



INTERNATIONAL TELECOMMUNICATION UNION

# ITU-T

TELECOMMUNICATION  
STANDARDIZATION SECTOR  
OF ITU

## T.6

### TERMINAL EQUIPMENT AND PROTOCOLS FOR TELEMATIC SERVICES

---

### FACSIMILE CODING SCHEMES AND CODING CONTROL FUNCTIONS FOR GROUP 4 FACSIMILE APPARATUS

### ITU-T Recommendation T.6

(Extract from the *Blue Book*)

## NOTES

1 ITU-T Recommendation T.6 was published in Fascicle VII.3 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.

© ITU 1988, 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.



**Documents**  
Document Sharing Hub

## Recommendation T.6

### FACSIMILE CODING SCHEMES AND CODING CONTROL FUNCTIONS FOR GROUP 4 FACSIMILE APPARATUS

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

#### 1 General

##### 1.1 Scope

1.1.1 Recommendation T.6 defines the facsimile coding schemes and their control functions to be used in the Group 4 facsimile.

1.1.2 This Recommendation should be read in conjunction with the following Recommendations:

- T.503 A document application profile for the interchange of Group 4 facsimile documents
- T.521 Communication application profile for document bulk transfer based on the session service (according to the rules defined in T.62 *bis*)
- T.563 Terminal characteristics for Group 4 facsimile apparatus
- T.73 Document interchange protocol for the Telematic services
- T.62 Control procedures for Teletex and Group 4 facsimile services
- T.62 *bis* Control procedures for Teletex and Group 4 facsimile services based on Recommendations X.215/X.225
- T.70 Network-independent basic transport service for Telematic services
- F. 161 International Group 4 facsimile service

In addition, in the case of Group 4 Class II/III (Teletex or mixed mode of operation), the following Recommendations should also be read:

- T.60 Terminal equipment for use in the Teletex service
- T.61 Character repertoire and coded character sets for the international Teletex service
- T.72 Terminal capabilities for mixed mode of operation

##### 1.2 Fundamental principles

###### 1.2.1 Facsimile coding schemes and coding control functions

Facsimile coding schemes consist of the basic facsimile coding scheme and optional facsimile coding schemes. They are defined in § 2 and §§ 3 and 4, respectively.

Facsimile coding schemes are specified assuming that transmission errors are corrected by control procedures at a lower level.

The basic facsimile coding scheme is the two-dimensional coding scheme which is in principle the same as the two-dimensional coding scheme of Group 3 facsimile specified in Recommendation T.4.

Optional facsimile coding schemes are specified not only for black and white images but also for grey scale images and colour images.

Facsimile coding control functions are used in facsimile user information in order to change facsimile parameters or to invoke the end of facsimile block. They are defined in § 2.4.

#### 2 Facsimile coding schemes and coding control functions for black and white images

##### 2.1 General

This section specifies the facsimile coding schemes, and associated control functions for black and white images.

Facsimile coding schemes consist of the basic facsimile coding scheme and optional coding schemes.

The use of the optional facsimile coding schemes is subject to mutual agreement between terminals and shall be initiated by the appropriate procedural steps.

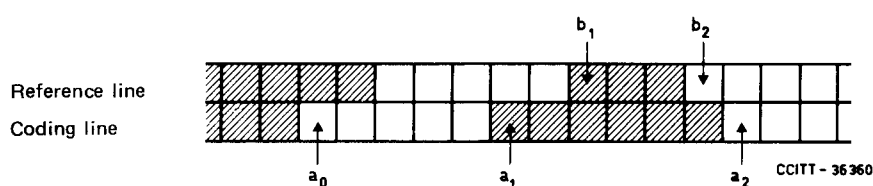
## 2.2 Basic facsimile coding scheme

### 2.2.1 Principle of the coding scheme

The coding scheme uses a two-dimensional line-by-line coding method in which the position of each changing picture element on the current coding line is coded with respect to the position of a corresponding reference element situated on either the coding line or the reference line which is immediately above the coding line. After the coding line has been coded, it becomes the reference line for the next coding line. The reference line for the first coding line in a page is an imaginary white line.

### 2.2.2 Definition of changing picture elements (see Figure 1 /T.6)

A changing element is defined as an element whose "colour" (i.e. black or white) is different from that of the previous element along the same scan line.



- $a_0$  : The reference or starting changing element on the coding line. At the start of the line  $a_0$  is set on an imaginary white changing element situated just before the first element on the line. During the coding of the coding line, the position of  $a_0$  is defined by the previous coding mode (see § 2.2.3).
- $a_1$  : The next changing element to the right of  $a_0$  on the coding line.
- $a_2$  : The next changing element to the right of  $a_1$  on the coding line.
- $b_1$  : The first changing element on the reference line to the right of  $a_0$  and of opposite colour to  $a_0$ .
- $b_2$  : The next changing element to the right of  $b_1$  on the reference line.

FIGURE 1/T.6

Changing picture elements

### 2.2.3 Coding modes

One of the three coding modes are chosen according to the coding procedure described in § 2.2.4 to code the position of each changing element along the coding line. Examples of the three coding modes are given in Figure 2/T.6, 3/T.6 and 4/T.6.

#### 2.2.3.1 Pass mode

This mode is identified when the position of  $b_2$  lies to the left of  $a_1$ . (See Figure 2/T.6.)

However, the state where  $b_2$  occurs just above  $a_1$  as shown in Figure 3/T.6 is not considered as a pass mode.