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TELEMATIC SERVICE

OPERATIONAL PROVISIONS FOR THE INTERNATIONAL PUBLIC FACSIMILE SERVICE BETWEEN SUBSCRIBER STATIONS WITH GROUP 4 FACSIMILE MACHINES (TELEFAX 4)

ITU-T Recommendation F.184

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. 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, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation F.184 was revised by the ITU-T Study Group I (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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

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OPERATIONAL PROVISIONS FOR THE INTERNATIONAL PUBLIC FACSIMILE SERVICE BETWEEN SUBSCRIBER STATIONS WITH GROUP 4 FACSIMILE MACHINES (TELEFAX 4)

(Melbourne, 1988; revised Helsinki, 1993)

1 Introduction

1.1 Scope

1.1.1 This Recommendation defines the rules to be followed in the international Group 4 Facsimile (Telefax 4) service.

1.1.2 Telefax 4 is an international service, offered by Administrations enabling subscribers to exchange correspondence either manually or automatically via telecommunication networks.

1.1.3 The basic element of the correspondence between people using the service is the page, as the smallest unit of text treated as an entity. No restrictions shall exist as far as the operator procedures for generation of the text or the positioning of text within the reproducible area on a page are concerned.

1.1.4 Questions of an essentially technical nature concerning the international Telefax 4 service are dealt with by other Recommendations.

1.1.5 In this Recommendation, the word terminal is used instead of apparatus which appears in Recommendations T.563 and T.6. These two words should be considered as being equivalent.

1.2 Service definitions

1.2.1 General

1.2.1.1 An essential characteristic of the Telefax 4 service is that it provides a basic level of compatibility between all terminals participating in the service.

1.2.1.2 There are three classes of Group 4 facsimile terminals:

- *Class I* – Minimum requirement is a terminal able to send and receive documents containing facsimile encoded information (in accordance with Recommendations T.6, T.503 and T.400-Series).

- *Class II* – Minimum requirement is a terminal able to transmit documents that are facsimile encoded (in accordance with Recommendations T.6, T.503 and T.400-Series). In addition, the terminal must be capable of receiving documents which are facsimile coded (in accordance with Recommendations T.6, T.503 and T.400-Series), Teletex coded (in accordance with the basic coded character repertoire as defined in Recommendation T.61) and also mixed-mode documents (in accordance with Recommendations T.501 and T.400-Series).

- *Class III* – Minimum requirement is a terminal that is capable of generating, transmitting and receiving facsimile coded documents (in accordance with Recommendations T.6, T.503 and T.400-Series), Teletex coded documents (in accordance with the basic coded character as defined in Recommendation T.61) and mixed-mode documents (in accordance with Recommendations T.501 and T.400-Series – when defined).

1.2.1.3 Where a Telefax 4 Class III terminal and mixed mode Teletex terminal are both provided on the ISDN, they should be able to communicate without any restriction according to the basic service requirements of this Recommendation and Recommendation F.200.

1.2.2 Basic requirements

1.2.2.1 The basic requirements of Telefax 4 service are as follows:

a) a basic level of compatibility is provided between any two terminals both nationally and internationally so that they may communicate image-coded information to each other. This is to be achieved by requiring that terminals comply with Recommendations T.563, T.6, T.62, T.70, T.503 and T.400-Series;

b) it is for each Administration to decide on the network(s) on which the Telefax 4 service will be carried. There shall be no restriction on the type of network to be used;

c) it should be possible to extend the Telefax 4 service to any number of countries;

d) to permit private use applications, for example, encryption, there should be no technical limitation on the bit sequence of the subscriber's information that may be transmitted;

e) a received Telefax 4 message can be printed or displayed as decided by the recipient and the terminal characteristics. If the message is printed, the receiving subscriber will be furnished with a document that is identical with that produced by the sending subscriber as far as its contents, layout and format are concerned;

f) it is intended that the Telefax 4 service should require no changes to the Recommendations for existing services or networks.

1.2.3 Standardized options

1.2.3.1 It is recognized that some subscribers may need to use their Group 4 facsimile terminals to communicate nationally and internationally using service features that are not included in the basic requirements. A number of CCITT-standardized options should, therefore, be defined. However, the provision of any option in a service leads to some degree of incompatibility and the number of standardized options should be restricted, as shown below, to those features for which a clear international need can be foreseen.

The sending terminal shall ensure the transmission of documents using only those options that have been indicated as being available at the receiving terminal.

1.2.3.2 The standardized options should provide means for:

a) different pel transmission densities (Recommendation T.563);

b) optional coding schemes (Recommendation T.6);

c) grey scale images (Recommendation T.6);

d) colour images (Recommendation T.6);

e) use of the mixed-mode of operation (Recommendations T.61, T.6, T.501, T.503 and T.400-Series);

f) printable areas (Recommendation T.561 – Classes II and III only, Recommendation T.563);

g) escape into national and private options (Recommendation T.62);

h) resolution conversion algorithms (Recommendation T.563).

NOTES

1 Administrations are encouraged to ensure that standardized and nationally defined options are used in such a way as to minimize the need for the introduction of private use options.

2 There is a need for further study as the service develops. Changes may be required to this list.

1.4 Restrictions on the use of the Telefax 4 service

NOTE – Please refer to Recommendation F.160 for details.

2 Network requirements

2.1 It is the responsibility of each Administration to decide in which network(s) the Telefax 4 service is to be provided. The term Telefax 4 network, as used in this Recommendation, shall be taken to mean a network on which Telefax 4 service is provided.

2.2 Considering that the Telefax 4 service may be operated on the following networks:

a) Telefax 4 service on a circuit switched public data network (CSPDN);

b) Telefax 4 service on a packet switched public data network (PSPDN);

c) Telefax 4 service on a public switched telephone network (PSTN), for further study;

d) Telefax 4 service on an integrated services digital network (ISDN),

interworking between Group 4 facsimile terminals supported on any network must be possible.

2.3 The international connection shall use international data transmission facilities. Exceptionally, bilateral agreements to use other means may be made where necessary.

2.4 Connection between PSTNs may use international telephone circuits.

In all cases for interworking between networks of different types, the same network should be used for both traffic directions.

2.5 In the case of international interworking between Group 4 facsimile terminals connected to dissimilar networks, Recommendation X.300 shall apply.

2.6 International routes between ISDNs for the Telefax 4 service shall be capable of supporting user data rates up to 64 kbit/s.

3 Numbering plan

3.1 Considering that it is the responsibility of each Administration to decide on the network(s) to be used for the Telefax 4 service in accordance with the options noted in 2, the Telefax 4 numbering plan must accommodate these options.

3.2 The Telefax 4 numbering plan is based on the individual numbering plans of each of these networks, i.e. Recommendation E.163 for PSTNs, Recommendation X.121 for public data networks (PDNs) and Recommendation E.164 for ISDN.

3.3 Each of these numbering plans provides for international calls between similar networks.

3.4 The numbering plan for PDNs provides for calls to national and international PSTNs.

3.5 As the numbering plan for PSTNs does not provide for calls to PDNs and non-voice terminals on the ISDN, those Administrations that use the PSTN nationally for the Telefax 4 service must provide for call set-up procedures to give access to the national Telefax 4 service in the other countries on a PDN or the ISDN. These procedures should also apply to access from Group 3 to Telefax 4 interworking capabilities in these countries.

3.6 Administrations are requested to consider the numbering plan of their particular implementation relative to the existing networks. Further study is required.

4 Coding scheme

4.1 The basic coding scheme and control functions for the international Telefax 4 service are detailed in Recommendation T.6.

4.2 The basic character repertoire of graphic characters and control functions for the Telefax 4 service (Class II and Class III) and the coding of these characters for transmission between terminals are found in Recommendation T.61.

4.3 The use of other recognized national and/or application-oriented coding schemes is for further study (see Recommendation T.61).

5 Operation of the Telefax 4 service

5.1 General

5.1.1 The Telefax 4 service in each country and the interconnection between countries or networks shall use automatic switching so that it is possible for any Telefax 4 subscriber to reach any other Telefax 4 subscriber using fully automatic selection. This shall not, however, preclude, on a purely interim basis, the use of manual call set-up by international operators, where the calling terminal is served from a PSTN in which international call access to another PSTN serving the called terminal cannot be automatically provided.

NOTES

1 Special requirements may in these instances be applicable to the terminals in order not to affect unduly the grade of service.

2 The feasibility of this approach requires further study.

5.1.2 It is a requirement to allow the through-connection of a call between Group 4 facsimile terminals connected to a private automatic branch exchange (or similar systems) and those connected to public exchanges used for the Group 4 facsimile service.

5.1.3 Two-way alternate (TWA) communication is a capability of the Telefax 4 service, which also includes one-way communication (OWC); the calling subscriber will have full control of the Group 4 facsimile call.

5.1.4 Interworking with other services

For further study.

5.1.4.1 Interworking between basic mode and mixed mode Teletex terminals and Classes I, II and III Group 4 facsimile terminals connected to the Telefax 4 service is shown in Table 1. Where direct interworking between Teletex and Group 4 facsimile terminals is not possible, it is essential that Administrations provide the interworking capability as a function of the network or through specific features.

TABLE 1/F.184

Possible cases of direct interworking for Teletex and Group 4 facsimile terminals on the same network

From \ To	Facsimile Group 4 Class I	Facsimile Group 4 Class II	Facsimile Group 4 Class III	Teletex basic mode	Teletex mixed mode
Facsimile Group 4 Class I	F	F	F		F
Facsimile Group 4 Class II	F	F	F		F
Facsimile Group 4 Class III	F	T, F, MM	T, F, MM	T	T, F, MM
Teletex basic mode		T	T	T	T
Teletex mixed mode	F	T, F, MM	T, F, MM	T	T, F, MM

T Document with Teletex character coded information only.

F Document with fax coded information only.

MM Mixed-mode document with character and fax coded information.

5.1.4.2 Interworking between Telefax services

Communication between terminals should take place at the level of compatibility at, or nearest to, the parameters initially selected by the originating user. The determination of this level should be carried out automatically via the pre-message procedures. This should take into account aspects of the quality of transmission media available in the participating networks and the options available on the receiving terminal.

1) *Telefax 4 (PSTN) - Telefax 3 (PSTN)*

Interworking between terminals of the Telefax 4 service connected to the PSTN and terminals of the Telefax 3 service (see Recommendation F.180) should be provided as a function of the Group 4 terminal.

2) *Telefax 4 (PDN) - Telefax 3 (PSTN)*

In this case, Telefax 4 terminals use data transmission facilities. Interworking shall be provided by network interworking units. As far as the numbering plans are concerned, refer to 3.4 and 3.5.

3) *Telefax 4 (ISDN) - Telefax 3 (PSTN)*

Telefax 4 terminals connected to the ISDN will use specific service features of the ISDN. The capability of the Telefax 4 terminal on the ISDN shall be as follows:

i) Calls from Telefax 4 (ISDN) to Telefax 3 (PSTN) should be set up using the 3.1 kHz bearer service if it is known that the called number is a Telefax 3. Otherwise, the Telefax 4 will attempt the call using the circuit mode 64 kbit/s 8 kHz structured multi-use bearer service category, (MUB - Recommendation I.231.9) specifying the 3.1 kHz fallback option.

NOTE – Where a network does not yet support the MUB service, an alternative interim solution would be to attempt the Telefax 4 call initially using the 64 kbit/s bearer service and, if unsuccessful, reattempt the call as a Telefax 3 using the 3.1 kHz bearer service. This will allow the completion of calls to other ISDN terminals of PSTN Group 3 terminals.

ii) Calls from Telefax 3 (PSTN) to the ISDN terminal will be presented on the 3.1 kHz bearer service. The Telefax 4 (ISDN) terminal shall accept the call and operate as Group 3 terminal.

NOTES

1 Telefax 4 ISDN-ISDN calls will use the 64 kbit/s bearer service.

2 Telefax 3 terminals and Telefax 4 terminals which are to be connected in the PSTN can also be connected to the ISDN via terminal adaptors. This case is identical to case 1 since the interworking of such terminals with PSTN terminals in the same country has to be provided by telephone connections.

5.1.4.3 Interworking between Telefax 4 terminals provided on different public data networks (PDNs) shall be provided in accordance with the appropriate CCITT Recommendation.

5.1.4.4 Interworking is desirable between terminals of the Telefax 4 service and terminals of services other than facsimile provided over public switched networks.

5.1.4.5 In both the Teletex and Telefax 4 services, the machines providing mixed mode should enable a direct exchange of documents in accordance with Recommendations T.6, T.61, T.503 and T.400-Series.

NOTE – Interworking with other services is for further study.

5.2 Call phases

5.2.1 The operations for each call may be divided into the following three phases:

a) *Preparation:* preparation of the information to be transmitted.

b) *Transmission:*

– call establishment (manual or automatic);

– pre-information phase (see Note);

– information transfer (see Note);

– post information phase (see Note);

– call clearing.

NOTE – During these parts of the transmission phase the network must be transparent with respect to control procedures.

c) *Output:* displaying the message either by immediate printing or from a storage medium upon control by the operator.

NOTE – The information may consist of one or more Telefax 4 documents each consisting of one or more Telefax 4 pages.

5.2.2 The control procedures as specified in Recommendation T.62, T.503 and T.400-Series shall be used as end to-end communication procedures between terminals in the service.

5.2.3 The network independent basic transport service for Telefax 4 is specified in Recommendation T.70.

5.2.4 The network-dependent control procedures for the Telefax 4 service should be those that are defined for that network on which the Telefax 4 service is provided (see relevant Recommendations).

5.3 Call identification

5.3.1 General

5.3.1.1 The Telefax 4 procedures include the exchange of reference information prior to sending any document. This reference information includes identification of the parties to the call as well as the date and time. Also, supplementary reference information is exchanged during a call to allow reference to an individual document or page for error recovery or other purposes.

5.3.1.2 This reference information, taken together, is defined to be printable on a single line called the call identification line. Use of this information is a local decision except in recovering from an interrupted transmission. In the case of automatic linking, the use of this information is for further study.

5.3.2 Format of the call identification line

Details of the format of the call identification line are given in Recommendation F.200.

5.4 ISDN supplementary services

5.4.1 International supplementary services for the Telefax 4 service in the circuit mode on the B channel:

a) closed user group;

b) multiple numbers for a subscriber;

c) user-to-user signalling;

d) calling line identification presentation;

e) called line identification presentation.

Other supplementary services are for further study.

5.4.2 Use of national supplementary services is beyond the scope of this Recommendation.

5.4.3 Supplementary services for the Telefax 4 service in the packet mode

The provision of packet mode services according to Recommendation X.31 within the ISDN is for further study.

6 Quality of service

6.1 Class I terminals

6.1.1 For quality of service using class I terminals, see 6/F.160.

6.2 Class II and III terminals

6.2.1 The quality of service for Class II and III terminals and interworking with other services is for further study.

6.3 Error protection

To ensure call integrity, error protection will be provided by Telefax 4 control procedures (see Recommendations T.62 and T.70). The error rate on the pre-information, information and post-information phases should not exceed 1×10^{-6}.

6.4 International routes

The capacity of the routes between countries also has an important influence on the quality of the service. For that reason, the number of circuits provided between any two networks should be such that in the route busy hour not more than one call in 50 is lost due to a lack of international circuits (see Recommendation T.62). (For further study.)

6.5 Duration of service

6.5.1 The national and international facilities of the Telefax 4 service shall be open continuously.

6.5.2 Telefax 4 terminals for which call numbers are published in the directories shall, in principle, be available to accept calls continuously.

6.6 Observations on the quality of the service

For further study.

7 Subscriber terminals

7.1 General

7.1.1 In order to support a high quality of service, a range of data signalling rates has been defined as follows.

7.1.1.1 Public data networks

Terminals on a circuit switched data network shall operate in accordance with user classes of service 5 and 7 as defined in Recommendation X.1.

Terminals on a packet switched data network shall operate in accordance with user classes of service 9 to 11 as defined in Recommendation X.1.

7.1.1.2 Public switched telephone network

For further study.

Terminals on the public switched telephone network shall operate at 9600 bit/s with fallback to 7200 bit/s and 4800 bit/s or at 14 400 bit/s with fallback to 12 000 bit/s, 9600 bit/s and 7200 bit/s.

7.1.1.3 Integrated Services Digital Networks (ISDN)

Terminals on the ISDN shall operate in accordance with user classes of service 30 as defined in Recommendation X.1.

7.1.2 The facilities required in terminals connected to the international Telefax 4 service are listed in the following paragraphs.

7.2 Coding scheme

7.2.1 Class I Group 4 facsimile terminals shall have the ability to send, receive and display documents encoded using the Group 4 coding scheme defined in Recommendation T.6.

7.2.2 In addition to the requirements detailed in 7.2.1, Class II terminals shall have provision for receiving and displaying basic Teletex and mixed-mode documents.

7.2.3 In addition to the requirements detailed in 7.2.1 and 7.2.2, Class III terminals shall have provisions for generating basic Teletex and mixed-mode documents (see Recommendation T.61).

7.3 No constraints should be made on the type of presentation technology employed.

7.4 Receiving capability

7.4.1 The ability of a terminal to receive incoming traffic is a prerequisite for it to answer the call.

NOTE – The control procedures may allow for negotiation of storage capability between terminals. This matter is for further study.

7.4.2 If during a call, the ability of the receiving terminal to continue to accept traffic is jeopardized (e.g. memory threshold reached) an indication of this condition will be passed to the sending terminal using the control procedures to permit the orderly termination and resumption of the transmission.

7.5 Alarm indicators

7.5.1 Alarm indicators (visual and/or audible) are required in the terminals to inform users about conditions that could have an adverse effect on the quality of service.

7.5.2 Where appropriate, the following indicators are required:

a) terminals unable to transmit (e.g. paper jam at transmitting end);

b) terminals unable or soon unable to receive (e.g. paper jam or receiving memory nearly full);

c) operator assistance required;

d) message received in store.

7.6 Terminal identification

7.6.1 Each terminal in the Telefax 4 service shall have a unique identification. Details of the identification are given in Recommendation F.200.

7.6.2 The calling terminal may verify the identification of the called terminal prior to the information transfer phase of the call.

7.7 Page format, Telefax 4 service

7.7.1 General

7.7.1.1 The principal objective of the Telefax 4 service is to establish a basic defined mode of operation common to all machines used in the service. Therefore, a minimum basic requirement is defined, and all terminals used in the Telefax 4 service shall comply with this minimum basic requirement. This, however, does not preclude the possibility that terminals may by prior agreement operate in modes different from these basic minimum requirements.

7.7.1.2 The maximum reproducible areas for various standard paper sizes are defined in Recommendation T.563.

The minimum requirement is that the image area defined by the United Nations' layout key and ISO 3535 shall be reproduced.

7.7.1.3 The range of the terminals' capabilities is exchanged during session establishment, prior to document transmission. These procedures are defined in Recommendation T.62 and Recommendation T.503 and T.400-Series along with the default values for these capabilities if this exchange is not explicitly stated.

7.7.1.4 A particular selection from this established range of capabilities is made preceding transmission of each document. Some of these selections may be changed at page boundaries and some may also be changed within a page.

8 Customer information

8.1 Directories

A terminal must comply with all the requirements of a service in order to be included in the directory for that service.

Mixed-mode terminals may have entries in the Telefax and Teletex directories. The entries for such terminals may include indication of their dual capability. See also 6/F.180.

In the case of network interworking facilities to provide interworking Telefax 4 terminals on dissimilar networks or between Telefax 3 and Telefax 4 terminals, separate access numbers to subscribers via interworking units may be necessary. These numbers must be shown in directories.

NOTE – In these cases, the terminals of the Telefax 4 service may have two identifications (contrary to what is indicated in 7.6.1). In a given call, however, only one identification is valid.

8.2 Operating instructions

For further study.

9 Access to facsimile Message Handling Facilities

Users of the Telefax 4 service may wish to have access to the services offered by Message Handling Facilities. This is for further study.

10 Tariff principles

This matter requires further studies in conjunction with Study Group III.