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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.

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

From \ To		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	b	b	-	a	a	a	a	a	a	FS	a	a
	optional [1]	b	b	b	b [2, 3]	b	b	b	b	a	FS	a	b [2, 3]
G3 Fax	basic	c	c	c	c	-	a	a	a	c [5]	c	a	a
	optional [1]	c	c	c	c	b	b [2, 3]	b	b	c [5]	c	b	b
G4 Class 1	basic	c	c	c	c	b	b	-	a	c [5]	c	a	a
	non basic [1]	c	c	c	c	b	b	b	b [2, 3]	c [5]	c	b	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	b	b	b	b	b	b	a	a	b	FS	-	a
	non basic [1]	b	b	b	b [2, 3]	b	b	b	b [2, 3]	b	FS	b	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-FF 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.

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.

4.5.2 *Code conversion*

The conversion rule is specified in Annex A.

4.6 *Conversion from IA5Text to voice*

Requires further study.

4.7 *Conversion from IA5Text to mixedmode*

Requires further study.

5 Conversion from TTX

5.1 *Conversion from TTX to TLX*

5.1.1 *Format conversion*

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

A TTX 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.

A TTX line should be converted into the appropriate number of TLX 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 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.

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

5.1.2 *Code conversion*

This conversion rule is defined in Annex A.

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

5.2 *Conversion from TTX to IA5Text*

5.2.1 *Format conversion*

A TTX is converted into an IA5Text assuming the vertical orientation and a maximum of 77 characters per line (a line may be constructed by placing 72 characters to the right of the left margin and additional 5 characters to the left of the left margin). Teletex information in the horizontal orientation will result in loss of information.

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

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

A TTX 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 in a code-converted TTX line exceeds the maximum number of graphic characters available in an IA5Text line. Each split IA5Text character line (except the last one) may contain the maximum number of graphic characters available for the IA5Text character line. Folding at the word boundary requires further study.

A TTX CR-FF pair invokes a new IA5Text page.

A TTX page should be split into the appropriate number of IA5Text pages if the number of code-converted TTX lines exceeds the number available in a IA5Text page. 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 TTX should be calculated after the insertion of any required IA5 CR-LF pairs.

5.2.2 *Code conversion*

Every character in the set of T.61 is converted into the corresponding character of IA5 by deleting Bit b_8. The conversion rule is specified in Annex A.

Note - Other conversion rules for the currency signs are for further study.

5.3 *Conversion from TTX to TTX*

Requires further study.

5.4 *Conversion from TTX to G3Fax*

5.4.1 *Format conversion*

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

A TTX 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.

A TTX line should be converted into the appropriate number of G3Fax character lines (with possible insertion of a TTX CR-LF pair) if the number of graphic characters in a code-converted TTX 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 TTX CR-FF pair invokes a new G3Fax page.

A TTX page should be split into the appropriate number of G3Fax pages (with possible insertion of a TTX CR-FF pair) if the number of code-converted TTX 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 TTX should be calculated after the insertion of any required TTX CR-LF pairs.

Imaging of characters to G3Fax should be in accordance with Recommendation T.351. The use of figures, however, in Recommendation T.351 corresponding to the options of TTX requires further study.

5.4.2 *Code conversion*

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

5.5 *Conversion from TTX to G4Class1*

5.5.1 *Format conversion*

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

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

A TTX line should be converted into the appropriate number of G4Class1 character lines (with possible insertion of a TTX CR-LF pair) if the number of graphic characters in a code-converted TTX 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 Videotex character line. Folding at the word boundary requires further study.

A TTX CR-FF pair invokes a new G4Class1 page.

A -TTX page should be split into the appropriate number of G4Class1 pages (with possible insertion of a TTX CR-FF pair) if the number of code-converted TTX 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 TTX should be calculated after the insertion of any required TTX CR-LF pairs.

Imaging of characters to G4Class1 should be in accordance with Recommendation T.351. The use of figures, however, in Recommendation T.351 corresponding to the options of TTX requires further study.

5.5.2 *Code conversion*

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

5.6 *Conversion from TTX to Videotex*

5.6.1 *Format conversion*

A TTX is converted into a Videotex assuming the vertical orientation and a maximum of 77 characters per line (a line may be constructed by placing 72 characters to the right of the left margin and additional 5 characters to the left of the left margin). Teletex information in the horizontal orientation will result in loss of information.

Note - BS at the beginning (maximum 5) of a TTX line moves the first logical character position of all Videotex lines to the left, according to the number of BS. This enables an extension of the line length by 5 characters. An appropriate number of spaces has to be added at the beginning of each Videotex line in order to ensure that all Videotex lines begin at the first logical position given by the line having the most BS at the beginning of the TTX line.

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

A TTX 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 TTX line should be converted into the appropriate number of Videotex lines (with possible insertion of an T.101 APD-APR pair) if the number of graphic characters in a code-converted TTX 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.

A TTX CR-FF pair invokes a new Videotex page.

A TTX 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 TTX 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 TTX should be calculated after the insertion of any required IA5 CR-LF pairs.

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

5.6.2 *Code conversion*

The conversion rule is specified in Annex A.

5.7 *Conversion from TTX to voice*

Requires further study.

5.8 *Conversion from TTX to mixedmode*

5.8.1 *Format conversion*

Requires further study.

5.8.2 *Code conversion*

Not required. T.61 String is allowed in mixedmode.

6 Conversion from G3Fax

6.1 *Conversion from G3Fax to G3Fax*

Requires further study.

6.2 *Conversion from G3Fax to G4Class1*

Requires further study.

6.3 *Conversion from G3Fax to mixedmode*

Requires further study.

7 Conversion from G4Class1

7.1 *Conversion from G4Class1 to G3Fax*

Requires further study.

7.2 *Conversion from G4Class1 to G4Class1*

Requires further study.

7.3 *Conversion from G4Class1 to mixedmode*

Requires further study.

8 Conversion from Videotex

8.1 *Conversion from Videotex to TLX*

8.1.1 *Formal conversion*

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

A T.101 APD-APR pair invokes a new TLX line. If an APR is not associated with an APD, an APR may be inserted after the APD.

A Videotex line should be converted into the appropriate number of TLX lines (with possible insertion of an ITA2 CR-LF pair) if the number of graphic characters in a code-converted Videotex 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.

A T.101 CS is converted into an ITA2 CR-LF pair plus the optional addition of up to 3 blank lines.

8.1.2 *Code conversion*

This conversion rule is defined in Annex A.

8.2 *Conversion from Videotex to IA5Text*

8.2.1 *Format conversion*

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

A T.101 APD-APR pair invokes a new IA5Text line. If an APR is not associated with an APD, an APR may be inserted after the APR.

A Videotex 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 in a code-converted Videotex line exceeds the maximum number of graphic characters available in a IA5Text line. 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 T.101 CS invokes a new IA5Text page or, alternatively, 3 blank lines if the next videotex page can be represented fully on the same IA5Text page.

A Videotex page should be split into the appropriate number of IA5Text pages (with possible insertion of a IA5 CR-FF pair) if the number of code-converted Videotex lines exceeds the number available in a IA5Text page. 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 Videotex should be calculated after the insertion of any required IA5 CR-LF pairs.

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

8.2.2 *Code conversion*

The conversion rule is specified in Annex A.

8.3 *Conversion from Videotex to TTX*

8.3.1 *Format conversion*

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

A T.101 APD-APR pair invokes a new TTX line. If an APR is not associated with an APD, an APR may be inserted after the APR.

A Videotex 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 Videotex 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.

A T.101 CS invokes a new TTX page or, alternatively, 3 blank lines if the next videotex page can be represented fully on the same TTX page.

A Videotex page should be split into the appropriate number of TTX pages (with possible insertion of a TTX CR-FF pair) if the number of code-converted Videotex 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 a Videotex should be calculated after the insertion of any required TTX CR-LF pairs.

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

8.3.2 *Code conversion*

The conversion rule is specified in Annex A.

8.4 *Conversion from Videotex to G3Fax*

Requires further study.

8.5 *Conversion from Videotex to G4Class1*

Requires further study.

8.6 *Conversion from Videotex to Videotex*

Requires further study.

8.7 *Conversion from Videotex to voice*

Requires further study.

8.8 *Conversion from Videotex to mixedmode*

Requires further study.

9 Conversion from voice

9.1 *Conversion from voice to voice*

Requires further study.

10 Conversion from mixedmode

10.1 *Conversion from mixedmode to TLX*

Requires further study.

10.2 *Conversion from mixedmode to IA5Text*

Requires further study.

10.3 *Conversion from mixedmode to TTX*

Requires further study.

10.4 *Conversion from mixedmode to G3Fax*

Requires further study.

10.5 *Conversion from mixedmode to G4Class1*

Requires further study.

10.6 *Conversion from mixedmode to Videotex*

Requires further study.

10.7 *Conversion from mixedmode to voice*

Requires further study.

10.8 *Conversion from mixedmode to mixedmode*

Requires further study.

ANNEX A

(to Recommendation X.408)

Code conversion tables

A.1 *Introduction*

This Annex was developed for describing the code conversion rules for the use of message handling concisely and consistently.

A.2 *Premises*

A.2.1 *References*

a) Tables 1/S.18 and 2/S.18 (Rules);

b) Tables 1/T.50 to 9/T.50 and 11/T.50 (Symbol and description);

c) Figures 1/T.51 and 2/T.51, Tables 1/T.51 and 2/T.51 and Tables 4/T.51 and 5/T.51 (Symbol and description);

d) Table C-1/T.60 (Rules);

e) Paragraphs 3.2 and 3.3 of T.61 (Symbol and identification);

f) Figures 2/T.61 and 3/T.61, Tables 1/T.61 and 2/T.61 and Figures B-1/T.61 and C-1/T.61 (Symbol);

g) T.100 (Identification);

h) X.408 (1984) (Rules).

A.2.2 *Structure of the tables*

A.2.2.1 *Introduction*

The tables are divided into two columns:

a) REFERENCE SET

b) CONVERTED SET

A pair of the REFERENCE SET and a sub-column in the CONVERTED SET column form the definition of the code conversion rule for the encoded information type referenced as an output.

The tables are developed under the premises described below. The extension of the tables requires further study.

A.2.2.2 *REFERENCE SET*

The REFERENCE SET is a collection of the final visible graphic form (e.g. printed or displayed) of characters. This set is NOT intended to introduce a new character set to be implemented elsewhere.

Regarding control characters, the visibility of the character could not form a criterion to enlist it to the REFERENCE SET. Any available controls are enlisted in order to show if the intent of the particular control character is maintained after conversion.

Note - Use of a control character may be different from one type to other. This may imply that we need to deal with character escape sequences defined in ISO 2022 first, then character conversion. This requires further study.

This column is provided for the reference character set. The set is a conceptual one and may contain any conceivable characters. It is completely independent of the peculiar encoding of individual characters. There are, however, three exceptions on the characters "circumflex accent", "grave accent" and "overline/tilde" of IA5 because of historical and technical reasons.

The symbols # and ¤ whose encoding is different from one type to another are assigned the same identification numbers.

Questions relating to the registration and maintenance authority of the REFERENCE SET are left for further study.

The column has three sub-columns:

a) *Identification:* Identification number for a character increased by 10 and also the identification code developed in T.61 if available. Numbers 0 through 999 will be allocated for the controls and numbers 1000 or over will be allocated to graphic characters.

b) *Name or description:* Concise description of a character.

c) *Symbol:* Known symbol for a character.

A.2.2.3 *Column "CONVERTED SET"*

This column has a number of sub-columns. Each sub-column defines a corresponding character(s) to that of the REFERENCE SET.

Some part of the conversion rule may not necessarily be used when converting one type to the other. For example, in the Telex-to-Teletex conversion, there is no need to use the part for the characters numbered more than 2000.

Originally, five sub-columns are provided for:

a) Teletex encoded information type (referred to as T.61);

b) IA5 text encoded information type (referred to as IA5IRV);

c) Telex encoded information type (referred to as ITA2);

d) G3Fax and G4Class1 encoded information type (referred as facsimile);

e) Videotex encoded information type (referred as Videotex).

A.2.3 *Use of other standards*

For message handling applications, the conversion table shall be used wherever possible. The conversion table does not attempt to replace existing international standards that deal with conversions for other applications other than message handling.

The basic rules for the use of the conversion tables shall be that the conversions defined in the tables are derived from the basic character representations of the codes as found in the appropriate international standards. For this version of X.408, alternative representations may be used but are for further study.

When there are alternative conversions defined in existing Recommendations, X.408 shall not constrain choices. Examples of alternative conversion are as follows:

a) ITA2 $\rightarrow$ IA5 conversion defined in Recommendation S.18 has alternative conversions such as:

   The IA5 Asterisk character * can be converted to either ITA2 character ? or characters (?).

b) ITA2 $\rightarrow$ T.61 conversion defined in Recommendation T.60 has alternative conversions such as:

   The ITA2 character A can be converted to either T.61 character A or a.

Note that the conversion from one graphic character to many graphic characters may be used where appropriate as a national option.

A.3 *Conventions*

a) If both SYM and No. boxes are left blank in the "CONVERTED SET" column, this means that the conversion is not provided (i.e., NOT convertible).

b) FS means "for further study".

c) disc. means "DISCARDED".

d) The symbols for the control characters should not be interpreted as to print the symbols literally. They are simply placed for reference information. The intent is that semantics of those characters defined elsewhere should be kept. See § A.2.2.2.

A.4 *Notes*

(a) This character is used only to operate the answer-back unit for corresponding equipment in the international public service.

(b) These characters have no international allocation.

(c) These characters have no corresponding function in other encoded information types. Conversion equipment operates the appropriate shift and discards the characters.

(d) Classification of control functions numbered less than 1000 requires further study.

TABLE A-1/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description (d)	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
0		Null	NUL	disc.		NUL	0	?	1310	disc.		NUL	0
10		Start of heading	SOH	disc.		SOH	10	?	1310	disc.		disc.	
20		Start of text	STX	disc.		STX	20	?	1310	disc.		disc.	
30		End of text	ETX	disc.		ETX	30	?	1310	disc.		disc.	
40		End of transmission	EOT	disc.		EOT	40	?	1310	disc.		disc.	
50		Enquiry	ENQ	disc.		ENQ	50	WRU (a)	600	disc.		ENQ	50
60		Acknowledge	ACK	disc.		ACK	60	?	1310	disc.		disc.	
70		Bell	BEL	disc.		BEL	70	BEL	70	disc.		disc.	
80	CF10	Backspace	BS	BS	80	BS	80	?	1310	BS	80	APB	800
90		Horizontal tabulation	HT	disc.		HT	90	?	1310	disc.		disc.	
100	CF12	Line feed	LF	LF	100	LF	100	LF	100	LF	100	APD	820
110		Vertical tabulation	VT	disc.		VT	110	?	1310	disc.		disc.	
120	CF14	Form feed	FF	CR, FF	130, 120	FF	120	CR, LF	130,100	CR, FF	130, 120	CS	840
130	CF15	Carriage return	CR	CR	130	CR	130	CR	130	CR	130	APR	850
140		Shift-out	SO	disc.		SO	140	?	1310	disc.		FS	
150		Shift-in	SI	disc.		SI	150	?	1310	disc.		FS	
160		Data link escape	DLE	disc.		DLE	160	?	1310	disc.		disc.	
170		Device control one	DC1	disc.		DC1	170	?	1310	disc.		disc.	
180		Device control two	DC2	disc.		DC2	180	?	1310	disc.		disc.	
190		Device control three	DC3	disc.		DC3	190	?	1310	disc.		disc.	

TABLE A-2/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description (d)	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
200		Device control four	DC4	disc.		DC4	200	?	1310	disc.		disc.	
210		Negative acknowledgment	NAK	disc.		NAK	210	?	1310	disc.		disc.	
220		Synchronous idle	SYN	disc.		SYN	220	?	1310	disc.		disc.	
230		End of text block	ETB	disc.		ETB	230	?	1310	disc.		disc.	
240		Cancel	CAN	disc.		CAN	240	?	1310	disc.		CAN	240
250		End of medium	EM	disc.		EM	250	?	1310	disc.		disc.	
260	CM02	Substitute character	SUB	SUB	260	SUB	260	?	1310	FS		FS	
270	CE03	Escape	ESC	ESC	270	ESC	270	?	1310	FS		FS	
280		Information separator four	IS4	disc.		IS4	280	?	1310	disc.		disc.	
290		Information separator three	IS3	disc.		IS3	290	?	1310	disc.		disc.	
300		Information separator two	IS2	disc.		IS2	300	?	1310	disc.		disc.	
310		Information separator one	IS1	disc.		IS1	310	?	1310	disc.		disc.	
320													
330													
340													
350													
360													
370													
380													
390													

TABLE A-3/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description (d)	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
400	CE07	Locking shift 0	LS0	LS0	400	FS		FS		FS		FS	
410	CE08	Locking shift 1	LS1	LS1	410	FS		FS		FS		FS	
420	CE09	Locking shift 1 right	LS1R	LS1R	420	FS		FS		FS		FS	
430	CE10	Locking shift 2	LS2	LS2	430	FS		FS		FS		FS	
440	CE11	Locking shift 2 right	LS2R	LS2R	440	FS		FS		FS		FS	
450	CE12	Locking shift 3	LS3	LS3	450	FS		FS		FS		FS	
460	CE13	Locking shift 3 right	LS3R	LS3R	460	FS		FS		FS		FS	
470													
480													
490													
500													
510													
520	CE04	Single shift 2	SS2	SS2	520	FS		FS		FS		FS	
530	CE05	Single shift 3	SS3	SS3	530	FS		FS		FS		FS	
540													
550													
560													
570													
580													
590													

TABLE A-4/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description [d]	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
600		WHO ARE YOU? [a]	WRU	disc.		disc.		WRU	600	disc.		disc.	
610		National use [b]		disc.		disc.				disc.		disc.	
620		National use [b]		disc.		disc.				disc.		disc.	
630		National use [b]		disc.		disc.				disc.		disc.	
640													
650		Letter shift [c]	LS	disc.		disc.		LS	650	disc.		disc.	
660		Figure shift [c]	FS	disc.		disc.		FS	660	disc.		disc.	
670		All-space: null	NU	disc.		disc.		NU	670	disc.		disc.	
680													
690	CF16	Partial line down	PLD	PLD	690	disc.		disc.		disc.		disc.	
700	CF17	Partial line up	PLU	PLU	700	disc.		disc.		disc.		disc.	
710	CP06	Control sequence introducer	CSI	CSI	710	FS		disc.		disc.		FS	
720	CF20	Reverse line feed	RLF	RLF	720	disc.		disc.		disc.		disc.	
730	CP01	Select graphic rendition	PFS	PFS	730	disc.		disc.		disc.		disc.	
740	CP03	Select graphic rendition	SGR	SGR	740	disc.		disc.		disc.		disc.	
750	CP04	Select horizontal spacing	SHS	SHS	750	disc.		disc.		disc.		disc.	
760	CP05	Select vertical spacing	SVS	SVS	760	disc.		disc.		disc.		disc.	
770	CP06	Select presentation direction	SPD	SPD	770	disc.		disc.		disc.		disc.	
780	CP07	Graphic size modification	GSM	GSM	780	disc.		disc.		disc.		disc.	
790	CM04	Identify graphic subrepertoire	IGS	IGS	790	disc.		disc.		disc.		disc.	

TABLE A-5/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description (d)	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
800		Active position backward	APB	BS	80	BS	80	?	1310	FS		APB	800
810		Active position forward	APF	FS		FS		?	1310	FS		APF	810
820		Active position down	APD	LF	100	LF	100	LF	100	FS		APD	820
830		Active position up	APU	FS		FS		?	1310	FS		APU	830
840		Clear screen	CS	FF	120	FF	120	CR, LF	130,100	FS		CS	840
850		Active position return	APR	CR	130	CR	130	CR	130	FS		APR	850
860													
870													
880													
890													
900													
910													
920													
930													
940													
950													
960													
970													
980													
990													

TABLE A-6/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description (d)	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
1000	SP01	Space	SP	SP	1000	SP	1000	SP	1000	SP	1000	SP	1000
1010	SP02	Exclamation mark	!	!	1010	!	1010	?	1310	!	1010	!	1010
1020	SP04	Quotation mark	’’	’’	1020	’’	1020	?	1310	’’	1020	’’	1020
1030													
1040													
1050	SM02	Percent sign	%	%	1050	%	1050	?	1310	%	1050	%	1050
1060	SM03	Ampersand	&	&	1060	&	1060	?	1310	&	1060	&	1060
1070	SP05	Apostrophe	’	’	1070	’	1070	’	1070	’	1070	’	1070
1080	SP06	Left parenthesis	(	(	1080	(	1080	(	1080	(	1080	(	1080
1090	SP07	Right parenthesis	)	)	1090	)	1090	)	1090	)	1090	)	1090
1100	SM04	Asterisk	*	*	1100	*	1100	?	1310	*	1100	*	1100
1110	SA01	Plus sign	+	+	1110	+	1110	+	1110	+	1110	+	1110
1120	SP08	Comma	,	,	1120	,	1120	,	1120	,	1120	,	1120
1130	SP10	Hyphen or minus sign	–	–	1130	–	1130	–	1130	–	1130	–	1130
1140	SP11	Full stop, period	.	.	1140	.	1140	.	1140	.	1140	.	1140
1150	SP12	Solidus	/	/	1150	/	1150	/	1150	/	1150	/	1150
1160	ND10	Digit 0	0	0	1160	0	1160	0	1160	0	1160	0	1160
1170	ND01	Digit 1	1	1	1170	1	1170	1	1170	1	1170	1	1170
1180	ND02	Digit 2	2	2	1180	2	1180	2	1180	2	1180	2	1180
1190	ND03	Digit 3	3	3	1190	3	1190	3	1190	3	1190	3	1190

TABLE A-7/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
1200	ND04	Digit 4	4	4	1200	4	1200	4	1200	4	1200	4	1200
1210	ND05	Digit 5	5	5	1210	5	1210	5	1210	5	1210	5	1210
1220	ND06	Digit 6	6	6	1220	6	1220	6	1220	6	1220	6	1220
1230	ND07	Digit 7	7	7	1230	7	1230	7	1230	7	1230	7	1230
1240	ND08	Digit 8	8	8	1240	8	1240	8	1240	8	1240	8	1240
1250	ND09	Digit 9	9	9	1250	9	1250	9	1250	9	1250	9	1250
1260	SP13	Colon	:	:	1260	:	1260	:	1260	:	1260	:	1260
1270	SP14	Semicolon	;	;	1270	;	1270	?	1310	;	1270	;	1270
1280	SA03	Less-than sign	<	<	1280	<	1280	?	1310	<	1280	<	1280
1290	SA04	Equal sign	=	=	1290	=	1290	=	1290	=	1290	=	1290
1300	SA05	Greater-than sign	>	>	1300	>	1300	?	1310	>	1300	>	1300
1310	SP15	Question mark	?	?	1310	?	1310	?	1310	?	1310	?	1310
1320	SM05	Cmmercial at	**@**	**@**	1320	**@**	1320	?	1310	**@**	1320	**@**	1320
1330	LA02	Capital A	A	A	1330	A	1330	A	1330	A	1330	A	1330
1340	LB02	Capital B	B	B	1340	B	1340	B	1340	B	1340	B	1340
1350	LC02	Capital C	C	C	1350	C	1350	C	1350	C	1350	C	1350
1360	LD02	Capital D	D	D	1360	D	1360	D	1360	D	1360	D	1360
1370	LE02	Capital E	E	E	1370	E	1370	E	1370	E	1370	E	1370
1380	LF02	Capital F	F	F	1380	F	1380	F	1380	F	1380	F	1380
1390	LG02	Capital G	G	G	1390	G	1390	G	1390	G	1390	G	1390

TABLE A-8/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
1400	LH02	Capital H	H	H	1400	H	1400	H	1400	H	1400	H	1400
1410	LI02	Capital I	I	I	1410	I	1410	I	1410	I	1410	I	1410
1420	LJ02	Capital J	J	J	1420	J	1420	J	1420	J	1420	J	1420
1430	LK02	Capital K	K	K	1430	K	1430	K	1430	K	1430	K	1430
1440	LL02	Capital L	L	L	1440	L	1440	L	1440	L	1440	L	1440
1450	LM02	Capital M	M	M	1450	M	1450	M	1450	M	1450	M	1450
1460	LN02	Capital N	N	N	1460	N	1460	N	1460	N	1460	N	1460
1470	LO02	Capital O	O	O	1470	O	1470	O	1470	O	1470	O	1470
1480	LP02	Capital P	P	P	1480	P	1480	P	1480	P	1480	P	1480
1490	LQ02	Capital Q	Q	Q	1490	Q	1490	Q	1490	Q	1490	Q	1490
1500	LR02	Capital R	R	R	1500	R	1500	R	1500	R	1500	R	1500
1510	LS02	Capital S	S	S	1510	S	1510	S	1510	S	1510	S	1510
1520	LT02	Capital T	T	T	1520	T	1520	T	1520	T	1520	T	1520
1530	LU02	Capital U	U	U	1530	U	1530	U	1530	U	1530	U	1530
1540	LV02	Capital V	V	V	1540	V	1540	V	1540	V	1540	V	1540
1550	LW02	Capital W	W	W	1550	W	1550	W	1550	W	1550	W	1550
1560	LX02	Capital X	X	X	1560	X	1560	X	1560	X	1560	X	1560
1570	LY02	Capital Y	Y	Y	1570	Y	1570	Y	1570	Y	1570	Y	1570
1580	LZ02	Capital Z	Z	Z	1580	Z	1580	Z	1580	Z	1580	Z	1580
1590	SM06	Left square bracket	[	[	1590	[	1590	?	1310	[	1590	[	1590

TABLE A-9/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
1600		Reverse solidus	\	?	1310	\	1600	?	1310	\	1600	?	1310
1610	SM08	Right spare bracket	]	]	1610	]	1610	?	1310	]	1610	]	1610
1620		Circumflex accent (IA5)	^	FS		^	1620	?	1310	^	1620	FS	
1630	SP09	Low line	_	_	1630	_	1630	?	1310	_	1630	_	1630
1640		Grave accent (IA5)	‘	FS		‘	1640	?	1310	‘	1640	FS	
1650	LA01	Small a	a	a	1650	a	1650	A	1330	a	1650	a	1650
1660	LB01	Small b	b	b	1660	b	1660	B	1340	b	1660	b	1660
1670	LC01	Small c	c	c	1670	c	1670	C	1350	c	1670	c	1670
1680	LD01	Small d	d	d	1680	d	1680	D	1360	d	1680	d	1680
1690	LE01	Small e	e	e	1690	e	1690	E	1370	e	1690	e	1690
1700	LF01	Small f	f	f	1700	f	1700	F	1380	f	1700	f	1700
1710	LG01	Small g	g	g	1710	g	1710	G	1390	g	1710	g	1710
1720	LH01	Small h	h	h	1720	h	1720	H	1400	h	1720	h	1720
1730	LI01	Small i	i	i	1730	i	1730	I	1410	i	1730	i	1730
1740	LJ01	Small j	j	j	1740	j	1740	J	1420	j	1740	j	1740
1750	LK01	Small k	k	k	1750	k	1750	K	1430	k	1750	k	1750
1760	LL01	Small l	l	l	1760	l	1760	L	1440	l	1760	l	1760
1770	LM01	Small m	m	m	1770	m	1770	M	1450	m	1770	m	1770
1780	LN01	Small n	n	n	1780	n	1780	N	1460	n	1780	n	1780
1790	LO01	Small o	o	o	1790	o	1790	O	1470	o	1790	o	1790

TABLE A-10/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
1800	LP01	Small p	p	p	1800	p	1800	P	1480	p	1800	p	1800
1810	LQ01	Small q	q	q	1810	q	1810	Q	1490	q	1810	q	1810
1820	LR01	Small r	r	r	1820	r	1820	R	1500	r	1820	r	1820
1830	LS01	Small s	s	s	1830	s	1830	S	1510	s	1830	s	1830
1840	LT01	Small t	t	t	1840	t	1840	T	1520	t	1840	t	1840
1850	LU01	Small u	u	u	1850	u	1850	U	1530	u	1850	u	1850
1860	LV01	Small v	v	v	1860	v	1860	V	1540	v	1860	v	1860
1870	LW01	Small w	w	w	1870	w	1870	W	1550	w	1870	w	1870
1880	LX01	Small x	x	x	1880	x	1880	X	1560	x	1880	x	1880
1890	LY01	Small y	y	y	1890	y	1890	Y	1570	y	1890	y	1890
1900	LZ01	Small z	z	z	1900	z	1900	Z	1580	z	1900	z	1900
1910		Left curly bracket	{	<	1280	{	1910	?	1310	{	1910	<	1280
1920	SM13	Vertical line	|	|	1920	|	1920	?	1310	|	1920	|	1920
1930		Right curly bracket	}	>	1300	}	1930	?	1310	}	1930	>	1300
1940		Tilde, overline (IA5)	¯	FS		¯	1940	?	1310	¯	1940	FS	
1950		Delete	DEL	disc.		DEL	1950	disc.		DEL	1950	disc.	
1960													
1970													
1980													
1990													

TABLE A-11/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
2000													
2010	SP03	Inverted exclamation mark	¡	¡	2010	?	1310	?	1310	¡	2010	¡	2010
2020	SC04	Cent sign	¢	¢	2020	¤	2080	?	1310	¢	2020	¢	2020
2030	SC02	Pound sign	£	£	2030	¤	2080	?	1310	£	2030	£	2030
2040	SC03	Dollar sign	$	$	2040	¤	2080	?	1310	$	2040	$	2040
2050	SC05	Yen sign	¥	¥	2050	¤	2080	?	1310	¥	2050	¥	2050
2060	SM01	Number sign	#	#	2060	#	2060	?	1310	#	2060	#	2060
2070	SM24	Section sign	§	§	2070	?	1310	?	1310	§	2070	§	2070
2080	SC01	Currency sign	¤	¤	2080	¤	2080	?	1310	¤	2080	¤	2080
2090	SP19	Single quotation mark left	‘	’	1070	’	1070	’	1070	’	1070	’	1070
2100	SP21	Double quotation mark left	“	”	1020	”	1020	?	1310	”	1020	”	1020
2110	SP17	Angle quotation mark left	«		2110	<	1280	?	1310	«	2110	«	2110
2120	SM30	Leftward arrow	←	?	1310	?	1310	?	1310	?	1310	?	1310
2130	SM32	Upward arrow	↑	?	1310	?	1310	?	1310	?	1310	?	1310
2140	SM31	Rightward arrow	→	?	1310	?	1310	?	1310	?	1310	?	1310
2150	SM33	Downward arrow	↓	?	1310	?	1310	?	1310	?	1310	?	1310
2160	SM19	Degree sign	°	°	2160	?	1310	?	1310	°	2160	°	2160
2170	SA02	Plus/minus sign	±	±	2170	?	1310	?	1310	±	2170	±	2170
2180	NS02	Superscript 2	□^{2}	□^{2}	2180	?	1310	?	1310	□^{2}	2180	□^{2}	2180
2190	NS03	Superscript 3	□^{3}	□^{3}	2190	?	1310	?	1310	□^{3}	2190	□^{3}	2190

TABLE A-12/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
2200	SA07	Multiply sign	×	×	2200	?	1310	?	1310	×	2200	×	2200
2210	SM17	Micro sign	µ	µ	2210	?	1310	?	1310	µ	2210	µ	2210
2220	SM25	Paragraph sign, pilcrow	¶	¶	2220	?	1310	?	1310	¶	2220	¶	2220
2230	SM26	Middle dot	·	·	2230	?	1310	?	1310	·	2230	·	2230
2240	SA06	Divide sign	÷	÷	2240	?	1310	?	1310	÷	2240	÷	2240
2250	SP20	Single quotation mark right	’	’	1070	’	1070	’	1070	’	1070	’	1070
2260	SP22	Double quotation mark right	”	”	1020	”	1020	?	1310	”	1020	”	1020
2270	SP18	Angle quotation mark right	»	»	2270	>	1300	?	1310	»	2270	»	2270
2280	NF04	Fraction one quarter	¼	¼	2280	?	1310	?	1310	¼	2280	¼	2280
2290	NF01	Fraction one half	½	½	2290	?	1310	?	1310	½	2290	½	2290
2300	NF05	Fraction three quarter	¾	¾	2300	?	1310	?	1310	¾	2300	¾	2300
2310	SP16	Inverted questionmark left	¿	¿	2310	?	1310	?	1310	¿	2310	¿	2310
2320													
2330	SD13	Grave accent	`	`	2330	?	1310	?	1310	`	2330	`	2330
2340	SD11	Acute accent	´	´	2340	?	1310	?	1310	´	2340	´	2340
2350	SD15	Circumflex accent	^	^	2350	?	1310	?	1310	^	2350	^	2350
2360	SD19	Tilde	~	~	2360	?	1310	?	1310	~	2360	~	2360
2370	SD31	Macron	-	-	2370	?	1310	?	1310	-	2370	-	2370
2380	SD23	Breve	˘	˘	2380	?	1310	?	1310	˘	2380	˘	2380
2390	SD29	Dot	˙	˙	2390	?	1310	?	1310	˙	2390	˙	2390

TABLE A-13/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
2400	SD17	Diaeresis or umlaut mark	¨	¨	2400	?	1310	?	1310	¨	2400	¨	2400
2410													
2420	SD27	Ring	°	°	2420	?	1310	?	1310	°	2420	°	2420
2430	SD41	Cedilla	¸	¸	2430	?	1310	?	1310	¸	2430	¸	2430
2440													
2450	SD25	Double acute accent	˝	˝	2450	?	1310	?	1310	˝	2450	˝	2450
2460	SD43	Ogonek	˛	˛	2460	?	1310	?	1310	˛	2460	˛	2460
2470	SD21	Caron	ˇ	ˇ	2470	?	1310	?	1310	ˇ	2470	ˇ	2470
2480	SM12	Horizontal bar	–	?	1310	?	1310	?	1310	–	2480	–	2480
2490		Superscript 1	□[1]	?	1310	?	1310	?	1310	□[1]	2490	□[1]	2490
2500		Registered sign	®	?	1310	?	1310	?	1310	®	2500	®	2500
2510		Copyright sign	©	?	1310	?	1310	?	1310	©	2510	©	2510
2520		Trade mark sign	TM	?	1310	?	1310	?	1310	TM	2520	TM	2520
2530		Music note	♪	?	1310	?	1310	?	1310	♪	2530	♪	2530
2540													
2550													
2560													
2570													
2580													
2590													

TABLE A-14/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
2600		Fraction one eighth	1/8	?	1310	?	1310	?	1310	1/8	2600	1/8	2600
2610		Fraction three eighth	3/8	?	1310	?	1310	?	1310	3/8	2610	3/8	2610
2620		Fraction five eighth	5/8	?	1310	?	1310	?	1310	5/8	2620	5/8	2620
2630		Fraction seven eighth	7/8	?	1310	?	1310	?	1310	7/8	2630	7/8	2630
2640	SM18	Ohm sign	Ω	Ω	2640	?	1310	?	1310	Ω	2640	Ω	2640
2650	LA52	Capital AE diphthong	Æ	Æ	2650	?	1310	?	1310	Æ	2650	Æ	2650
2660	LD62	Capital D with stroke	Đ	Đ	2660	?	1310	?	1310	Đ	2660	Đ	2660
2670	SM21	Ordinal indicator, feminine	a	a	2670	?	1310	?	1310	a	2670	a	2670
2680	LH62	Capital H with stroke	Ħ	Ħ	2680	?	1310	?	1310	Ħ	2680	Ħ	2680
2690													
2700	LI52	Capital IJ ligature	IJ	IJ	2700	?	1310	?	1310	IJ	2700	IJ	2700
2710	LL64	Capital L with middle dot	Ŀ	Ŀ	2710	?	1310	?	1310	Ŀ	2710	Ŀ	2710
2720	LL62	Capital L with stroke	Ł	Ł	2720	?	1310	?	1310	Ł	2720	Ł	2720
2730	LO62	Capital O with slash	Ø	Ø	2730	?	1310	?	1310	Ø	2730	Ø	2730
2740	LO52	Capital Œ ligature	Œ	Œ	2740	?	1310	?	1310	Œ	2740	Œ	2740
2750	SM20	Ordinal indicator, masculine	o	o	2750	?	1310	?	1310	o	2750	o	2750
2760	LT64	Capital thorn, icelandic	Þ	Þ	2760	?	1310	?	1310	Þ	2760	Þ	2760
2770	LT62	Capital T with stroke	Ŧ	Ŧ	2770	?	1310	?	1310	Ŧ	2770	Ŧ	2770
2780	LN62	Capital eng, lapp	Ŋ	Ŋ	2780	?	1310	?	1310	Ŋ	2780	Ŋ	2780
2790	LN63	Small n with apostrophe	ŉ	ŉ	2790	?	1310	?	1310	ŉ	2790	ŉ	2790

TABLE A-15/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
2800	LK61	Small k, greenlandic	ĸ	ĸ	2800	?	1310	?	1310	ĸ	2800	ĸ	2800
2810	LA51	Small æ diphthong	æ	æ	2810	?	1310	?	1310	æ	2810	æ	2810
2820	LD61	Small d with stroke	đ	đ	2820	?	1310	?	1310	đ	2820	đ	2820
2830	LD63	Small eth, icelandic	ð	ð	2830	?	1310	?	1310	ð	2830	ð	2830
2840	LH61	Small h with stroke	ħ	ħ	2840	?	1310	?	1310	ħ	2840	ħ	2840
2850	LI61	Small i without dot	ı	ı	2850	?	1310	?	1310	ı	2850	ı	2850
2860	LI51	Small ij ligature	ij	ij	2860	?	1310	?	1310	ij	2860	ij	2860
2870	LL63	Small l with middle dot	l·	l·	2870	?	1310	?	1310	l·	2870	l·	2870
2880	LL61	Small l with stroke	ł	ł	2880	?	1310	?	1310	ł	2880	ł	2880
2890	LO61	Small o with slash	ø	ø	2890	?	1310	?	1310	ø	2890	ø	2890
2900	LO51	Small œ ligature	œ	œ	2900	?	1310	?	1310	œ	2900	œ	2900
2910	LS61	Small sharp s, german	ß	ß	2910	?	1310	?	1310	ß	2910	ß	2910
2920	LT63	Small thorn, icelandic	þ	þ	2920	?	1310	?	1310	þ	2920	þ	2920
2930	LT61	Small t with stroke	ŧ	ŧ	2930	?	1310	?	1310	ŧ	2930	ŧ	2930
2940	LN61	Small eng, lapp	ŋ	ŋ	2940	?	1310	?	1310	ŋ	2940	ŋ	2940
2950													
2960													
2970													
2980													
2990													

TABLE A-16/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
3000	LA11	Small a with acute accent	á	á	3000	a	1650	A	1330	á	3000	á	3000
3010	LA12	Capital A with acute accent	Á	Á	3010	A	1330	A	1330	Á	3010	Á	3010
3020	LA13	Small a with grave accent	à	à	3020	a	1650	A	1330	à	3020	à	3020
3030	LA14	Capital A with grave accent	À	À	3030	A	1330	A	1330	À	3030	À	3030
3040	LA15	Small a with circumflex accent	â	â	3040	a	1650	A	1330	â	3040	â	3040
3050	LA16	Capital A with circumflex accent	Â	Â	3050	A	1330	A	1330	Â	3050	Â	3050
3060	LA17	Small a with diaeresis or umlaut mark	ä	ä	3060	a	1650	A	1330	ä	3060	ä	3060
3070	LA18	Capital A with diaeresis or umlaut mark	Ä	Ä	3070	A	1330	A	1330	Ä	3070	Ä	3070
3080	LA19	Small a with tilde	ã	ã	3080	a	1650	A	1330	ã	3080	ã	3080
3090	LA20	Capital A with tilde	Ã	Ã	3090	A	1330	A	1330	Ã	3090	Ã	3090
3100	LA23	Small a with breve	ă	ă	3100	a	1650	A	1330	ă	3100	ă	3100
3110	LA24	Capital A with breve	Ă	Ă	3110	A	1330	A	1330	Ă	3110	Ă	3110
3120	LA27	Small a with ring	å	å	3120	a	1650	A	1330	å	3120	å	3120
3130	LA28	Capital A with ring	Å	Å	3130	A	1330	A	1330	Å	3130	Å	3130
3140	LA31	Small a with macron	ā	ā	3140	a	1650	A	1330	ā	3140	ā	3140
3150	LA32	Capital A with macron	Ā	Ā	3150	A	1330	A	1330	Ā	3150	Ā	3150
3160	LA43	Small a with ogonek	ą	ą	3160	a	1650	A	1330	ą	3160	ą	3160
3170	LA44	Capital A with ogonek	Ą	Ą	3170	A	1330	A	1330	Ą	3170	Ą	3170
3180	LC11	Small c with acute accent	ć	ć	3180	c	1670	C	1350	ć	3180	ć	3180
3190	LC12	Capital C with acute accent	Ć	Ć	3190	C	1350	C	1350	Ć	3190	Ć	3190

TABLE A-17/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
3200	LC15	Small c with circumflex accent	ĉ	ĉ	3200	c	1670	C	1350	ĉ	3200	ĉ	3200
3210	LC16	Capital C with circumflex accent	Ĉ	Ĉ	3210	C	1350	C	1350	Ĉ	3210	Ĉ	3210
3220	LC21	Small c with caron	č	č	3220	c	1670	C	1350	č	3220	č	3220
3230	LC22	Capital C with caron	Č	Č	3230	C	1350	C	1350	Č	3230	Č	3230
3240	LC29	Small c with dot	ċ	ċ	3240	c	1670	C	1350	ċ	3240	ċ	3240
3250	LC30	Capital C with dot	Ċ	Ċ	3250	C	1350	C	1350	Ċ	3250	Ċ	3250
3260	LC41	Small c with cedilla	ç	ç	3260	c	1670	C	1350	ç	3260	ç	3260
3270	LC42	Capital C with cedilla	Ç	Ç	3270	C	1350	C	1350	Ç	3270	Ç	3270
3280	LD21	Small d with caron	ď	ď	3280	d	1680	D	1360	ď	3280	ď	3280
3290	LD22	Capital D with caron	Ď	Ď	3290	D	1360	D	1360	Ď	3290	Ď	3290
3300	LE11	Small e with acute accent	ė	ė	3300	e	1690	E	1370	é	3300	é	3300
3310	LE12	Capital E with acute accent	É	É	3310	E	1370	E	1370	É	3310	É	3310
3320	LE13	Small e with grave accent	è	è	3320	e	1690	E	1370	è	3320	è	3320
3330	LE14	Capital E with grave accent	È	È	3330	E	1370	E	1370	È	3330	È	3330
3340	LE15	Small e with circumflex accent	ê	ê	3340	e	1690	E	1370	ê	3340	ê	3340
3350	LE16	Capital E with circumflex accent	Ê	Ê	3350	E	1370	E	1370	Ê	3350	Ê	3350
3360	LE17	Small e with diaeresis or umlaut mark	ë	ë	3360	e	1690	E	1370	ë	3360	ë	3360
3370	LE18	Capital E with diaeresis or umlaut mark	Ë	Ë	3370	E	1370	E	1370	Ë	3370	Ë	3370
3380	LE21	Small e with caron	ě	ě	3380	e	1690	E	1370	ě	3380	ě	3380
3390	LE22	Capital E with caron	Ě	Ě	3390	E	1370	E	1370	Ě	3390	Ě	3390

TABLE A-18/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
3400	LE29	Small e with dot	ė	ė	3400	e	1690	E	1370	ė	3400	ė	3400
3410	LE30	Capital E with dot	Ė	Ė	3410	E	1370	E	1370	Ė	3410	Ė	3410
3420	LE31	Small e with macron	ē	ē	3420	e	1690	E	1370	ē	3420	ē	3420
3430	LE32	Capital E with macron	Ē	Ē	3430	E	1370	E	1370	Ē	3430	Ē	3430
3440	LE43	Small e with ogonek	ę	ę	3440	e	1690	E	1370	ę	3440	ę	3440
3450	LE44	Capital E with ogonek	Ę	Ę	3450	E	1370	E	1370	Ę	3450	Ę	3450
3460	LG11	Small g with acute accent	ǵ	ǵ	3460	g	1710	G	1390	ǵ	3460	ǵ	3460
3470	LG15	Small g with circumflex accent	ĝ	ĝ	3470	g	1710	G	1390	ĝ	3470	ĝ	3470
3480	LG16	Capital G with circumflex accent	Ĝ	Ĝ	3480	G	1390	G	1390	Ĝ	3480	Ĝ	3480
3490	LG23	Small g with breve	ğ	ğ	3490	g	1710	G	1390	ğ	3490	ğ	3490
3500	LG24	Capital G with breve	Ğ	Ğ	3500	G	1390	G	1390	Ğ	3500	Ğ	3500
3510	LG29	Small g with dot	ġ	ġ	3510	g	1710	G	1390	ġ	3510	ġ	3510
3520	LG30	Capital G with dot	Ġ	Ġ	3520	G	1390	G	1390	Ġ	3520	Ġ	3520
3530	LG42	Capital G with cedilla	Ģ	Ģ	3530	G	1390	G	1390	Ģ	3530	Ģ	3530
3540	LH15	Small h with circumflex accent	ĥ	ĥ	3540	h	1720	H	1400	ĥ	3540	ĥ	3540
3550	LH16	Capital H with circumflex accent	Ĥ	Ĥ	3550	H	1400	H	1400	Ĥ	3550	Ĥ	3550
3560	LI11	Small i with acute accent	í	í	3560	i	1730	I	1410	í	3560	í	3560
3570	LI12	Capital I with acute accent	Í	Í	3570	I	1410	I	1410	Í	3570	Í	3570
3580	LI13	Small i with grave accent	ì	ì	3580	i	1730	I	1410	ì	3580	ì	3580
3590	LI14	Capital I with grave accent	Ì	Ì	3590	I	1410	I	1410	Ì	3590	Ì	3590

TABLE A-19/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
3600	LI15	Small i with circumflex accent	î	î	3600	i	1730	I	1410	î	3600	î	3600
3610	LI16	Capital I with circumflex accent	Î	Î	3610	I	1410	I	1410	Î	3610	Î	3610
3620	LI17	Small i with diaeresis or umlaut mark	ï	ï	3620	i	1730	I	1410	ï	3620	ï	3620
3630	LI18	Capital I with diaeresis or umlaut mark	Ï	Ï	3630	I	1410	I	1410	Ï	3630	Ï	3630
3640	LI19	Small i with tilde	ĩ	ĩ	3640	i	1730	I	1410	ĩ	3640	ĩ	3640
3650	LI20	Capital I with tilde	Ĩ	Ĩ	3650	I	1410	I	1410	Ĩ	3650	Ĩ	3650
3660	LI30	Capital I with dot	İ	İ	3660	I	1410	I	1410	İ	3660	İ	3660
3670	LI31	Small i with macron	ī	ī	3670	i	1730	I	1410	ī	3670	ī	3670
3680	LI32	Capital I with macron	Ī	Ī	3680	I	1410	I	1410	Ī	3680	Ī	3680
3690	LI43	Small i with ogonek	į	į	3690	i	1730	I	1410	į	3690	į	3690
3700	LI44	Capital I with ogonek	Į	Į	3700	I	1410	I	1410	Į	3700	Į	3700
3710	LJ15	Small j with circumflex accent	ĵ	ĵ	3710	j	1740	J	1420	ĵ	3710	ĵ	3710
3720	LJ16	Capital J with circumflex accent	Ĵ	Ĵ	3720	J	1420	J	1420	Ĵ	3720	Ĵ	3720
3730	LK41	Small k with cedilla	ķ	ķ	3730	k	1750	K	1430	ķ	3730	ķ	3730
3740	LK42	Capital K with cedilla	Ķ	Ķ	3740	K	1430	K	1430	Ķ	3740	Ķ	3740
3750	LL11	Small l with acute accent	ĺ	ĺ	3750	l	1760	L	1440	ĺ	3750	ĺ	3750
3760	LL12	Capital L acute accent	Ĺ	Ĺ	3760	L	1440	L	1440	Ĺ	3760	Ĺ	3760
3770	LL21	Small l with caron	ľ	ľ	3770	l	1760	L	1440	ľ	3770	ľ	3770
3780	LL22	Capital L with caron	Ľ	Ľ	3780	L	1440	L	1440	Ľ	3780	Ľ	3780
3790	LN11	Small n with acute accent	ń	ń	3790	n	1780	N	1460	ń	3790	ń	3790

TABLE A-20/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
3800	LN12	Capital N with acute accent	Ń	Ń	3800	N	1460	N	1460	Ń	3800	Ń	3800
3810	LN19	Small n with tilde	ñ	ñ	3810	n	1780	N	1460	ñ	3810	ñ	3810
3820	LN20	Capital N with tilde	Ñ	Ñ	3820	N	1460	N	1460	Ñ	3820	Ñ	3820
3830	LN21	Small n with caron	ň	ň	3830	n	1780	N	1460	ň	3830	ň	3830
3840	LN22	Capital N with caron	Ň	Ň	3840	N	1460	N	1460	Ň	3840	Ň	3840
3850	LN41	Small n with cedilla	ņ	ņ	3850	n	1780	N	1460	ņ	3850	ņ	3850
3860	LN42	Capital N with cedilla	Ņ	Ņ	3860	N	1460	N	1460	Ņ	3860	Ņ	3860
3870	LO11	Small o with acute accent	ó	ó	3870	o	1790	O	1470	ó	3870	ó	3870
3880	LO12	Capital O with acute accent	Ó	Ó	3880	O	1470	O	1470	Ó	3880	Ó	3880
3890	LO13	Small o with grave accent	ò	ò	3890	o	1790	O	1470	ò	3890	ò	3890
3900	LO14	Capital O with grave accent	Ò	Ò	3900	O	1470	O	1470	Ò	3900	Ò	3900
3910	LO15	Small o with circumflex accent	ô	ô	3910	o	1790	O	1470	ô	3910	ô	3910
3920	LO16	Capital O with circumflex accent	Ô	Ô	3920	O	1470	O	1470	Ô	3920	Ô	3920
3930	LO17	Small o with diaeresis or umlaut mark	ö	ö	3930	o	1790	O	1470	ö	3930	ö	3930
3940	LO18	Capital O with diaeresis or umlaut mark	Ö	Ö	3940	O	1470	O	1470	Ö	3940	Ö	3940
3950	LO19	Small o with tilde	õ	õ	3950	o	1790	O	1470	õ	3950	õ	3950
3960	LO20	Capital O with tilde	Õ	Õ	3960	O	1470	O	1470	Õ	3960	Õ	3960
3970	LO25	Small o with double acute accent	ő	ő	3970	o	1790	O	1470	ő	3970	ő	3970
3980	LO26	Capital O with double acute accent	Ő	Ő	3980	O	1470	O	1470	Ő	3980	Ő	3980
3990	LO31	Small o with macron	ō	ō	3990	o	1790	O	1470	ō	3990	ō	3990

TABLE A-21/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
4000	L032	Capital O with macron	Ō	Ō	4000	O	1470	O	1470	Ō	4000	Ō	4000
4010	LR11	Small r with acute accent	ŕ	ŕ	4010	r	1820	R	1500	ŕ	4010	ŕ	4010
4020	LR12	Capital R with acute accent	Ŕ	Ŕ	4020	R	1500	R	1500	Ŕ	4020	Ŕ	4020
4030	LR21	Small r with caron	ř	ř	4030	r	1820	R	1500	ř	4030	ř	4030
4040	LR22	Capital R with caron	Ř	Ř	4040	R	1500	R	1500	Ř	4040	Ř	4040
4050	LR41	Small r with cedilla	ŗ	ŗ	4050	r	1820	R	1500	ŗ	4050	ŗ	4050
4060	LR42	Capital R with cedilla	Ŗ	Ŗ	4060	R	1500	R	1500	Ŗ	4060	Ŗ	4060
4070	LS11	Small s with acute accent	ś	ś	4070	s	1830	S	1510	ś	4070	ś	4070
4080	LS12	Capital S with acute accent	Ś	Ś	4080	S	1510	S	1510	Ś	4080	Ś	4080
4090	LS15	Small s with circumflex accent	ŝ	ŝ	4090	s	1830	S	1510	ŝ	4090	ŝ	4090
4100	LS16	Capital S with circumflex accent	Ŝ	Ŝ	4100	S	1510	S	1510	Ŝ	4100	Ŝ	4100
4110	LS21	Small s with caron	š	š	4110	s	1830	S	1510	š	4110	š	4110
4120	LS22	Capital S with caron	Š	Š	4120	S	1510	S	1510	Š	4120	Š	4120
4130	LS41	Small s with cedilla	ş	ş	4130	s	1830	S	1510	ş	4130	ş	4130
4140	LS42	Capital S with cedilla	Ş	Ş	4140	S	1510	S	1510	Ş	4140	Ş	4140
4150	LT21	Small t with caron	ť	ť	4150	t	1840	T	1520	ť	4150	ť	4150
4160	LT22	Capital T with caron	Ť	Ť	4160	T	1520	T	1520	Ť	4160	Ť	4160
4170	LT41	Small t with cedilla	ţ	ţ	4170	t	1840	T	1520	ţ	4170	ţ	4170
4180	LT42	Capital T with cedilla	Ţ	Ţ	4180	T	1520	T	1520	Ţ	4180	Ţ	4180
4190	LU11	Small u with acute accent	ú	ú	4190	u	1850	U	1530	ú	4190	ú	4190

TABLE A-22/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
4200	LU12	Capital U with acute accent	Ú	Ú	4200	U	1530	U	1530	Ú	4200	Ú	4200
4210	LU13	Small u with grave accent	ù	ù	4210	u	1850	U	1530	ù	4210	ù	4210
4220	LU14	Capital U with grave accent	Ù	Ù	4220	U	1530	U	1530	Ù	4220	Ù	4220
4230	LU15	Small u with circumflex accent	û	û	4230	u	1850	U	1530	û	4230	û	4230
4240	LU16	Capital U with circumflex accent	Û	Û	4240	U	1530	U	1530	Û	4240	Û	4240
4250	LU17	Small u with diaeresis or umlaut mark	ü	ü	4250	u	1850	U	1530	ü	4250	ü	4250
4260	LU18	Capital U with diaeresis or umlaut mark	Ü	Ü	4260	U	1530	U	1530	Ü	4260	Ü	4260
4270	LU19	Small u with tilde	ũ	ũ	4270	u	1850	U	1530	ũ	4270	ũ	4270
4280	LU20	Capital U with tilde	Ũ	Ũ	4280	U	1530	U	1530	Ũ	4280	Ũ	4280
4290	LU23	Small u with breve	ŭ	ŭ	4290	u	1850	U	1530	ŭ	4290	ŭ	4290
4300	LU24	Capital U with breve	Ŭ	Ŭ	4300	U	1530	U	1530	Ŭ	4300	Ŭ	4300
4310	LU25	Small u with double acute accent	ű	ű	4310	u	1850	U	1530	ű	4310	ű	4310
4320	LU26	Capital U with double acute accent	Ű	Ű	4320	U	1530	U	1530	Ű	4320	Ű	4320
4330	LU27	Small u with ring	ů	ů	4330	u	1850	U	1530	ů	4330	ů	4330
4340	LU28	Capital U with ring	Ů	Ů	4340	U	1530	U	1530	Ů	4340	Ů	4340
4350	LU31	Small u with macron	ū	ū	4350	u	1850	U	1530	ū	4350	ū	4350
4360	LU32	Capital U with macron	Ū	Ū	4360	U	1530	U	1530	Ū	4360	Ū	4360
4370	LU43	Small u with ogonek	ų	ų	4370	u	1850	U	1530	ų	4370	ų	4370
4380	LU44	Capital U with ogonek	Ų	Ų	4380	U	1530	U	1530	Ų	4380	Ų	4380
4390	LW15	Small w with circumflex accent	ŵ	ŵ	4390	w	1870	W	1550	ŵ	4390	ŵ	4390

TABLE A-23/X.408

REFERENCE SET				CONVERTED SET									
Identification		Name or description	Symbol	T.61		IA5IRV		ITA2		Facsimile		Videotex	
No.				Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.	Symbol	No.
4400	LW16	Capital W with circumflex accent	Ŵ	Ŵ	4400	W	1550	W	1550	Ŵ	4400	Ŵ	4400
4410	LY11	Small y with acute accent	ý	ý	4410	y	1890	Y	1570	ý	4410	ý	4410
4420	LY12	Capital Y with acute accent	Ý	Ý	4420	Y	1570	Y	1570	Ý	4420	Ý	4420
4430	LY15	Small y with circumflex accent	ŷ	ŷ	4430	y	1890	Y	1570	ŷ	4430	ŷ	4430
4440	LY16	Capital Y with circumflex accent	Ŷ	Ŷ	4440	Y	1570	Y	1570	Ŷ	4440	Ŷ	4440
4450	LY17	Small y with diaeresis or umlaut mark	ÿ	ÿ	4450	y	1890	Y	1570	ÿ	4450	ÿ	4450
4460	LY18	Capital Y with diaeresis or umlaut mark	Ÿ	Ÿ	4460	Y	1570	Y	1570	Ÿ	4460	Ÿ	4460
4470	LZ11	Small z with acute accent	ź	ź	4470	z	1900	Z	1580	ź	4470	ź	4470
4480	LZ12	Capital Z with acute accent	Ź	Ź	4480	Z	1580	Z	1580	Ź	4480	Ź	4480
4490	LZ21	Small z with caron	ž	ž	4490	z	1900	Z	1580	ž	4490	ž	4490
4500	LZ22	Capital Z with caron	Ž	Ž	4500	Z	1580	Z	1580	Ž	4500	Ž	4500
4510	LZ29	Small z with dot	ż	ż	4510	z	1900	Z	1580	ż	4510	ż	4510
4520	LZ30	Capital Z with dot	Ż	Ż	4520	Z	1580	Z	1580	Ż	4520	Ż	4520
4530													
4540													
4550													
4560													
4570													
4580													
4590													

ANNEX B

(to Recommendation X.408)

Abbreviations

The following abbreviations are used in this Recommendation.

APD	Active Position Down
APR	Active Position Return
BS	Backspace
CR	Carriage Return
CS	Clear Screen
FF	Form Feed
FS	Further Study
G3	Group 3
G3Fax	Group 3 Facsimile Type
G4	Group 4
HT	Horizontal Tabulation
IA	International Alphabet
IGS	Identify Graphic Subrepertoire
ITA	International Telegraph Alphabet
LF	Line Feed
MHS	Message Handling System
OSI	Open Systems Interconnection
PFS	Page Format Selection
PLD	Partial Line Down
PLU	Partial Line Up
RLF	Reverse Line Feed
SGR	Select Graphic Rendition
SHS	Select Horizontal Spacing
SP	Space
SUB	Substitute Character
SVS	Select Vertical Spacing
TLX	Telex Type
TTX	Teletex Type
VT	Vertical Tabulation