



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

T.563

(10/96)

SERIES T: TERMINALS FOR TELEMATIC SERVICES

Terminal characteristics for Group 4 facsimile apparatus

ITU-T Recommendation T.563

(Previously CCITT Recommendation)

ITU-T T-SERIES RECOMMENDATIONS
TERMINALS FOR TELEMATIC SERVICES

For further details, please refer to ITU-T List of Recommendations.

FOREWORD

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

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation T.563 was revised by ITU-T Study Group 8 (1993-1996) and was approved by the WTSC (Geneva, 9-18 October 1996)

NOTE

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

© ITU 1997

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.

CONTENTS

Page

1	General	1
2	Scope of Recommendations concerning Group 4 facsimile apparatus.....	1
3	General characteristics of the apparatus	2
3.1	Basic characteristics	2
3.2	Basic functions.....	2
3.3	ITU-T-standardized optional functions of Group 4 facsimile apparatus	4
3.4	Optional functions of Group 4 facsimile apparatus for national standardization or private use	6
3.5	Default conditions for Group 4 facsimile apparatus	7
4	Communications.....	7
4.1	Storage	7
4.2	Call identification.....	7
4.3	Communication application profile for Group 4 facsimile document	7
5	Network-related requirements	8
5.1	Networks	8
5.2	Circuit-Switched Public Data Network (CSPDN)	8
5.3	Packet-Switched Public Data Network (PSPDN)	8
5.4	Integrated Services Digital Network (ISDN).....	8
6	Indicators	8
7	Access to facsimile MHS	8
8	Implementation of apparatus	9
	Annex A – Guaranteed reproducible area for Group 4 apparatus conforming to Recommendation T.563	9
	Annex B – Optional file transfer for Group 4.....	11
	B.1 Introduction.....	11
	B.2 Definitions	11
	B.3 Normative references	11
	B.4 Definition of the different file transfer modes	12
	B.5 Coding of the file description	12
	B.6 Protocol aspects – ASN.1 definition of user data conveyed by session PDU.....	14
	B.7 Communication concepts.....	16
	Appendix I – Implementation Guide of Group 4 facsimile	17
	I.1 Document architecture	17
	I.2 ASN.1 definition of user data conveyed by session PDU.....	17
	I.3 Communication concepts.....	22

Copyright International Telecommunication Union/ITU Telecommunication Sector
 Provided by IHS Markit under license with ITU-T
 No reproduction or networking permitted without license from IHS
 Full document details: ITU-T T.563 1996

SUMMARY

This Recommendation defines the terminal characteristics for G4 facsimile apparatus. The descriptions of the terminal characteristics for colour extension are added as an option by this Recommendation. The coding schemes for colour image type and optional functions for colour facsimile are mainly defined. The references to the teletext service are removed.

Recommendation T.563**TERMINAL CHARACTERISTICS FOR GROUP 4
FACSIMILE APPARATUS***(revised 1994 and 1996)*

The ITU-T,

considering

- (a) that Recommendation T.4 refers to Group 3 type apparatus for ISO A4 document transmission over a telephone-type circuit in approximately one minute;
- (b) that there is a demand for Group 4 apparatus which incorporates means for reducing the transmission time and assures essentially error-free reception of the documents;
- (c) that telematic terminals including Group 4 facsimile apparatus are to be standardized, taking into account the commonality among these terminals,

unanimously declares

that Group 4 facsimile apparatus as defined in Recommendation T.0 should be designed and operated according to the following standard.

1 General

1.1 Group 4 facsimile apparatus is used mainly on Public Data Networks (PDN) including circuit-switched, packet-switched, and the Integrated Services Digital Network (ISDN).

1.2 The procedures used with Group 4 facsimile apparatus enable it to transmit and reproduce image-coded information essentially without transmission errors.

1.3 Group 4 facsimile apparatus has the means for reducing the redundant information in facsimile signals prior to transmission.

1.4 The basic image type of the Group 4 facsimile apparatus is black and white. Continuous tone gray scale and colour image type of G4 facsimile apparatus are optional.

Other image types are for further study.

NOTE – The above definitions are extracted from Study Group 1 where “terminal” is used instead of “apparatus”.

2 Scope of Recommendations concerning Group 4 facsimile apparatus

2.1 This Recommendation defines the general aspects of Group 4 facsimile apparatus.

2.2 The rules to be followed in the Group 4 facsimile services are defined in Recommendation F.184.

2.3 The Group 4 facsimile coding scheme and facsimile control functions are defined in Recommendations T.6, T.81 and T.82.

2.4 Group 4 facsimile apparatus communicates with unique procedures that are described as follows:

- a) the interface to the physical network is defined in this Recommendation (see Note);
- b) the transport end-to-end control procedure is defined in Recommendation T.70;
- c) Group 4 facsimile control procedures are defined in Recommendation T.62;
- d) Group 4 facsimile communication application profile is defined in Recommendation T.521;
- e) Group 4 facsimile document application profile is defined in Recommendation T.503.

2.5 For the continuous tone colour image, the continuous tone colour representation method for G4 facsimile is defined in Recommendation T.42.

3 General characteristics of the apparatus

3.1 Basic characteristics

3.1.1 The Group 4 facsimile apparatus provides the means for direct document transmission from any subscriber to any other subscriber.

3.1.2 All apparatus participating in the international Group 4 facsimile service have to be compatible with each other at the basic level defined in this Recommendation. Additional operational functions may be invoked.

3.1.3 The range of data rates is described in clause 5. Detailed arrangements on a national level are left to the Administrations concerned, as it is recognized that national implementation of the Group 4 facsimile service on various types of network may involve national operation at different data throughput rates.

3.1.4 The page is the basis for facsimile message formatting and transmission. Both A4 and North American paper formats are taken into account.

3.1.5 Facsimile coding schemes are applied in order to reduce the redundant information in facsimile signals prior to transmission.

3.1.6 The apparatus must have the ability to reproduce facsimile messages. The content, layer and format of facsimile messages must be identical at the transmitting and receiving apparatus.

3.1.7 The reproducible area is defined within which facsimile messages are assured to be reproduced. (See 3.2.6.)

3.1.8 The Group 4 facsimile apparatus should provide means for automatic reception.

3.1.9 Group 4 facsimile apparatus shall incorporate the functions defined as basic for the Group 4 facsimile service in 3.2 below. In addition, optional functions can be incorporated. In this Recommendation, the optional functions are divided into ITU-T standardized options and nationally and/or privately specified options.

3.2 Basic functions

3.2.1 Group 4 facsimile apparatus shall be capable of handling:

- a) communication application profile as defined in Recommendation T.521;
- b) document application profile as defined in Recommendation T.503;
- c) the basic facsimile coding scheme as defined in Recommendation T.6;
- d) the control function associated with the basic facsimile coding scheme as defined in Recommendation T.6.

3.2.2 Group 4 apparatus shall have the following provisions for facsimile messages:

- a) provision for scanning the documents to be transmitted (see 3.2.5);
- b) provision for receiving and presenting hard or soft copies of the documents.

3.2.3 Basic page formatting functions are as follows:

- a) vertical page orientation;
- b) paper size of ISO A4;
- c) reproducible area/printable area is defined, taking into account ISO A4 and North American paper formats and ISO standard 3535.

3.2.4 Terminal identification

Each Group 4 facsimile apparatus should be equipped with a unique identification. Details of the identification are given in Recommendation F.184.

3.2.5 Scanning

The message area should be scanned in the same direction in the transmitter and receiver. Viewing the message area in a vertical plane, the picture elements shall be processed as if the scanning direction were from left to right with subsequent scans adjacent to and below the previous scan.

3.2.6 Page size and reproducible area

3.2.6.1 Sometimes paper length may not be specified, because the paper end is detected by paper scanning.

3.2.6.2 The size of the guaranteed reproducible area for ISO A4 paper size is shown in Annex A.

3.2.7 Group 4 facsimile transmission pel density (resolution) requirements

The Group 4 facsimile resolution requirements and their tolerances are given in Table 1.

Standard pel transmission density for Group 4 facsimile is 200 pels/25.4 mm.

Table 1/T.563

Resolution (pels/25.4 mm)	Horizontal and vertical tolerance (%)
200 × 200	± 1
240 × 240	± 1
300 × 300	± 1
400 × 400	± 1

Lower resolution for continuous tone gray scale and colour image is for further study.

Centre line referencing will be used for paper positioning. Each page will be positioned on the scanner so that the centre line is in registration with the value: (number of pels/line)/2. (For further study.)

Specific values for the number of pels per line, scan line length and nominal number of scan lines per page are given in Tables 2a and 2b for all the Group 4 resolutions for ISO A4, North American Letter, ISO B4, ISO A3, Japanese Legal, Japanese Letter, North American Legal and North American Ledger paper.

Table 3 specifies the blanking procedure for all of the Group 4 paper sizes. An equal number of pels on the left and right side of the page are set to white to fit the paper format. Figure 1 illustrates the blanking procedure for ISO A4 and North American Letter paper. The same procedure is used for the other paper formats.

The raster point in the upper left corner of an ISO page is used as a reference for portrait mode character printing. This raster point, termed the raster reference point (1.1), is used as a starting point for determining character margins and positions. This is also illustrated in Figure 1.

3.2.8 Facsimile coding schemes

3.2.8.1 In order to reduce the redundant information in facsimile signals, the basic facsimile coding scheme is defined in Recommendation T.6. This coding scheme is used assuming that transmission errors are corrected by control procedures in lower levels.

3.2.8.2 On an optional basis, an apparatus can use other ITU-T standardized coding schemes defined in Recommendation T.6 or T.85.

3.2.8.3 When the encoded bit string based on Recommendation T.6 is arranged in the octet string of ASN.1, the first bit of encoded image should be placed in LSB of octet. The successive bits are placed in the direction of LSB to MSB of octet.

3.2.8.4 For colour facsimile of continuous tone image as described in 3.3.5 b) with more than one colour component, the coding scheme defined in Recommendation T.81 shall be used and the coding scheme defined in Recommendation T.82 is for further study. For colour facsimile of multi-colour image, the coding scheme defined in Recommendation T.82 is applicable. The colour facsimile of multi-colour is reserved for further study.

3.3 ITU-T-standardized optional functions of Group 4 facsimile apparatus

3.3.1 The possibility of using optional functions can be negotiated during a handshaking procedure in the communication application profile (see Recommendation T.521).

3.3.2 The optional functions are invoked by the communication application profile (see Recommendation T.521).

Table 2a/T.563 – Number of pels and scan line length for different paper sizes

		ISO A4	North American Letter	ISO B4	ISO A3	Japanese Legal	Japanese Letter	North American Legal	North American Ledger
Number of picture elements along a scan line	Resolution (pels/25.4 mm)								
	200	1728	1728	2048	2432	2048	1728	1728	2432
	240	2074	2074	2458	2918	2458	2074	2074	2918
	300	2592	2592	3072	3648	3072	2592	2592	3648
	400	3456	3456	4096	4864	4096	3456	3456	4864
Scan line length (mm) (P)		219.46	219.46	260.10	308.86	260.10	219.46	219.46	308.86
Paper width (mm) (Q)		210	215.9	250	297	257	182	215.9	279.4
P – Q		9.46	3.56	10.10	11.86	3.10	37.46	3.56	29.46

Table 2b/T.563 – Nominal number of scan lines for different paper sizes

		ISO A4	North American Letter	ISO B4	ISO A3	Japanese Legal	Japanese Letter	North American Legal	North American Ledger
Nominal number of scan lines per page for each pel-transmission density	Resolution (pels/25.4 mm)								
	200	2339	2200	2780	3307	2866	2024	2800	3400
	240	2806	2640	3335	3969	3439	2428	3360	4080
	300	3508	3300	4169	4961	4299	3035	4200	5100
	400	4677	4400	5559	6614	5732	4047	5600	6800
Nominal paper length (mm)		297	279.4	353	420	364	257	355.6	431.8