendations.

2.1 *Encoded information types*

This Recommendation defines the conversion rules for eight types of encoded information utilized in the MHS. In order to refer to each types, the following terms are used:

TLX The code is defined in Recommendation F.1. The format is defined in Recommendation S 5.

IA5Text The code is defined in Recommendation T.50.

TTX The format is defined in Recommendations F.200 and T.60, and the code is defined in Recommendation T.61.

G3Fax The encoding scheme is defined in Recommendation T.4, and the signalling of the encoding scheme is defined in Recommendation T.30.

G4Class1 The format and encoding scheme are defined in Recommendations T.6, T.503 and T.563.

Videotex The format and encoding scheme are defined in Recommendations T.101, T.504 and T.541.

Voice The encoding scheme is for further study.

Mixedmode The format and encoding scheme are defined in Recommendations T.501 and T.561.

Note - TLX: Telex, TTX: Teletex.

The TTX and G3Fax types have two subtypes: basic and optional. The G4Class1 type and the mixedmode type have two subtypes: basic and non-basic.

Table 1/X.408 depicts all conceivable conversions between the above types and subtypes. It characterizes each as: (-) No conversion, (a) possible without loss of information, (b) possible but loss of information may occur, or (c) impractical. This Recommendation defines the rules for format and code conversion for conversions in the second and third categories.

TABLE 1/X.408
Encoded information type conversions

To From		TLX	IA5 Text	TTX		G3 Fax		G4 Class 1		Videotex	Voice	Mixed mode	
				basic	optional ¹⁾	basic	optional ¹⁾	basic	non basic ¹⁾			basic	non basic ¹⁾
TLX ⁴⁾		-	b ⁷⁾	a	a	a	a	a	a	b	FS	a	a
IA5 Text		b	-	b	b	b	b	b	b	b	FS	b	b
TTX	basic optional ¹⁾	b b	b b	- b	a b ^{2), 3)}	a b	a b	a b	a b	a a	FS FS	a a	a b ^{2), 3)}
G3 Fax	basic optional ¹⁾	c c	c c	c c	c c	- b	a b ^{2), 3)}	a b	a b	c ⁵⁾ c ⁵⁾	c c	a b	a b
G4 Class 1	basic non basic ¹⁾	c c	c c	c c	c c	b b	b b	- b	a b ^{2), 3)}	c ⁵⁾ c ⁵⁾	c c	a b	a b ^{2), 3)}
Videotex		b	b	b	b	b ⁶⁾	b ⁶⁾	b ⁶⁾	b ⁶⁾	b	FS	FS	FS
Voice		c	c	c	c	c	c	c	c	c	FS	c	c
Mixed mode	basic non basic ¹⁾	b b	b b	b b	b b ^{2), 3)}	b b	b b	a b	a b ^{2), 3)}	b b	FS FS	- b	a b ^{2), 3)}

- No conversion
- a Possible without loss of information
- b Possible but loss of information may occur
- c Impractical
- FS For further study
- ¹⁾ Specified in the relevant Recommendations.
- ²⁾ No information is lost if the originating and recipient terminals have the same optional functions.
- ³⁾ Information may be lost if the originating terminal uses optional functions that the recipient terminal lacks.
- ⁴⁾ The WHO ARE YOU character is assumed to be a protocol element used for communicating with the Telex terminal and not part of the message's content.
- ⁵⁾ It may be possible with loss of information, if the recipient terminal has the capability of the photographic type of information.
- ⁶⁾ When converting videotex, color information may be lost.
- ⁷⁾ In the case when IA5 Text has less than 69 characters available in a line, format information may be lost.

2.2 *Two aspects of conversion*

The conversion rules have two aspects:

- 1) the format aspect;
- 2) the code aspect.

The conversion rules for encoded information types which have logical structures are for further study.

2.2.1 *Ground rules*

If there is an existing standard on the conversion between different types, it should be referred to without any modifications unless required. If there is not, the following ground rules are specified:

- 1) If there are standards on the subject and object types, the conversion rules should be defined such that the intersecting part of the standards is preserved. The creation of new rules for non-intersecting parts should be based on clear requirements, otherwise they should not be created.
- 2) When either the subject or object type has no standard, the conversion rules should be defined such that standard types can be accommodated as much as possible for both directions of the conversion.
- 3) When neither type has a standard, the definition of the rules is for further study.

2.2.2 *Format aspect*

The format aspect represents the dimensional attributes of the presentation space of user messages.

The two-dimensional (X and Y) aspect of the conversion is to be specified for a message being transferred. Following are the parameters to be defined for this aspect. Whether voice should be considered in the same context is for further study.

- a) The X-direction of the presentation space is defined by means of either:

- 1) the size of a character and the number of characters to be presented;
- 2) length.

If the object type has a smaller size of the X-direction than the subject type, a mechanism for adjustment of line length, such as the insertion of a CR/LF pair, should be defined as the format conversion rule.

- b) The Y-direction of the presentation space is defined by means of either:

- 1) the number of lines per presentation space or per unit length;
- 2) length.

If the object type has a smaller page size of the Y-direction than the subject type, a mechanism for change of page format, such as the insertion of a CR/FF pair, should be defined as the format conversion rule. If the object type has no length limitation of Y-direction and the subject type is paginated, some format conversion rule, such as the insertion of one or more blank lines, should be defined to represent the page boundary.

When converting characters to G3Fax or G4Class1, the rules for imaging should be applied according to Recommendation T.351.

2.2.3 *Code aspect*

With respect to the code aspect, Annex A specifies the conversion between different types. Further notes can be found in each subsection if necessary.

2.3 *Loss of information*

2.3.1 *Initial assumption on loss of information*

When considering conversion between different encoded information types some initial assumptions were taken into account. Changes to the character font, character size or paper type, etc. are not regarded as loss of information.

2.3.2 *Format loss of information*

The format conversions take two different forms; line length and number of lines. The following definitions apply:

1) *Line length (number of characters)*

- a) originator's line length less than, or equal to recipient's line length: no loss of information;
- b) originator's line length more than recipient's line length: loss of information.

2) *Page length (number of lines)*

- a) originator's page length less than, or equal to recipient's page length: no loss of information. However, in the recipient's pages, a clean field should be inserted between the originator's pages;
- b) originator's page length more than recipient's page: no loss of information, provided the originator's page is mapped onto an integer number of destination pages.

Note - Information may also be lost due to differences between the printable and reproducible areas in facsimile.

2.3.3 *Code loss of information*

If a graphic character is reproduced identically on both systems then there is no loss of information. However, if there is a change between italic, bold, underlined, normal or coloured (as in the case of Videotex) this could be considered to be a loss of information (e.g., one type of rendition could mean a positive financial result and the other a negative result!). This requires further study.

A conversion to a similar character, but not identical, in the second system is loss of information. A conversion from one character to many characters (e.g., \$ to dollar) is also loss of information.

2.4 *Encoded information type properties*

Followings are the properties of encoded information types assumed for this Recommendation.

2.4.1 *TLX encoded information type*

The TLX encoded information type is not paginated. A TLX text line contains maximum 69 graphic characters as defined in Recommendation S.5. The end of a line is also represented by an ITA2 CR-LF pair.

2.4.2 *IA5Text encoded information type*

The IA5Text encoded information type is paginated. An IA5Text line contains maximum N_1 graphic characters. The end of a line is also represented by an IA5 CR-LF pair. An IA5Text page contains maximum M_1 lines. The end of a page is also represented by an IA5 CR-FF pair.

Note - Any value to N_1 or M_1 are not assumed in this Recommendation unless explicitly specified in the relevant sections. A common value to N_1 is 80.

2.4.3 *TTX encoded information type*

The TTX encoded information type is paginated. The format of a TTX page is as defined by following "default condition of basic Teletex":

- paper size and orientation: vertical basic page format;
- character spacing: 2.54 mm;
- line feed spacing: 4.23 mm;
- rendition: default rendition.

This implies that the maximum number of characters per line is 77 and the maximum number of lines per page is 55. The end of a TTX line is represented by a TTX CR-LF pair. The end of a TTX page is represented by a TTX CR-FF pair.

Note - When converting from Teletex, each Teletex line shall be preceded by 5 spaces reduced by the number of backspaces (BS) found in the beginning of each Teletex line (refer to Recommendation F.200, § 7.6.9.1).

2.4.4 *G3Fax encoded information type*

The G3Fax encoded information type is paginated. The format of a G3Fax is described in Recommendation T.4.

2.4.5 *G4Class1 encoded information type*

The G4Class1 encoded information type is paginated. The format of a G4Class1 is described in Recommendation T.563.

2.4.6 *Videotex encoded information type*

The Videotex encoded information type is paginated. A Videotex line contains maximum N_2 graphic characters. The end of a line is represented by a Videotex APD-APR pair. A Videotex page contains maximum M_2 lines in the defined-display area. The end of a page is represented by a Videotex CS. The function of scroll is not assumed.

Among various graphic elements that Videotex can handle, the following rules apply only to the alphanumeric characters in the display-data elements. The use of Interworking Data Syntax (IDS) requires further study.

Note - Values of N_2 or M_2 are not assumed in this Recommendation; they may differ according to the syntax used.

2.4.7 *Voice encoded information type*

Requires further study.

2.4.8 *Mixedmode encoded information type*

The format and encoding scheme are defined in Recommendations T.501 and T.561.

3 **Conversion from TLX**

3.1 *Conversion from TLX to IA5Text*

3.1.1 *Format conversion*

A TLX line is directly converted into an IA5Text line if the number of graphic characters of the code-converted TLX line does not exceed the maximum number of graphic characters available in an IA5Text line (N_1) and if the number of lines in a TLX does not exceed the number of lines available in an IA5Text page (M_1).

An ITA2 CR-LF pair invokes a new IA5Text line. If an LF is not associated with a CR, an LF may be inserted after the CR.

A TLX line should be converted into the appropriate number of IA5Text lines (with possible insertion of an IA5 CR-LF pair) if the number of graphic characters of the code-converted TLX line exceeds N_1 . Each split IA5Text line (except the last one) may contain the maximum number of graphic characters available for the IA5Text line. Folding at the word boundary requires further study.

A TLX should be split into the appropriate number of IA5Text pages if the number of code-converted TLX line exceeds M_1 . Each split IA5Text page (except the last one) may contain the maximum number of lines available for the IA5Text page. The number of lines in a TLX should be calculated after the insertion of any required IA5 CR-LF pairs.

Note - Inclusion of data escape mode in a TLX is for further study.

Those aspects other than above (e.g., character spacing, line spacing and so on) are outside the scope of this conversion rule.

3.1.2 *Code conversion*

This conversion rule is defined in Annex A.

3.2 *Conversion from TLX to TTX*

3.2.1 *Format conversion*

A TLX text is directly converted into a TTX text if the number of graphic characters of the code converted TLX line does not exceed the maximum number of graphic characters available in a TTX text line and if the number of lines in a TLX does not exceeds the number of lines available in a TTX page.

An ITA2 CR-LF pair invokes a new TTX text line. If an LF is not associated with a CR, an LF may be inserted after the CR.

A TLX text line should be converted into the appropriate number of TTX text lines (with possible insertion of a TTX CR-LF pair) if the number of graphic characters in a code-converted TLX line exceeds the maximum number of graphic characters available in a TTX text line. Each split TTX text line (except the last one) may contain the maximum number of graphic characters available for the TTX text line. Folding at the word boundary requires further study.

A TLX text should be split into the appropriate number of TTX pages (with possible insertion of a TTX CR-LF pair) if the number of code-converted TLX line exceeds the number available in a TTX page. Each split TTX page (except the last one) may contain the maximum number of lines available for the TTX page. The number of lines in a TLX should be calculated after the insertion of any required TTX CR-LF pairs.

3.2.2 *Code conversion*

This conversion rule is defined in Annex A.

3.3 *Conversion from TLX to G3Fax*

3.3.1 *Format conversion*

A TLX text is directly converted into a G3Fax if the number of graphic characters of the code-converted TLX line does not exceed the maximum number of graphic characters available in a G3Fax character line and if the number of lines in the TLX does not exceed the number of lines available in a G3Fax page.

An ITA2 CR-LF pair invokes a new G3Fax character line. If an LF is not associated with an CR, a LF may be inserted after the CR.

A TLX text line should be converted into the appropriate number of G3Fax character lines (with possible insertion of an ITA2 CR-LF pair) if the number of graphic characters in a code-converted TLX line exceeds the maximum number of graphic characters available in a G3Fax character line. Each split G3Fax character line (except the last one) may contain the maximum number of graphic characters available for the G3Fax character line. Folding at the word boundary requires further study.

A TLX text should be split into the appropriate number of G3Fax pages if the number of code-converted TLX lines exceeds the number available in a G3Fax page. Each split G3Fax page (except the last one) may contain the maximum number of lines available for the G3Fax page. The number of lines in a TLX should be calculated after the insertion of any required ITA2 CR-LF pairs.

Imaging of characters to G3Fax should be in accordance with Recommendation T.351.

3.3.2 *Code conversion*

This conversion rule is defined in Annex A. The character rendition is a national option.

3.4 *Conversion from TLX to G4Class1*

3.4.1 *Format conversion*

A TLX text is directly converted into a G4Class1 if the number of graphic characters of the code-converted TLX line does not exceed the maximum number of graphic characters available in a G4Class1 character line and if the number of lines in the TLX does not exceed the number of lines available in a G4Class1 page.

An ITA2 CR-LF pair invokes a new G4Class1 character line. If an LF is not associated with a CR, an LF may be inserted after the CR.

A TLX text line should be converted into the appropriate number of G4Class1 character lines (with possible insertion of a ITA2 CR-LF pair) if the number of graphic characters in a code-converted TLX line exceeds the maximum number of graphic characters available in a G4Class1 character line. Each split G4Class1 character line (except the last one) may contain the maximum number of graphic characters available for the G4Class1 character line. Folding at the word boundary requires further study.

A TLX text should be split into the appropriate number of G4Class1 pages if the number of code-converted TLX lines exceeds the number available in a G4Class1 page. Each split G4Class1 page (except the last one) may contain the maximum number of lines available for the G4Class1 page. The number of lines in a TLX should be calculated after the insertion of any required ITA1 CR-LF pairs.

Imaging of characters to G4Class1 should be in accordance with Recommendation T.351.

3.4.2 *Code conversion*

This conversion rule is defined in Annex A. The character rendition is a national option.

3.5 *Conversion from TLX to Videotex*

3.5.1 *Format conversion*

A TLX text is converted directly into a Videotex if the number of graphic characters of the code-converted TLX line does not exceed the number of characters available in the Videotex line, and if the number of lines in the TLX does not exceed the number of lines available in the Videotex page.

An ITA2 CR-LF pair invokes a new Videotex line. If an LF is not associated with a CR, an LF may be inserted after the CR.

A TLX text line should be converted into the appropriate number of Videotex lines (with possible insertion of a T.101 APD-APR pair) if the number of graphic characters in a code-converted TLX line exceeds the maximum number of graphic characters available in a Videotex line (N_2). Each split Videotex line (except the last one) may contain the maximum number of graphic characters available for the Videotex line. Folding at the word boundary requires further study.

A TLX text should be split into the appropriate number of Videotex pages if the number of code-converted TLX lines exceeds the number available in a Videotex page (M_2). Each split Videotex page (except the last one) may contain the maximum number of lines available for the Videotex page. The number of lines in a TLX should be calculated after the insertion of any required T.101 APD-APR pairs.

By definition, if one TLX line is converted into one Videotex line and the TLX text is converted into one or several Videotex pages, this is not considered as loss of information.

3.5.2 *Code conversion*

The code conversion is specified in Annex A.

3.6 *Conversion from TLX to voice*

Requires further study.

3.7 *Conversion from TLX to mixedmode*

Requires further study.

4 **Conversion from IA5Text**

4.1 *Conversion from IA5Text to TLX*

4.1.1 *Format conversion*

An IA5Text is converted directly into a TLX if the number of graphic characters of the code-converted IA5Text line does not exceed the number of characters available in the TLX line.

An IA5 CR-LF pair invokes a new TLX line. If an LF is not associated with a CR, an LF may be inserted after the CR.

An IA5Text line should be converted into the appropriate number of TLX lines (with possible insertion of an IA5 CR-LF pair) if the number of graphic characters in a code-converted TLX line exceeds the maximum number of graphic characters available in a TLX line. Each split TLX line (except the last one) may contain the maximum number of graphic characters available for the TLX line. Folding at the word boundary requires further study.

An IA5 CR-FF pair is converted into an ITA2 CR-LF pair plus the optional addition of up to 3 blank lines.

4.1.2 *Code conversion*

This conversion rule is defined in Annex A.

When the IA5Text changes from a letter to a figure type then an ITA2 Figure Shift shall be generated. When the IA5Text changes from a figure to a letter then an ITA2 Letter Shift shall be generated.

At the start of the message an ITA2 Letter Shift shall be generated to ensure the TLX is in a known shift mode.

4.2 *Conversion from IA5Text to TTX*

4.2.1 *Format conversion*

An IA5Text is directly converted into a TTX if the number of graphic characters of the code-converted IA5Text line does not exceed the maximum number of graphic characters available in a TTX line and if the number of lines in the IA5Text does not exceed the number of lines available in a TTX page.

An IA5 CR-LF pair invokes a new TTX line. If an LF is not associated with a CR, an LF may be inserted after the CR.

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An IA5Text line should be converted into the appropriate number of TTX lines (with possible insertion of a TTX CR-LF pair) if the number of graphic characters in a code-converted IA5Text line exceeds the maximum number of graphic characters available in a TTX line. Each split TTX line (except the last one) may contain the maximum number of graphic characters available for the TTX line. Folding at the word boundary requires further study.

An IA5 CR-FF pair invokes a new TTX page.

An IA5Text page should be split into the appropriate number of TTX pages (with possible insertion of TTX CR-FF pair) if the number of code-converted IA5Text lines exceeds the number available in a TTX page. Each split TTX page (except the last one) may contain the maximum number of lines available for the TTX page. The number of lines in an IA5Text should be calculated after the insertion of any required TTX CR-LF pairs.

4.2.2 *Code conversion*

Every IA5 character is represented by seven bits (b_7 - b_1). Characters of IA5 are converted into the corresponding characters of T.61 by adding 0 as the eighth bit (b_8). The conversion rule is specified in Annex A.

Note - In the case of circumflex accent, grave accent, and overline, whether diacritical marks of T.61 can be chosen as converted codes is for further study.

4.3 *Conversion from IA5Text to G3Fax*

4.3.1 *Format conversion*

An IA5Text is directly converted into a G3Fax if the number of graphic characters of the code-converted IA5Text line does not exceed the maximum number of graphic characters available in a G3Fax character line and if the number of lines in the IA5Text does not exceed the number of lines available in a G3Fax page.

An IA5 CR-LF pair invokes a new G3Fax character line. If an LF is not associated with a CR, an LF may be inserted after the CR.

An IA5Text line should be converted into the appropriate number of G3Fax character lines (with possible insertion of an IA5 CR-LF pair) if the number of graphic characters in a code-converted IA5Text line exceeds the maximum number of graphic characters available in a G3Fax character line. Each split G3Fax character line (except the last one) may contain the maximum number of graphic characters available for the G3Fax character line. Folding at the word boundary requires further study.

An IA5 CR-FF pair invokes a new G3Fax page.

An IA5Text page should be split into the appropriate number of G3Fax pages if the number of code-converted IA5Text lines exceeds the number available in a G3Fax page. Each split G3Fax page (except the last one) may contain the maximum number of lines available for the G3Fax page. The number of lines in an IA5Text should be calculated after the insertion of any required IA5 CR-LF pairs.

When converting from IA5Text to G3Fax, the G3Fax image format will be 80 characters per line with a left margin of 20 mm and 55 lines per page.

Imaging of characters to G3Fax should be in accordance with Recommendation T.351.

4.3.2 *Code conversion*

This conversion rule is defined in Annex A. The character rendition is a national option.

4.4 *Conversion from IA5Text to G4Class1*

4.4.1 *Format conversion*

An IA5Text is directly converted into a G4Class1 if the number of graphic characters of the code-converted IA5Text line does not exceed the maximum number of graphic characters available in a G4Class1 character line and if the number of lines in the IA5Text does not exceed the number of lines available in a G4Class1 page.

An IA5 CR-LF pair invokes a new G4Class1 character line. If an LF is not associated with a CR, an LF may be inserted after the CR.

An IA5Text line should be converted into the appropriate number of G4Class1 character lines (with possible insertion of an IA5 CR-LF pair) if the number of graphic characters in a code-converted IA5Text line exceeds the maximum number of graphic characters available in a G4Class1 character line. Each split G4Class1 character line (except the last one) may contain the maximum number of graphic characters available for the G4Class1 character line. Folding at the word boundary requires further study.

An IA5 CR-FF pair invokes a new G4Class1 page.

An IA5Text page should be split into the appropriate number of G4Class1 pages if the number of code-converted IA5Text lines exceeds the number available in a G4Class1 page. Each split G4Class1 page (except the last one) may contain the maximum number of lines available for the G4Class1 page. The number of lines in an IA5Text should be calculated after the insertion of any required IA5 CR-LF pairs.

When converting from IA5Text to G4Class1, the G4Class1 image format will be 80 characters per line with a left margin of 20 mm and 55 lines per page.

Imaging of characters to G4Class1 should be in accordance with Recommendation T.351.

4.4.2 *Code conversion*

This conversion rule is defined in Annex A. The character rendition is a national option.

4.5 *Conversion from IA5Text to Videotex*

4.5.1 *Format conversion*

An IA5Text is directly converted into a Videotex if the number of graphic characters of the code-converted IA5Text line does not exceed the maximum number of graphic characters available in a Videotex line and if the number of lines in the IA5Text does not exceed the number of lines available in a Videotex page.

An IA5 CR-LF pair invokes a new Videotex line. If an LF is not associated with a CR, an LF may be inserted after the CR.

An IA5Text line should be converted into the appropriate number of Videotex lines (with possible insertion of a T.101 APD-APR pair) if the number of graphic characters in a code-converted IA5Text line exceeds the maximum number of graphic characters available in a Videotex line. Each split Videotex character line (except the last one) may contain the maximum number of graphic characters available for the Videotex character line. Folding at the word boundary requires further study.

An IA5 CR-FF pair invokes a new Videotex page.

An IA5Text page should be split into the appropriate number of Videotex pages (with possible insertion of a T.101 CS) if the number of code-converted IA5Text lines exceeds the number available in a Videotex page. Each split Videotex page (except the last one) may contain the maximum number of lines available for the Videotex page. The number of lines in a IA5Text should be calculated after the insertion of any required IA5 CR-LF pairs.

By definition, if one IA5Text line is converted into one Videotex line and if a IA5Text page is converted into one or several Videotex pages, each IA5Text page starting with a new Videotex page, this is not considered as loss of information.