INTERNATIONAL TELECOMMUNICATION UNION

CCITT

T.51

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

(09/92)

TERMINAL EQUIPMENT AND PROTOCOLS FOR TELEMATIC SERVICES

LATIN BASED CODED CHARACTER SETS FOR TELEMATIC SERVICES

Recommendation T.51

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation revised T.51 was revised by Study Group VIII and was approved under the Resolution No. 2 procedure on the 18 September 1992.

CCITT NOTES

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

2) A list of abbreviations used in this Recommendation can be found in Annex C.

© ITU 1993

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.

Recommendation T.51

LATIN BASED CODED CHARACTER SETS FOR TELEMATIC SERVICES

(Malaga-Torremolinos, 1984: Amended at Melbourne 1988; revised 1992)

1 Scope

1.1 The CCITT,

considering

(a) the increasing interdependence of the various CCITT character sets and coding schemes in various telematic services;

(b) the introduction of new facilities such as code conversion and interworking between various telematic services;

(c) the advantage of having a single unified repertoire and coding of Latin based character set in a Recommendation to act as a reference for the telematic services;

(d) that Recommendations T.61 and T.100/T.101 define the character coding systems for teletex and videotex;

(e) that Recommendation T.50 specifies the International Reference Version (IRV) of the 7-bit coded character set,

provides the following Recommendation as a reference document

towards which the Latin based portion of the coded character sets of telematic services should migrate and from which coded character subsets and elements of code extension mechanisms can be derived for individual telematic services.

1.2 This Recommendation specifies a primary set and a 96-character supplementary set of graphic characters. When various telematic services restrict their primary and supplementary sets to be respective subsets of those given in this Recommendation, it will be ensured that no code position in any of the specified code tables is assigned more than one meaning within different telematic services. 94-character subsets of the supplementary code table can be found in Recommendations of specific telematic services, i.e., in Recommendations T.61 and T.101.

1.3 This Recommendation gives the escape sequences for designating the primary and supplementary sets of graphic characters, to be used according to the code extension techniques specified.

1.4 Non-Latin based character sets are to be dealt with in Recommendation T.52.

1.5 This Recommendation describes those code extension mechanisms that are relevant to existing telematic services. Additional mechanisms will be included in this Recommendation as the need for such is identified for one or more telematic services. The purpose of this Recommendation is to include an up-to-coding systems in various telematic services.

1.6 In this Recommendation 7-bit code tables are described which can be used either in a 7-bit or in an 8-bit environment, with applicable code extension mechanisms that are given in other Recommendations specific to given telematic services.

1.7 This Recommendation gives a unified superset of the repertoire of Latin based alphanumeric characters (see Annex A).

1.8 This Recommendation gives a table of character and control sets used in CCITT telematic services (see Annex B).

1.9 There is no conformance clause in this Recommendation specifying the mandatory and optional subsets of code extension mechanisms and coded character sets. Conformance requirements will be the subject of other CCITT Recommendations specific to particular telematic services.

2 Graphic character sets

2.1 *Primary set*

2.1.1 The primary set of graphic characters specified in Figure 1/T.51 is identical with the set of graphic characters of the International Reference Version (IRV) of the 7-bit coded character set of Recommendation T.50.

2.1.2 The primary set is designated as G0 by the sequence ESC 2/8 4/2. It can also be alternatively designated as G1, G2 or G3 by the sequences ESC 2/9 4/2, ESC 2/10 4/2 or ESC 2/11 4/2 respectively. See § 3 for details on code extension techniques.

Terminals used for telematic services which make reference to the 1988 version of Recommendation T.51 use, for the designation of the primary set as G0, the sequence ESC 2/8 4/0 and alternatively as G1, G2 and G3, the sequences ESC 2/9 4/0, ESC 2/10 4/0, ESC 2/11 4/0.

2.2 *Supplementary set*

2.2.1 The supplementary set of graphic characters is specified in Figure 2/T.51.

2.2.2 Unallocated code positions are subject to future standardization and will be allocated when a need for such is identified.

2.2.3 The supplementary set is designated as G2 by the sequence ESC 2/14 5/2. It can be alternatively designated as G1 or G3 by the sequences ESC 2/13 5/2 or ESC 2/15 5/2 respectively.

Terminals used for telematic services which make reference to the 1988 version of Recommendation T.51 use, for the designation of the supplementary set as G2, the sequence ESC 2/10 6/2 and alternatively as G0, G1 and G3, the sequences ESC 2/8 6/2, ESC 2/9 6/2, ESC 2/11 6/2.

2.2.4 *Notes on the primary and supplementary sets of graphic characters for Figures 1/T.51 and 2/T.51*

In the figures the number of the note being referred to is encircled.

Note 1 – All the characters in column 4 of the supplementary set are non-spacing characters. They are all diacritical marks.

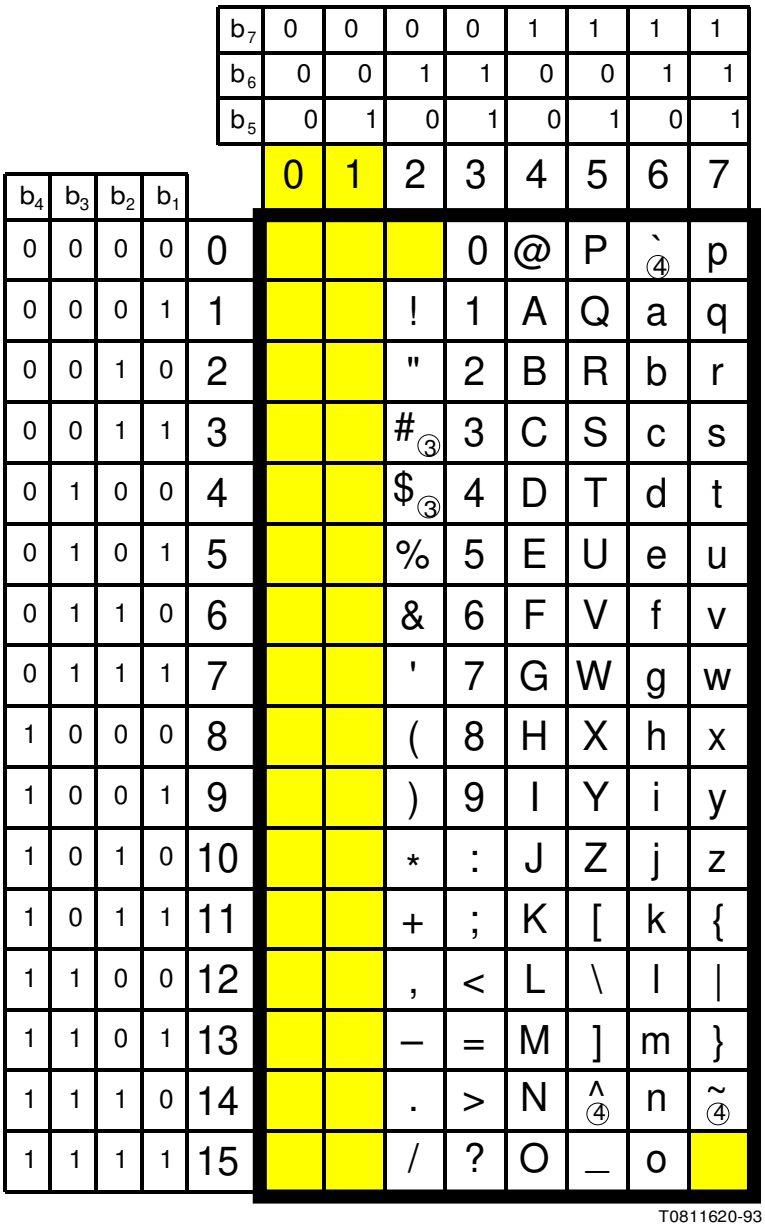
Note 2 – Cross-shaded code positions are reserved for future standardization by the CCITT.

Note 3 – Terminals used for current CCITT defined telematic services may send and receive the codes 2/6 and 2/4 of the supplementary set for the NUMBER SIGN and DOLLAR SIGN, respectively. When receiving codes 2/3 and 2/4 from the primary set of graphic characters, terminals may interpret them as # and ¤ respectively. Future applications in telematic services should code the NUMBER SIGN, CURRENCY SIGN and DOLLAR SIGN in accordance with Figures 1/T.51 and 2/.T.51.

Note 4 – Terminals used for CCITT defined telematic services should send only the codes 4/1 of the supplementary set followed by SPACE for a stand-alone grave accent, 4/3 of the supplementary set followed by SPACE for a stand-alone circumflex accent, and 4/4 of the supplementary set followed by SPACE for a stand-alone tilde. Whenever a telematic terminal is capable of receiving and interpreting codes 6/0, 5/14 and 7/14 from the primary set of graphic characters, terminals shall interpret them as GRAVE, CIRCUMFLEX and TILDE respectively.

Note 5 – This code position is reserved and shall not be used.

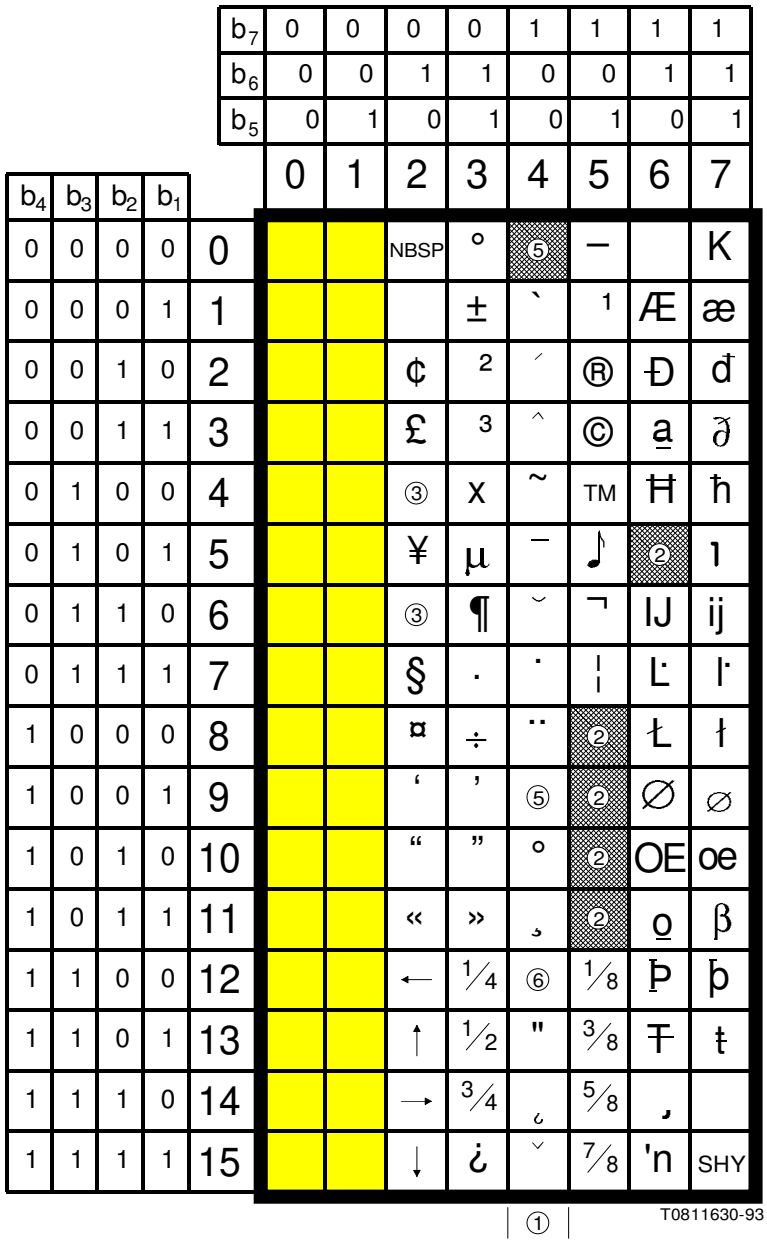
Note 6 – Current telematic services may interpret this as the non-spacing underline. The non-spacing underline character is never used individually but always in combination with some other graphic character to represent the graphic rendition "underlined" for the associated character. The non-spacing underline character can be used in combination with any graphic character of the repertoire, including an accented letter or an umlaut, or space. It is recommended to implement the "underline" function by means of the control function SGR(4) instead of the "non-spacing underline" graphic character. However, both must be correctly interpreted when received.



Note – Notes to this figure are contained in § 2.2.4.

FIGURE 1/T.51

The primary set of graphic characters for telematic services
(coded representation when invoked in columns 2-7 of the code table)



Note – Notes to this figure are contained in § 2.2.4.

FIGURE 2/T.51

The supplementary set of graphic characters for telematic services
(coded representation when invoked in columns 2-7 of the code table)

3 Code extension technique

3.1 *General*

3.1.1 Code extension techniques are required for the designation of various graphic or control character sets and their invocation in the 7-bit set or 8-bit set in use. Such techniques are derived from ISO Standard 2022.

3.1.2 This Recommendation describes only those code extension techniques currently specified for existing telematic services. Additional techniques will be further incorporated as they are identified for use in one or more telematic services.

3.2 *Definitions*

For the purpose of code extension techniques given in this Recommendation, the following definitions apply.

3.2.1 **bit combination**

An ordered set of bits used for the representation of characters.

3.2.2 **byte**

A bit string that is operated upon as a unit and the size of which is independent of redundancy or framing techniques.

3.2.3 **character**

A member of a set of elements used for the organization, control or representation of data.

3.2.4 **coded character set; code**

A set of unambiguous rules that establishes a character set and the one-to-one relationship between the characters of the set and their bit combinations.

3.2.5 **code extension**

The techniques for the encoding of characters that are not included in the character set of a given code.

3.2.6 **code table**

A table showing the character allocated to each bit combination in a code.

3.2.7 **control character**

A control function the coded representation of which consists of a single bit combination.

3.2.8 **control function**

An action that affects the recording, processing, transmission or interpretation of data and that has a coded representation consisting of one or more bit combinations.

3.2.9 **to designate**

To identify a set of characters that are to be represented, in some cases immediately and in others on the occurrence of a further control function, in a prescribed manner.

3.2.10 **environment**

The characteristic that identifies the number of bits used to represent a character in a data processing or data communication system or in part of such a system.

3.2.11 **escape sequence**

A bit string that is used for control purposes in code extension procedures and that consists of two or more bit combinations. The first of these bit combinations represents the character ESCAPE (1/11).

3.2.12 **final character**

The character the bit combination of which terminates an escape sequence.

3.2.13 **graphic character**

A character, other than a control function, that has a visual representation normally handwritten, printed or displayed.

3.2.14 **intermediate character**

A character the bit combination of which occurs between that of the ESCAPE character and that of the Final character in an escape sequence consisting of more than two bit combinations.

3.2.15 **to invoke**

To cause a designated set of characters to be represented by the prescribed bit combinations whenever those bit combinations occur, until an appropriate code extension function occurs.

3.2.16 **position**

That part of a code table identified by its column and row coordinates.

3.2.17 **to represent**

a) to use a prescribed bit combination with the meaning of a character in a set of characters that has been designated and invoked; or

b) to use an escape sequence with the meaning of an additional control function.

3.3 *Code extension facilities*

These are depicted in Figure 3/T.51 for the 7-bit environment and Figure 4/T.51 for the 8-bit environment. They include the following functions:

a) designation and invocation of control sets C0 and C1 by means of the relevant escape sequences given in § 3.4;

b) designation of a graphic character set G0 by means of the relevant escape sequence given in § 3.4;

c) designation of up to three additional G-sets called G1, G2 and G3 by means of the relevant escape sequences given in § 3.4;

d) invocation of the designated graphic sets, by means of locking and/or non-locking shift functions, given in § 3.5;

e) designation and invocation of a complete code by means of the relevant escape sequence given in § 3.4.

3.4 *Types of character sets*

There are a number of different types of control and graphic character sets that can be designated and invoked for use in the 7-bit or 8-bit environment. These are listed in Table 3/T.51 and defined below. A given control or graphic character set can be designated by an escape sequence terminated by a Final character F from bit combination 4/0 to 7/14, specific to the character set to be designated. Final characters are allocated by ISO and registered in the ISO “International register of coded character sets to be used with escape sequences”.

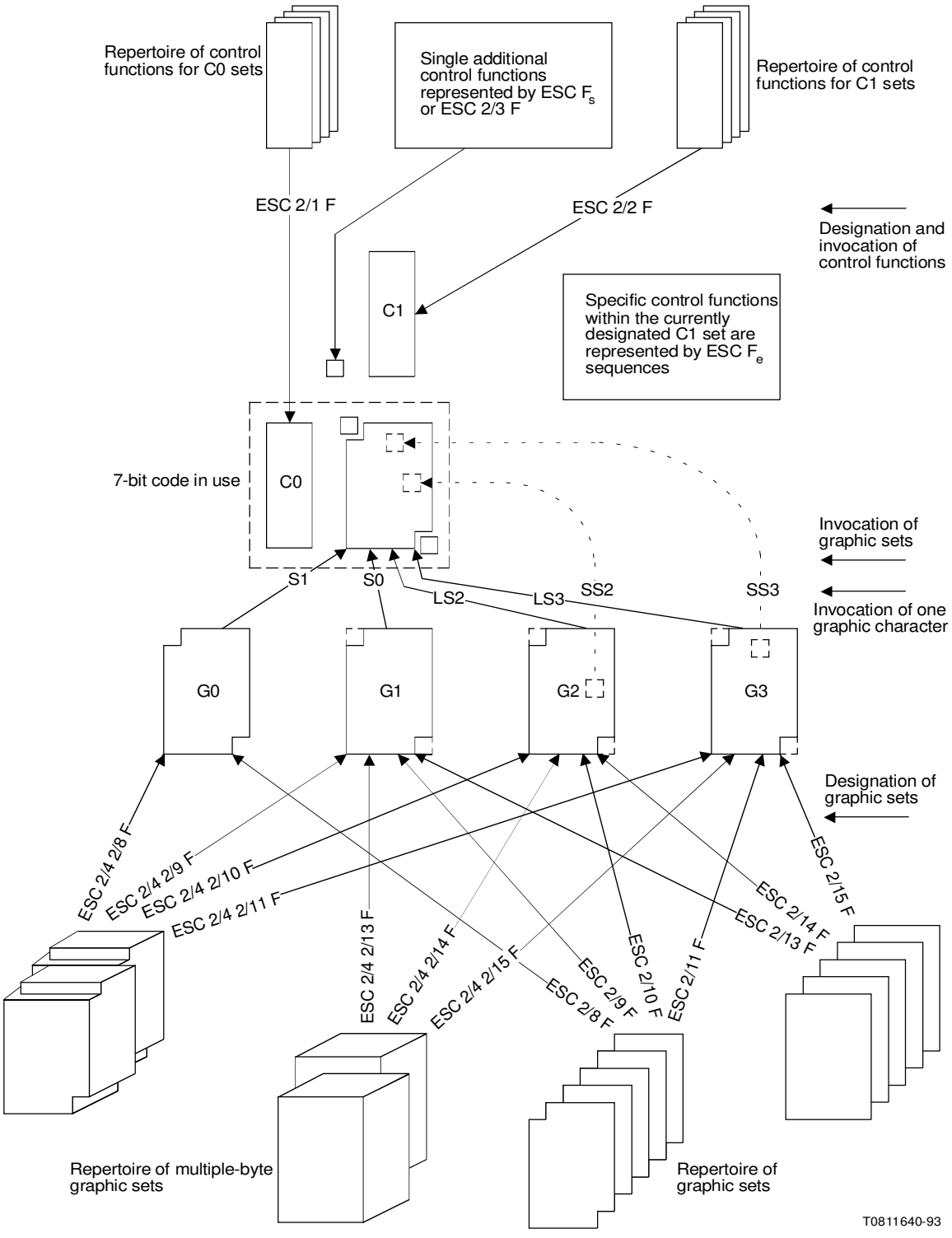


FIGURE 3/T.51

Code extension in a 7-bit environment
(showing all shift functions)

3.4.1 C0 set of 32 control characters (bit combinations 0/0 to 1/15). A C0 set is designated and invoked by the sequence ESC 2/1 F, where F identifies a registered C0 set.

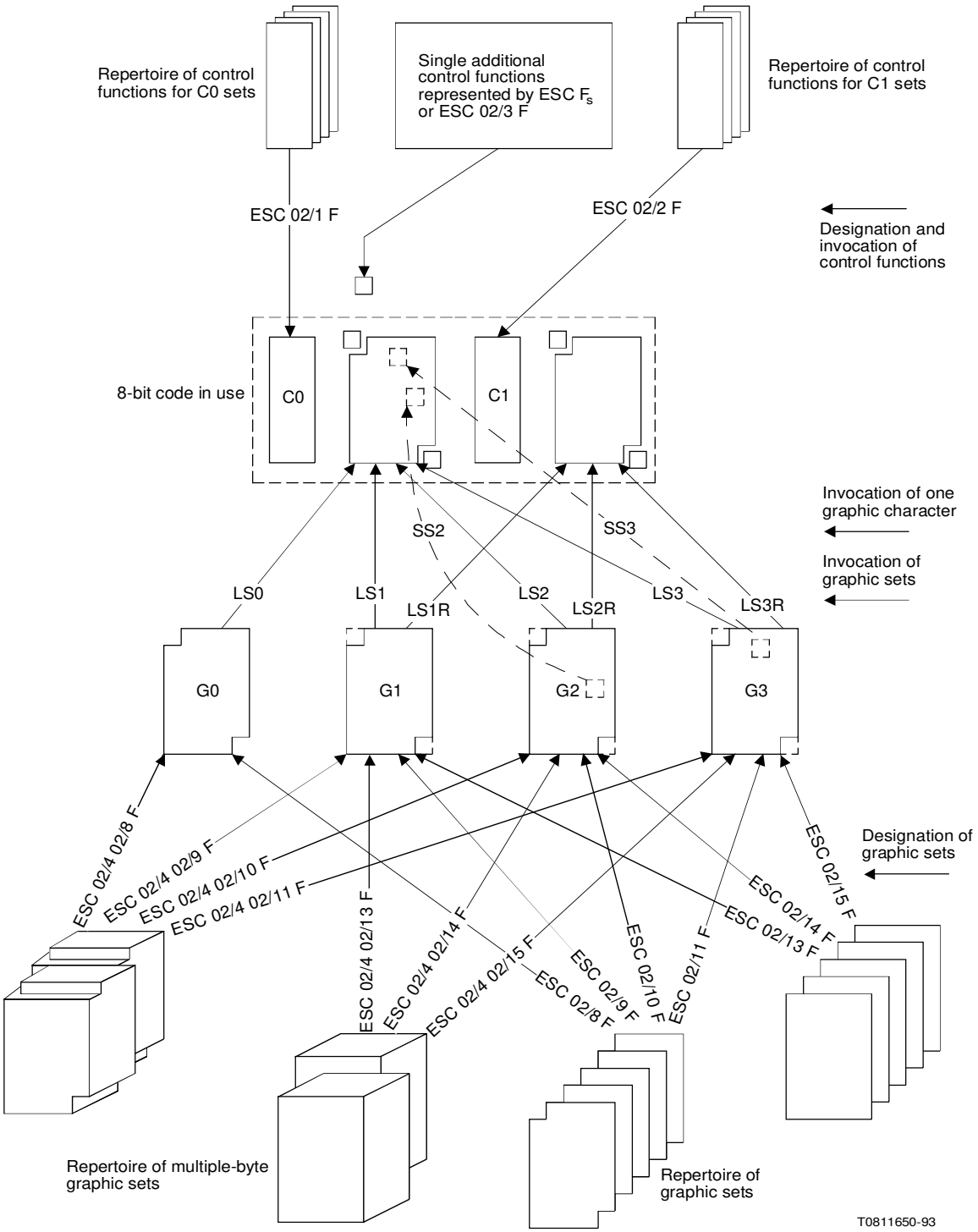


FIGURE 4/T.51
Code extension in an 8-bit environment
(showing all shift facilities)

3.4.2 C1 set of 32 control characters (bit combinations 8/0 to 9/15 in an 8-bit environment, or ESC 4/0 to ESC 5/15 in a 7-bit environment). A C1 set is designated and invoked by the sequence ESC 2/2 F, where F identifies a registered C1 set.

3.4.3 G0 set of 94 graphic characters (bit combinations 2/1 to 7/14).

3.4.4 G1, G2 and G3 sets of 94 graphic characters (bit combinations 2/1 to 7/14 or 10/1 to 15/14). A registered set of 94 graphic characters can be designated by the escape sequence ESC 2/8 F, ESC 2/9 F, ESC 2/10 F or ESC 2/11 F in order to be used as a G0, G1, G2 or G3 set respectively, where F identifies the designated set.

3.4.5 G1, G2 and G3 sets of 96 graphic characters (bit combinations 2/0 to 7/15 or 10/0 to 15/15). A registered set of 96 graphic characters can be designated by the escape sequence ESC 2/13 F, ESC 2/14 F or ESC 2/15 F in order to be used as a G1, G2 or G3 set respectively, where F identifies the designated set.

3.4.6 Multiple-byte G0 set of more than 94 graphic characters each represented by more than one bit combinations from 2/1 to 7/14. The designation sequence is ESC 2/4 2/8 F.

3.4.7 Multiple-byte G1, G2 and G3 sets of more than 94 graphic characters each represented by more than one bit combination from 2/1 to 7/14 or from 10/1 to 15/14. A registered multiple-byte set of more than 94 graphic characters can be designated by the escape sequence ESC 2/4 F, ESC 2/4 2/9 F, ESC 2/4 2/10 F or ESC 2/4 2/11 F in order to be used as a G0, G1, G2 or G3 set respectively, where F identifies the designated set.

3.4.8 Multiple-byte G1, G2 and G3 sets of more than 96 graphic characters each represented by more than one bit combination from 2/0 to 7/15 or from 10/0 to 15/15. A registered multiple-byte set of this type identified by a Final character F can be designated by the escape sequence ESC 2/4 2/13 F, ESC 2/4 2/14 F or ESC 2/4 2/15 F in order to be used as G1, G2 or G3 set respectively.

3.4.9 Complete code containing all bit combinations 0/0 to 7/15 in 7-bit environment, or 0/0 to 15/15 in 8-bit environment. A complete code identified by a Final character F, can be designated and invoked by the escape sequence ESC 2/5 F.

Note – Complete code is now referred to in ISO 2022 as “Coding System different from that of ISO 2022”.

3.5 *Invocation functions*

Following the designation of a G0, G1, G2 or G3 set as specified in § 3.4, any one of these sets will require invocation into the 7-bit or 8-bit in-use code table. This is performed by the use of either locking-shift functions or non-locking shift functions listed in Table 4/T.51. Coding for these functions is given in Table 5/T.51.

3.5.1 *Use of locking-shift functions*

There are seven locking-shift functions as given in Tables 4/T.51 and 5/T.51. A locking-shift function invokes the relevant G0, G1, G2 or G3 set into columns 2 to 7 or into columns 10 to 15 (8-bit code only) in order to replace the previously invoked G-set. The occurrence of a locking-shift function shall not affect those bit combinations that are included in any escape sequence or those that follow single-shift function SS2 or SS3. If a particular set has already been invoked, use of the corresponding locking-shift function has no effect.

3.5.2 *Use of single-shift functions*

The single-shift function SS2 shall invoke one character from the last designated G2 set. Similarly SS3 shall invoke one character from the last designated G3 set. In the case of using single-byte graphic sets, these invocations alter the meaning of the immediately following bit combination only and ascribe to it the meaning of the corresponding bit combination of the G2 or G3 set. The bit combination permitted to follow SS2 or SS3 is limited to one from columns 2 to 7. If a single-shift function is used to invoke a character from a multiple-byte set, the shift function will affect two or more bit-combinations to represent that character. The use of a single-shift function does not affect the current shift status established by a locking-shift function.

TABLE 3/T.51

Types of character sets

Description	Character set	Designation sequence	Bit combinations	
			7-bit environment	8-bit environment
Sets of 32 control characters (Note 1)	C0 C1	ESC 2/1 F ESC 2/2 F	0/0 to 1/15 ESC 4/1 to ESC 5/15	00/00 to 01/15 08/00 to 09/15
Sets of 94 graphic characters	G0	ESC 2/8 F	2/1 to 7/14	02/01 to 07/14
	G1 G2 G3	ESC 2/9 F ESC 2/10 F ESC 2/11	2/1 to 7/14	02/01 to 07/14 or 10/01 to 15/14
Sets of 96 graphic characters	G1 G2 G3	ESC 2/13 F ESC 2/14 F ESC 2/15 F	2/0 to 7/15	02/00 to 07/15 or 10/00 to 15/15
Sets of more than 94 graphic characters each represented by more than one byte	G0	ESC 2/4 F (Note 2) ESC 2/4 2/8 F	2/1 to 7/14	02/01 to 07/14
	G1 G2 G3	ESC 2/4 2/9 F ESC 2/4 2/10 F ESC 2/4 2/11 F	2/1 to 7/14	02/01 to 07/14 or 10/01 to 15/14
Sets of more than 96 graphic characters each represented by more than one byte	G1 G2 G3	ESC 2/4 2/13 F ESC 2/4 2/14 F ESC 2/4 2/15 F	2/0 to 7/15	02/00 to 07/15 or 10/00 to 15/15
Complete code		ESC 2/5 F	0/0 to 7/15	00/00 to 15/15

Note 1 – Control sets C0 and C1, and complete codes are simultaneously designated and invoked by the relevant escape sequences indicated.

Note 2 – Multi-byte character sets are to be designated by four-character escape sequences. However, the following three-character escape sequences have in the past been registered and their use is valid for the registered multi-byte character sets:

ESC 2/4 4/0;
ESC 2/4 4/1;
ESC 2/4 4/2.

TABLE 4/T.51

Allocation of shift functions to the graphic character sets to be invoked

	Locking-shift functions		Non-locking shift functions
A set	Columns 2 to 7 of 7-bit or 8-bit code	Columns 10 to 15 of 8-bit code	Columns 2 to 7 of 7-bit or 8bit code
G0	SI(7-bit), LS0(8-bit)	–	–
G1	SO(7-bit), LS1(8- bit)	LS1R	–
G2	LS2	LS2R	SS2
G3	LS3	LS3R	SS3

TABLE 5/T.51

Coding for shift functions

Shift functions		Coding
Single-shift two	SS2	1/9
Single-shift three	SS3	1/13
Shift in SI(7-bit), locking-shift zero	LS0(8-bit)	0/15
Shift out SO(7-bit), locking-shift one	LS1(8-bit)	0/14
Locking-shift one right	LS1R	ESC 7/14
Locking-shift two	LS2	ESC 6/14
Locking-shift two right	LS2R	ESC 7/13
Locking-shift three	LS3	ESC 6/15
Locking-shift three right	LS3R	ESC 7/12

ANNEX A

(to Recommendation T.51)

Superset of the repertoire of the Latin based character set

A.1 This annex contains a unified superset of the repertoire of Latin based alphanumeric graphic characters.

Each graphic character is identified by the identification system identical in that used in Recommendation T.61 (see § A.2).

A.2 *Identification system*

A system was developed that allows for the identification and description of each graphic character or control function. The system is shown in Figure A-1/T.51.

Each identifier consists of two letters and two digits.

The first letter indicates the alphabet, the language, etc.

The second letter indicates the letter of an alphabet or, in the case of a non-alphabetic graphic character or a control function, the group of characters or control functions.

The first digit indicates whether the letter in the second position is an accented one, whether the diacritical mark is above or below the letter, etc. It has not special meaning in the case of the first letter being a C, N or S.

The second digit indicates whether the letter is a capital or a small (even or odd). If the first letter is a C, N or S, this digit being even or odd has no significance.

The numbering is used in a consistent manner so that each diacritical mark is always given the same number.

The numbering principle is shown in Table A-1/T.51.

TABLE A-1/T.51

Numbering principle for alphabetic characters

Item	Small	Capital
No diacritical mark	01	02
Acuse accent	11	12
Grave accent	13	14
Circumflex accent	15	16
Diaeresis or umlaut mark	17	18
Tilde	19	20
Caron	21	22
Breve	23	24
Double acute accent	25	26
Ring	27	28
Dot	29	30
Macron	31	32
Cedilla	41	42
Ogonek	43	44
Diphthong or ligature	51	52
Special form	61, 63, etc.	62, 64, etc.

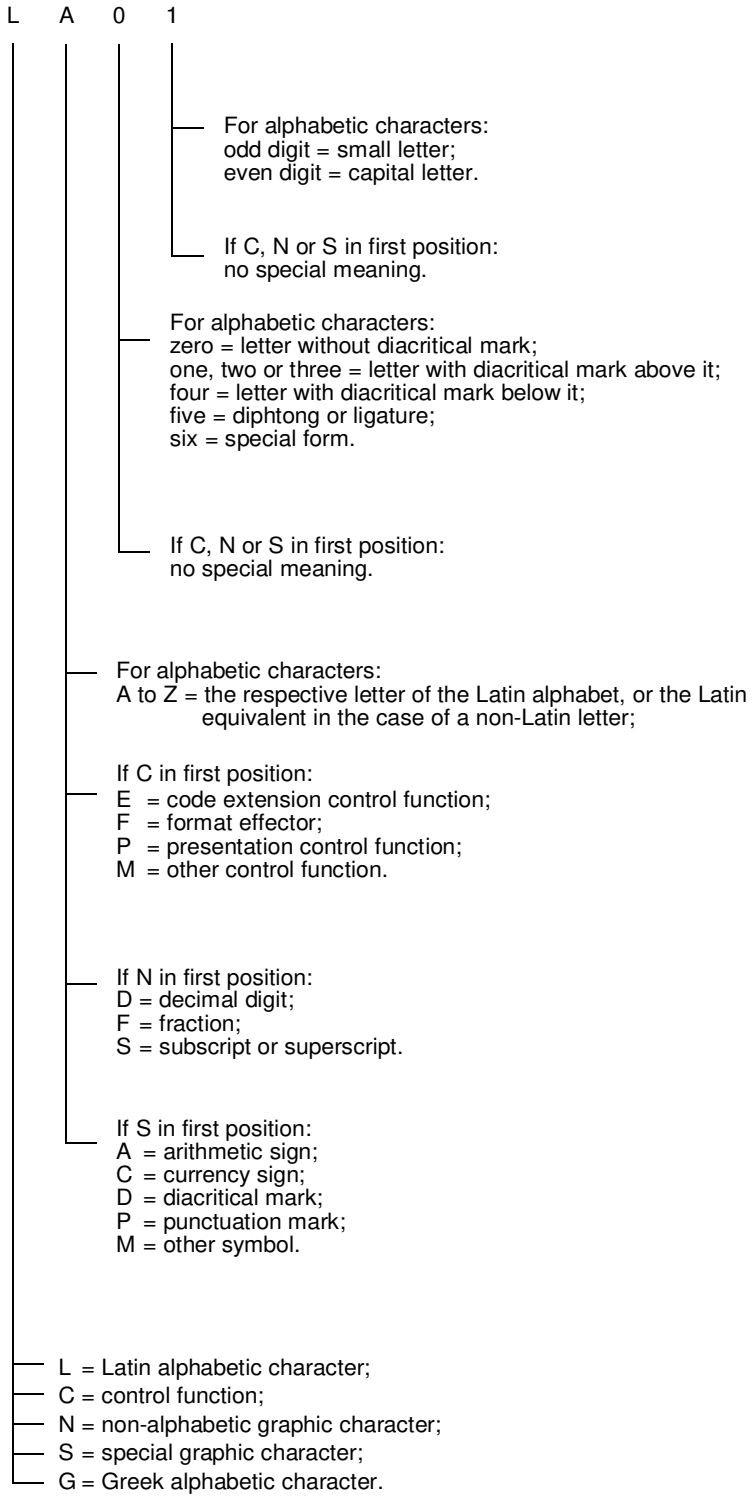


FIGURE A-1/T.51

Identification system

A.3 *Combination of diacritical marks and basic letters*

Figure A-2/T.51 specifies the combinations of diacritical marks and basic letters that are defined in this annex. This figure also shows ligatures and other characters.

Basic letters	Acute accent	Grave Accent	Circumflex accent	Diaeresis or umlaut accent	Tilde	Caron or hacek	Breve	Double acute accent	Ring	Dot abover	Macron	Cedilla	Ogonek	Ligature	Others
a A	á Á	à À	â Â	ä Ä	ã Ã		ă Ă		å Å		ā Ā		ą Ą	æ Æ	
b B															
c C	ć Ć		ĉ Ĉ			č Č				ċ Ċ		ç Ç			
d D						ď Ď									ð Ð ∂
e E	é É	è È	ê Ê	ë Ë		ě Ě				ė Ė	ē Ē		ę Ę		
f F															
g G	ǵ		ĝ Ĝ				ğ Ğ			ġ Ġ		Ģ			
h H			ĥ Ĥ												ħ Ħ
i I	í Í	ì Ì	î Î	ï Ï	ĩ Ĩ					İ	ī Ī		į Į	ĳ Ĳ	ı
j J			ĵ Ĵ												
k K												ķ Ķ			ĸ
l L	ĺ Ĺ					ľ Ľ						ļ Ļ			ŀ Ł
m M															
n N	ń Ń				ñ Ñ	ň Ň						ņ Ņ			ŉ ŋ
o O	ó Ó	ò Ò	ô Ô	ö Ö	õ Õ			ő Ő			ō Ō			œ Œ	ø Ø
p P															
q Q															
r R	ŕ Ŕ					ř Ř						ŗ Ŗ			
s S	ś Ś		ŝ Ŝ			š Š						ş Ş			ß
t T						ť Ť						ţ Ţ			ŧ Ŧ þ Þ
u U	ú Ú	ù Ù	û Û	ü Ü	ũ Ũ		ŭ Ŭ	ű Ű	ů Ů		ū Ū		ų Ų		
v V															
w W			ŵ Ŵ												
x X															
y Y	ý Ý		ŷ Ŷ	ÿ Ÿ											
z Z	ź Ź					ž Ž				ż Ż					

T0816900-94

FIGURE A-2/T.51

Use of alphabetical characters with dialectical marks, ligatures or others

A.4 *Specification of superset of Latin based character repertoire*

Explanations on coded representation

– P-prefix denotes Primary Code Table;

– S-prefix denotes Supplementary Code Table;

– Absence of prefix denotes T.50 Basic Code Table (For SPACE and DELETE characters).

Notes on implementation of the repertoire in telematic services

(1) Not used in current teletex service (Recommendation T.61);

(2) Not used in any current telematic services;

(3) Currently used in Recommendation T.101, Videotex Data Syntax III only.

General remarks

a) The Latin based repertoire of teletex (Recommendation T.61), is represented by this superset, with exclusions defined by Notes (1), (2) and (3) above.

b) The Latin based repertoire of Recommendation T.101, Videotex Data Syntax I, is represented by the characters of the Primary Set with the exception that the REVERSE SOLIDUS is replaced by the YEN SIGN.

c) The Latin based repertoire of Recommendation T.101, Videotex Data Syntax II, is represented by this superset with exclusions defined by Notes (2) and (3) above, plus a few characters not within the scope of coding defined by the Primary Set and the Supplementary Set of this Recommendation.

d) The Latin based repertoire of Recommendation T.101, Videotex, Data Syntax III, is represented entirely by this superset.

A.4.1 *Latin alphabet characters*

Identifier	Name	Coded representation	
LA01	Latin small letter a		P 6/1
LA02	Latin capital letter A		P 4/1
LA11	Latin small letter a with acute	S 4/2	P 6/1
LA12	Latin capital letter A with acute	S 4/2	P 4/1
LA13	Latin small letter a with grave	S 4/1	P 6/1
LA14	Latin capital letter A with grave	S 4/1	P 4/1
LA15	Latin small letter a with circumflex	S 4/3	P 6/1
LA16	Latin capital letter A with circumflex	S 4/3	P 4/1
LA17	Latin small letter a with diaeresis	S 4/8	P 6/1
LA18	Latin capital letter A with diaeresis	S 4/8	P 4/1
LA19	Latin small letter a with tilde	S 4/4	P 6/1
LA20	Latin capital letter A with tilde	S 4/4	P 4/1
LA23	Latin small letter a with breve	S 4/6	P 6/1
LA24	Latin capital letter A with breve	S 4/6	P 4/1
LA27	Latin small letter a with ring above	S 4/10	P 6/1
LA28	Latin capital letter A with ring above	S 4/10	P 4/1
LA31	Latin small letter a with macron	S 4/5	P 6/1
LA32	Latin capital letter A with macron	S 4/5	P 4/1
LA43	Latin small letter a with ogonek	S 4/14	P 6/1
LA44	Latin capital letter A with ogonek	S 4/14	P 4/1
LA51	Latin small ligature æ	S 7/1	
LA52	Latin capital ligature Æ	S 6/1	
LB01	Latin small letter b		P 6/2
LB02	Latin capital letter B		P 4/2
LC01	Latin small letter c		P 6/3
LC02	Latin capital letter C		P 4/3

Identifier	Name	Coded representation	
LC11	Latin small letter c with acute	S 4/2	P 6/3
LC12	Latin capital letter C with acute	S 4/2	P 4/3
LC15	Latin small letter c with circumflex	S 4/3	P 6/3
LC16	Latin capital letter C with circumflex	S 4/3	P 4/3
LC21	Latin small letter c with caron	S 4/15	P 6/3
LC22	Latin capital letter C with caron	S 4/15	P 4/3
LC29	Latin small letter c with dot above	S 4/7	P 6/3
LC30	Latin capital letter C with dot above	S 4/7	P 4/3
LC41	Latin small letter c with cedilla	S 4/11	P 6/3
LC42	Latin capital letter C with cedilla	S 4/11	P 4/3
LD01	Latin small letter d		P 6/4
LD02	Latin capital letter D		P 4/4
LD21	Latin small letter d with caron	S 4/15	P 6/4
LD22	Latin capital letter D with caron	S 4/15	P 4/4
LD61	Latin small letter d with stroke	S 7/2	
LD62	Latin capital letter D with stroke	S 6/2	
LD63	Latin small letter eth (icelandic)	S 7/3	
LE01	Latin small letter e		P 6/5
LE02	Latin capital letter E		P 4/5
LE11	Latin small letter e with acute	S 4/2	P 6/5
LE12	Latin capital letter E with acute	S 4/2	P 4/5
LE13	Latin small letter e with grave	S 4/1	P 6/5
LE14	Latin capital letter E with grave	S 4/1	P 4/5
LE15	Latin small letter e with circumflex	S 4/3	P 6/5
LE16	Latin capital letter E with circumflex	S 4/3	P 4/5
LE17	Latin small letter e with diaeresis	S 4/8	P 6/5
LE18	Latin capital letter E with diaeresis	S 4/8	P 4/5
LE21	Latin small letter e with caron	S 4/15	P 6/5
LE22	Latin capital letter E with caron	S 4/15	P 4/5
LE29	Latin small letter e with dot above	S 4/7	P 6/5
LE30	Latin capital letter E with dot above	S 4/7	P 4/5
LE31	Latin small letter e with macron	S 4/5	P 6/5
LE32	Latin capital letter E with macron	S 4/5	P 4/5
LE43	Latin small letter e with ogonek	S 4/14	P 6/5
LE44	Latin capital letter E with ogonek	S 4/14	P 4/5
LF01	Latin small letter f		P 6/6
LF02	Latin capital letter F		P 4/6
LG01	Latin small letter g		P 6/7
LG02	Latin capital letter G		P 4/7
LG11	Latin small letter g with cedilla	S 4/2	P 6/7
LG15	Latin small letter g with circumflex	S 4/3	P 6/7
LG16	Latin capital letter G with circumflex	S 4/3	P 4/7
LG23	Latin small letter g with breve	S 4/6	P 6/7
LG24	Latin capital letter G with breve	S 4/6	P 4/7
LG29	Latin small letter g with dot above	S 4/7	P 6/7
LG30	Latin capital letter G with dot above	S 4/7	P 4/7
LG42	Latin capital letter G with cedilla	S 4/11	P 4/7
LH01	Latin small letter h		P 6/8
LH02	Latin capital letter H		P 4/8
LH15	Latin small letter h with circumflex	S 4/3	P 6/8
LH16	Latin capital letter H with circumflex	S 4/3	P 4/8
LH61	Latin small letter h with stroke	S 7/4	
LH62	Latin capital letter H with stroke	S 6/4	
LI01	Latin small letter i		P 6/9
LI02	Latin capital letter I		P 4/9
LI11	Latin small letter i with acute	S 4/2	P 6/9
LI12	Latin capital letter I with acute	S 4/2	P 4/9
LI13	Latin small letter i with grave	S 4/1	P 6/9
LI14	Latin capital letter I with grave	S 4/1	P 4/9

Identifier	Name	Coded representation	
LI15	Latin small letter i with circumflex	S 4/3	P 6/9
LI16	Latin capital letter I with circumflex	S 4/3	P 4/9
LI17	Latin small letter i with diaeresis	S 4/8	P 6/9
LI18	Latin capital letter I with diaeresis	S 4/8	P 4/9
LI19	Latin small letter i with tilde	S 4/4	P 6/9
LI20	Latin capital letter I with tilde	S 4/4	P 4/9
LI30	Latin capital letter I with dot above	S 4/7	P 4/9
LI31	Latin small letter i with macron	S 4/5	P 6/9
LI32	Latin capital letter I with macron	S 4/5	P 4/9
LI43	Latin small letter i with ogonek	S 4/14	P 6/9
LI44	Latin capital letter I with ogonek	S 4/14	P 4/9
LI51	Latin small ligature ij	S 7/6	
LI52	Latin capital ligature IJ	S 6/6	
LI61	Latin small letter dotless i	S 7/5	
LJ01	Latin small letter j		P 6/10
LJ02	Latin capital letter J		P 4/10
LJ15	Latin small letter j with circumflex	S 4/3	P 6/10
LJ16	Latin capital letter J with circumflex	S 4/3	P 4/10
LK01	Latin small letter k		P 6/11
LK02	Latin capital letter K		P 4/11
LK41	Latin small letter k with cedilla	S 4/11	P 6/11
LK42	Latin capital letter K with cedilla	S 4/11	P 4/11
LK61	Latin small letter kra (greenlandic)	S 7/0	
LL01	Latin small letter l		P 6/12
LL02	Latin capital letter L		P 4/12
LL11	Latin small letter l with acute	S 4/2	P 6/12
LL12	Latin capital letter L with acute	S 4/2	P 4/12
LL21	Latin small letter l with caron	S 4/15	P 6/12
LL22	Latin capital letter L with caron	S 4/15	P 4/12
LL41	Latin small letter l with cedilla	S 4/11	P 6/12
LL42	Latin capital letter L with cedilla	S 4/11	P 4/12
LL61	Latin small letter l with stroke	S 7/8	
LL62	Latin capital letter L with stroke	S 6/8	
LL63	Latin small letter l with middle dot	S 7/7	
LL64	Latin capital letter L with middle dot	S 6/7	
LM01	Latin small letter m		P 6/13
LM02	Latin capital letter M		P 4/13
LN01	Latin small letter n		P 6/14
LN02	Latin capital letter N		P 4/14
LN11	Latin small letter n with acute	S 4/2	P 6/14
LN12	Latin capital letter N with acute	S 4/2	P 4/14
LN19	Latin small letter n with tilde	S 4/4	P 6/14
LN20	Latin capital letter N with tilde	S 4/4	P 4/14
LN21	Latin small letter n with caron	S 4/15	P 6/14
LN22	Latin capital letter N with caron	S 4/15	P 4/14
LN41	Latin small letter n with cedilla	S 4/11	P 6/14
LN42	Latin capital letter N with cedilla	S 4/11	P 4/14
LN61	Latin small letter eng (lappish)	S 7/14	
LN62	Latin capital letter ENG (lappish)	S 6/14	
LN63	Latin small letter n preceded by apostrophe	S 6/15	
LO01	Latin small letter o		P 6/15
LO02	Latin capital letter O		P 4/15
LO11	Latin small letter o with acute	S 4/2	P 6/15
LO12	Latin capital letter O with acute	S 4/2	P 4/15
LO13	Latin small letter o with grave	S 4/1	P 6/15
LO14	Latin capital letter O with grave	S 4/1	P 4/15
LO15	Latin small letter o with circumflex	S 4/3	P 6/15
LO16	Latin capital letter O with circumflex	S 4/3	P 4/15

Identifier	Name	Coded representation	
LO17	Latin small letter o with diaeresis	S 4/8	P 6/15
LO18	Latin capital letter O with diaeresis	S 4/8	P 4/15
LO19	Latin small letter o with tilde	S 4/4	P 6/15
LO20	Latin capital letter O with tilde	S 4/4	P 4/15
LO25	Latin small letter o with double acute	S 4/13	P 6/15
LO26	Latin capital letter O with double acute	S 4/13	P 4/15
LO31	Latin small letter o with macron	S 4/5	P 6/15
LO32	Latin capital letter O with macron	S 4/5	P 4/15
LO51	Latin small ligature œ	S 7/10	
LO52	Latin capital ligature Œ	S 6/10	
LO61	Latin small letter o with stroke	S 7/9	
LO62	Latin capital letter O with stroke	S 6/9	
LP01	Latin small letter p		P 7/0
LP02	Latin capital letter P		P 5/0
LQ01	Latin small letter q		P 7/1
LQ02	Latin capital letter Q		P 5/1
LR01	Latin small letter r		P 7/2
LR02	Latin capital letter R		P 5/2
LR11	Latin small letter r with acute	S 4/2	P 7/2
LR12	Latin capital letter R with acute	S 4/2	P 5/2
LR21	Latin small letter r with caron	S 4/15	P 7/2
LR22	Latin capital letter R with caron	S 4/15	P 5/2
LR41	Latin small letter r with cedilla	S 4/11	P 7/2
LR42	Latin capital letter R with cedilla	S 4/11	P 5/2
LS01	Latin small letter s		P 7/3
LS02	Latin capital letter S		P 5/3
LS11	Latin small letter s with acute	S 4/2	P 7/3
LS12	Latin capital letter S with acute	S 4/2	P 5/3
LS15	Latin small letter s with circumflex	S 4/3	P 7/3
LS16	Latin capital letter S with circumflex	S 4/3	P 5/3
LS21	Latin small letter s with caron	S 4/15	P 7/3
LS22	Latin capital letter S with caron	S 4/15	P 5/3
LS41	Latin small letter s with cedilla	S 4/11	P 7/3
LS42	Latin capital letter S with cedilla	S 4/11	P 5/3
LS61	Latin small letter sharp s (german)	S 7/11	
LT01	Latin small letter t		P 7/4
LT02	Latin capital letter T		P 5/4
LT21	Latin small letter t with caron	S 4/15	P 7/4
LT22	Latin capital letter T with caron	S 4/15	P 5/4
LT41	Latin small letter t with cedilla	S 4/11	P 7/4
LT42	Latin capital letter T with cedilla	S 4/11	P 5/4
LT61	Latin small letter t with stroke	S 7/13	
LT62	Latin capital letter T with stroke	S 6/13	
LT63	Latin small letter thorn (icelandic)	S 7/12	
LT64	Latin capital letter thorn (icelandic)	S 6/12	
LU01	Latin small letter u		P 7/5
LU02	Latin capital letter U		P 5/5
LU11	Latin small letter u with acute	S 4/2	P 7/5
LU12	Latin capital letter U with acute	S 4/2	P 5/5
LU13	Latin small letter u with grave	S 4/1	P 7/5
LU14	Latin capital letter U with grave	S 4/1	P 5/5
LU15	Latin small letter u with circumflex	S 4/3	P 7/5
LU16	Latin capital letter U with circumflex	S 4/3	P 5/5
LU17	Latin small letter u with diaeresis	S 4/8	P 7/5
LU18	Latin capital letter U with diaeresis	S 4/8	P 5/5
LU19	Latin small letter u with tilde	S 4/4	P 7/5
LU20	Latin capital letter U with tilde	S 4/4	P 5/5
LU23	Latin small letter u with breve	S 4/6	P 7/5
LU24	Latin capital letter U with breve	S 4/6	P 5/5

Identifier	Name	Coded representation	
LU25	Latin small letter u with double acute	S 4/13	P 7/5
LU26	Latin capital letter U with double acute	S 4/13	P 5/5
LU27	Latin small letter u with ring above	S 4/10	P 7/5
LU28	Latin capital letter U with ring above	S 4/10	P 5/5
LU31	Latin small letter u with macron	S 4/5	P 7/5
LU32	Latin capital letter U with macron	S 4/5	P 5/5
LU43	Latin small letter u with ogonek	S 4/14	P 7/5
LU44	Latin capital letter U with ogonek	S 4/14	P 5/5
LV01	Latin small letter v		P 7/6
LV02	Latin capital letter V		P 5/6
LW01	Latin small letter w		P 7/7
LW02	Latin capital letter W		P 5/7
LW15	Latin small letter w with circumflex	S 4/3	P 7/7
LW16	Latin capital letter W with circumflex	S 4/3	P 5/7
LX01	Latin small letter x		P 7/8
LX02	Latin capital letter X		P 5/8
LY01	Latin small letter y		P 7/9
LY02	Latin capital letter Y		P 5/9
LY11	Latin small letter y with acute	S 4/2	P 7/9
LY12	Latin capital letter Y with acute	S 4/2	P 5/9
LY15	Latin small letter y with circumflex	S 4/3	P 7/9
LY16	Latin capital letter Y with circumflex	S 4/3	P 5/9
LY17	Latin small letter y with diaeresis	S 4/8	P 7/9
LY18	Latin capital letter Y with diaeresis	S 4/8	P 5/9
LZ01	Latin small letter z		P 7/10
LZ02	Latin capital letter Z		P 5/10
LZ11	Latin small letter z with acute	S 4/2	P 7/10
LZ12	Latin capital letter Z with acute	S 4/2	P 5/10
LZ21	Latin small letter z with caron	S 4/15	P 7/10
LZ22	Latin capital letter Z with caron	S 4/15	P 5/10
LZ29	Latin small letter z with dot above	S 4/7	P 7/10
LZ30	Latin capital letter Z with dot above	S 4/7	P 5/10

A.4.2 *Non-alphabetic characters*

A.4.2.1 *Decimal digits*

Identifier	Name	Coded representation
ND01	Digit one	P 3/1
ND02	Digit two	P 3/2
ND03	Digit three	P 3/3
ND04	Digit four	P 3/4
ND05	Digit five	P 3/5
ND06	Digit six	P 3/6
ND07	Digit seven	P 3/7
ND08	Digit eight	P 3/8
ND09	Digit nine	P 3/9
ND10	Digit zero	P 3/0

A.4.2.2 *Currency signs*

Identifier	Name	Coded representation
NC01	Currency sign	S 2/8
NC02	Pound sign	S 2/3
NC03	Dollar sign	P 2/4
NC04	Cent sign	S 2/2
NC05	Yen sing	S 2/5

A.4.2.3 *Punctuation marks*

Identifier	Name	Coded representation	Notes
SP01	Espace	2/0	
SP02	Exclamation mark	P 2/1	
SP03	Inverted exclamation mark	P 2/1	
SP04	Quotation mark	P 2/2	
SP05	Apostrophe	P 2/7	
SP06	Left parenthesis	P 2/8	
SP07	Right parenthesis	P 2/9	
SP08	Comma	P 2/12	
SP09	Low line	P 5/13	
SP10	Hyphen-minus	P 2/13	
SP11	Full stop	P 2/14	
SP12	Solidus	P 2/15	
SP13	Colon	P 3/10	
SP14	Semicolon	P 3/11	
SP15	Question mark	P 3/15	
SP16	Inverted question mark	S 3/15	
SP17	Left-pointing double angle quotation mark	S 2/11	
SP18	Right-pointing double angle quotation mark	S 3/11	
SP19	Left single quotation mark	S 2/9	(1)
SP20	Right single quotation mark	S 3/9	(1)
SP21	Left double quotation mark	S 2/10	(1)
SP22	Right double quotation mark	S 3/10	(1)
SP31	No-break space	S 2/0	(2)
SP32	Soft hyphen	S 7/15	(2)

Note – In teletex and videotex, quotation mark, apostrophe and comma are independent characters that cannot have the meaning of diacrical marks.

A.4.2.4 *Arithmetic signs*

Identifier	Name	Coded representation
SA01	Plus sign	P 2/11
SA02	Plus-minus sign	S 3/1
SA03	Less-than sign	P 3/12
SA04	Equals sign	P 3/13
SA05	Greater-than sign	P 3/14
SA06	Division sign	S 3/8
SA07	Multiplication sign	S 3/4

A.4.2.5 *Subscripts and superscripts*

Identifier	Name	Coded representation
NS01	Superscript one	S 5/1
NS02	Superscript two	S 3/2
NS03	Superscript three	S 3/3

A.4.2.6 *Fractions*

Identifier	Name	Coded representation	Notes
NF01	Vulgar fraction one half	S 3/13	
NF04	Vulgar fraction one quarter	S 3/12	
NF05	Vulgar fraction three quarters	S 3/14	
NF18	Vulgar fraction one eighth	S 5/12	(1)
NF19	Vulgar fraction three eighths	S 5/13	(1)
NF20	Vulgar fraction five eighths	S 5/14	(1)
NF21	Vulgar fraction seven eighths	S 5/15	(1)

A.4.3 *Miscellaneous symbols*

Identifier	Name	Coded representation	Notes
SM01	Number sign	P 2/3	
SM02	Percent sign	P 2/5	
SM03	Ampersand	P 2/6	
SM04	Asterisk	P 2/10	
SM05	Commercial AT	P 4/0	
SM06	Left square bracket	P 5/11	
SM07	Reverse solidus	P 5/12	(1)
SM08	Right square bracket	P 5/13	
SM11	Left curly bracket	P 7/11	(1)
SM12	Horizontal bar	S 5/0	(3)
SM13	Verticle line	P 7/12	
SM14	Right curly bracket	P 7/13	(1)
SM17	Micro sign	S 3/5	
SM18	Ohm sign	S 6/0	
SM19	Degree sign	S 3/0	
SM20	Masculine ordinal indicator	S 6/11	
SM21	Femenine ordinal indicator	S 6/3	
SM24	Section sign	S 2/7	
SM25	Pilcrow sign	S 3/6	
SM26	Middle dot	S 3/7	
SM30	Leftwards arrow	S 2/12	(1)
SM31	Rightwards arrow	S 2/14	(1)
SM32	Upwards arrow	S 2/13	(1)
SM33	Downwards arrow	S 2/15	(1)
SM52	Copyright sign	S 5/3	(1)
SM53	Registered sign	S 5/2	(1)
SM54	Trade mark sign	S 5/4	(1)
SM93	Music note	S 5/5	(1)
SM95	Broken bar	S 5/7	(2)
SM96	Not sign	S 5/6	(2)

A.4.4 *Diacritical marks as separate graphic characters*

Identifier	Name	Coded representation	
SD11	Acute accent	S 4/2	2/0
SD13	Grave accent	S 4/1	2/0
SD15	Circumflex accent	S 4/3	2/0
SD17	Diaeresis	S 4/8	2/0
SD19	Tilde	S 4/4	2/0
SD21	Caron	S 4/15	2/0
SD23	Breve	S 4/6	2/0
SD25	Double acute accent	S 4/13	2/0
SD27	Ring above	S 4/10	2/0
SD29	Dot above	S 4/7	2/0
SD31	Macron	S 4/5	2/0
SD41	Cedilla	S 4/11	2/0
SD43	Ogonek	S 4/14	2/0

Note – The grave accent, circumflex accent and tilde are also coded as P 6/0, P 5/14 and P 7/14 respectively.

A.4.5 *Special character*

Identifier	Name	Coded representation
SM34	Delete	7/15

ANNEX B

(to Recommendation T.51)

Table of character and control sets

Register No.	Name of registered set	(Note 1)	Final character	C0	C1	G0	G1	G2	G3
1	Primary control set of IRV		4/0	x					
6	Rec. T.50 International reference version (IRV). This is also the primary set of Rec. T.51	94	4/2			x	x	x	x
132	Rec. T.101 Data syntax I Primary control set	C0	4/9	x					
125	Rec. T.101 Data Syntax I Supplementary control set	C1	4/4		x				
42	Rec. T.101 Data Syntax I Kanji set (2 byte set) JISC 6226 (1978)	94 × 94	4/0			x	x	x	x
137	Rec. T.101 Data Syntax I Mosaic 1 set	94	7/9			x	x	x	x
14	Rec. T.101 Data Syntax I Primary character set JISC 6220 (1969)	94	4/10			x	x	x	x
131	Rec. T.101 Data Syntax I Complete code	–	4/3						
134	Rec. T.101 Data Syntax II Primary control set	C0	4/10	x					
56	Rec. T.101 Data Syntax II Serial supplementary control set	C1	4/0		x				
73	Rec. T.101 Data Syntax II Parallel supplementary control set	C1	4/1		x				
70	Rec. T.101 Data Syntax II Supplementary character set	94	6/2			x	x	x	x

Register No.	Name of registered set	(Note 1)	Final character	C0	C1	G0	G1	G2	G3
71	Rec. T.101 Data Syntax II 2nd supplementary mosaic set	94	6/3			x	x	x	x
72	Rec. T.101 Data Syntax II 3rd supplementary mosaic set	94	6/4			x	x	x	x
145	Rec. T.101 Data Syntax II Complete code	–	4/4						
150	Rec. T.52 Greek primary set	94	2/1 4/0			x	x	x	x
108	Rec. T.101 Data Syntax III Complete code	–	4/1						
135	Rec. T.101 Data Syntax III Primary control set	C0	4/11	x					
136	Rec. T.101 Data Syntax III Supplementary control set	C1	4/6		x				
6	Rec. T.101 Data Syntax III Primary character set	94	4/2			x	x	x	x
128	Rec. T.101 Data Syntax III Supplementary character set	94	7/12			x	x	x	x
Cannot be registered	Rec. T.101 Data Syntax III PDI set	96	(5/7) never to be assigned by ISO				x	x	x
129	Rec. T.101 Data Syntax III Mosaic set	96	7/13			x	x	x	x
102	Rec. T.61 Primary graphic character set (left half of Fig. 2/T.61)	94	7/5			x	x	x	x
103	Rec. T.61 Supplementary character set (right half of Fig. 2/T.61)	94	7/6			x	x	x	x
106	Rec. T.61 Primary control set	C0	4/5	x					
107	Rec. T.61 Supplementary control set	C1	4/8		x				

Register No.	Name of registered set	(Note 1)	Final character	C0	C1	G0	G1	G2	G3
156	Rec. T.51 Supplementary graphic set	96	5/2				x	x	x
Up-dated 87	Rec. T.52 Kanji set (2 byte set) JIS × 0208-1990	94 × 94	4/2 (Note 2)			x	x	x	x
164	Rec. T.52 Hebrew supplementary set	96	5/3				x	x	x
144	Rec. T.52 Cyrillic supplementary set	96	4/12				x	x	x
13	Rec. T.52 Katakana set	96	4/9				x	x	x
89	Rec. T.52 Arabic set	94	6/11			x	x	x	x
165	Rec. T.52 Chinese set	94 × 94	4/5			x	x	x	x
161	Rec. T.101 Audio Data Syntax	Complete code	4/5						
162	Rec. T.101 Photo-Videotex Data Syntax	Complete Code	4/5						

Note 1 – The 94 or 96 character set applies only to single byte graphic character sets. The 94 × 94 set applies to two byte graphic character sets. Primary control sets are C0. Supplementary control sets are C1. Complete code is also referred to as "Coding System different from that of ISO 2022".

Note 2 – The designation sequences are:

ESC 02/06 04/00 ESC 02/04 04/02 for G0
ESC 02/06 04/00 ESC 02/04 02/09 04/02 for G1
ESC 02/06 04/00 ESC 02/04 02/10 04/02 for G2
ESC 02/06 04/00 ESC 02/04 02/11 04/02 for G3

ANNEX C

(to Recommendation T.51)

Alphabetical list of abbreviations used in this Recommendation

ESC ESCAPE

IRV International reference version