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Foreword

This European Telecommunication Standard (ETS) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS sets out arrangements for the international operation of the telefax group 4 teleservice within the Integrated Services Digital Network (ISDN). The ISDN telefax group 4 teleservice will use standardised group 4 facsimile terminals, the requirements for which are set out in relevant CCITT Recommendations, which are referenced within this ETS (see Clause 2 and Annex A).

This ETS covers group 4 - class I facsimile terminals.

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1   Scope

The telefax group 4 teleservice within the Integrated Services Digital Network (ISDN) is an international service, offered by service providers, enabling subscribers to exchange correspondence either manually or automatically via telecommunication networks.

Subscribers can communicate by means of group 4 facsimile terminals standardised in accordance with the appropriate CCITT Recommendations on an international level.

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 so far as the operator procedures for generation of the text or the positioning of text within the reproducible area on a page are concerned.

As defined in the appropriate CCITT Recommendations (see Clause 2), there are three classes of group 4 facsimile terminals:

Class I: the minimum requirement for class I is a terminal which is able to send and receive documents containing facsimile encoded information (in accordance with CCITT Recommendations T.6 [13], T.503 [1], T.563 [2] and T.400 [10] series).

Class II: the minimum requirement for class II is a terminal which is able to transmit documents that are facsimile encoded (in accordance with CCITT Recommendations T.6 [13], T.503 [1] and T.400 [10] series). In addition, the terminal shall be capable of receiving documents which are facsimile coded (in accordance with CCITT Recommendations T.6 [13], T.503 [1] and T.400 [10] series), teletex coded (in accordance with the basic coded character repertoire as defined in CCITT Recommendation T.61 [9]), and also mixed-mode documents (in accordance with CCITT Recommendations T.501 [11] and T.400 [10] series).

Class III: the minimum requirement for class III is a terminal which is capable of generating, transmitting and receiving facsimile coded documents (in accordance with CCITT Recommendations T.6 [13], T.503 [1] and T.400 [10] series), teletex coded documents (in accordance with the basic coded character repertoire as defined in CCITT Recommendation T.61 [9]) and mixed-mode documents (in accordance with CCITT Recommendations T.501 [11] and T.400 [10] series).

Service requirements contained in this standard take into account group 4 - class I facsimile terminals.

2   Normative references

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1]   CCITT Recommendation T.503 (1988): "A document application profile for the interchange of group 4 facsimile documents".

[2]   CCITT Recommendation T.563 (1988): "Terminal characteristics for Group 4 facsimile apparatus".

[3]   ETS 300 080 (1992): "Integrated Services Digital Network (ISDN); ISDN lower layer protocols for telematic terminals".

[4]   ETS 300 087 (1991): "Integrated Services Digital Network (ISDN); Facsimile group 4 class 1 equipment on the ISDN; Functional specification of the equipment".

[5]   ETS 300 102: "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

[6]   ETS 300 112 (1990): "Integrated Services Digital Network (ISDN); Facsimile group 4 class 1 equipment on the ISDN; End-to-end protocols".

[7]   ETS 300 125: "Integrated Services Digital Network (ISDN); User-network interface data link layer specification; Application of CCITT Recommendations Q.920/I.440 and Q.921/I.441".

[8]   CCITT Recommendation E.164 (1988): "Numbering plan for the ISDN era".

[9]   CCITT Recommendation T.61 (1988): "Character repertoire and coded character sets for the international teletex service".

[10]   CCITT Recommendation T.400 Series (1988): "(Fascicle VII.6) Terminal equipment and protocols for telematic services".

[11]   CCITT Recommendation T.501 (1988): "A document application profile MM for the interchange of formatted mixed mode document".

[12]   CCITT Recommendation F.200 (1988): "Teletex service".

[13]   CCITT Recommendation T.6 (1988): "Facsimile coding schemes and coding control functions for group 4 facsimile apparatus".

3   Symbols and abbreviations

For the purposes of this standard, the following abbreviations apply:

CIL   Call Identification Line

LAN   Local Area Network

ISDN   Integrated Services Digital Network

PABX   Private Automatic Branch eXchange

PC   Personal Computer

TID   Terminal IDentification

4   Telefax group 4 service profile

4.1   General

The telefax group 4 service profile takes account of a number of different types of terminals:

-       dedicated facsimile terminals;

-       non-dedicated facsimile terminals (e.g. personal computer-based multi-service terminal);

-       multi-user system or multi-access systems (e.g. telefax Private Automatic Branch eXchange (PABX), Local Area Network (LAN)).

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 achieved by requiring that terminals comply with ETSs 300 080 [3], 300 087 [4] and 300 112 [6].

It is recognised 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. Therefore a number of options, recommended by CCITT, are defined. However, the number of standardised options is restricted, as shown in subclause 4.2, 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.

4.2 Description

Group 4 facsimile terminals shall provide standardised facsimile transmission with a scanning and printing device:

- the printer is optional and its provision depends on user needs. However, a telefax group 4 facsimile terminal shall be able to output a received document to a printer;

- in addition to other conformance testing specifications laid down elsewhere in this standard, since only the physical presence of the printer is optional, the ability to output a received document to a printer shall be capable of verification;

- while the scanner is optional, the terminal shall be able to accept input either from a physical scanner, or from a wire plug-in interface, floppy disc, or LAN, etc.

Concurrent output while receiving is not mandatory. In the case of standardised mode communication, and provided the printer is available, the terminal shall print out at least the first page of the document as soon as possible. Additional facilities may be provided on an optional or private mode basis, e.g. to enable the document to be received into memory and retrieved by use of a password, or re-routed to another terminal.

In principle, telefax group 4 facsimile terminals for which call numbers are published in directories shall be continuously available to accept calls.

Secured page-oriented end to end transmission via telematic protocols shall be provided.

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

Where appropriate, the following indicators shall be provided:

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.

The terminals shall transmit at 64 kbit/s within the ISDN.

The reproduction of the receiving page shall be identical with the original in content, format and layout.

The paper format shall be as provided by CCITT Recommendation T.563 [2], Chapter III.

Transmission resolution shall be in accordance with the following requirements:

- basic:

    - 200 x 200 picture elements/inch (standard value);

- optional:

    - 240 x 240 picture elements/inch;
    - 300 x 300 picture elements/inch;
    - 400 x 400 picture elements/inch.

As a standardised option, the group 4 facsimile terminal can be capable of downward compatibility to group 3.

A non-dedicated terminal (e.g. a Personal Computer (PC) with facsimile application) shall be capable of visualising a scanned or converted document in facsimile mode stored previously in memory before transmission.

The format of a telefax group 4 facsimile Terminal IDentification (TID) shall conform to the format for terminals of the telematic services (according to CCITT Recommendation F.200 [12]).

The call identification line shall be (unless disabled by the user) printed out locally, but outside of the information field, on the top or on the bottom of each page of the hard copy.

Facilities shall be provided to clearly indicate to the user the result of each communication process. It is recommended that this indication is provided by a journal which contains the information in chronological order (see subclause 5.7).

5 Service requirements

5.1 General

In a telematic service, in which end to end compatibility between terminals is guaranteed and in which the network only has a transparent transport function during the connection, the terminal features shall cover the full range of functions needed by the service.

The following subclauses list the service requirements to be fulfilled by terminals. These requirements shall be implemented by all manufacturers and shall be available in all different systems.

5.2 Information suited for transmission

The transmission of facsimile copies shall not be subject to any restriction concerning the form, the representation and the content of the message.

5.3 Printable area

A telefax document shall be based on the ISO A4 page.

The basic features of page formats shall be as follows:

a)   paper format ISO A4 (format size);

b)   vertical format (format orientation);

c)   the reproduction of the original or the printable area on the received copy is defined in compliance with the ISO A4 paper formats and the North American format pursuant to the ISO standard.

5.4 Terminal identification

The terminal identification serves the purposes of identifying the subscriber and of increasing the security of the service.

The terminal identifications shall be able to be changed by authorised persons only.

Each terminal shall have a unique identification by a subscriber number and a mnemonic abbreviation. The complete subscriber number and the group of letters are called "identification". For example, the identification of a telefax terminal within the service area of the Deutsche Bundespost TELEKOM and within the service area of FRANCE TELECOM is shown in figures 1 and 2.

Figure 1 shows the internationally agreed format of telefax group 4 identification:

```
┌─────────┬───┬───────────┬─────────────┬───┬─────────────┐
│ Part 1  │   │ Part 2    │ Part 3      │   │ Part 4      │
├─────────┼───┼───────────┼─────────────┼───┼─────────────┤
│ network │   │ national  │ (-)         │   │ mnemonic    │
│ or      │ - │ subscriber│ additional  │ = │ abbreviation│
│ country │   │ number    │ information │   │             │
│ code    │   │           │             │   │             │
├─────────┼───┼───────────┼─────────────┼───┼─────────────┤
│         │   │           │             │   │             │
│ up to 4 │ 1 │ up to 12  │ up to 4     │ 1 │ at least 3  │
│         │   │           │             │   │             │
│ <─────── maximum 15 ──────>           │   │             │
│                                       │   │             │
│ <──────────── maximum 24 characters ─────────────────>  │
└───────────────────────────────────────────────────────┘
```

Figure 1: Format of the telefax group 4 identification

```
049-61511234=FTZ
 ^  ^    ^    ^ ^
 └──┴────┴────┴─┴──── network identification code
    │    │    │ │     (049 for the DBP)
    │    │    │ │
    └────┴────┴─┴──── hyphen
         │    │ │
         └────┴─┴──── national subscriber number
              │ │     (area- + subscriber-number +
              │ │     terminal selection)
              │ │
              └─┴──── equal sign
                │
                └──── group of letters
```

```
033-99384961=DAIIFAX
 ^   ^  ^    ^    ^
 └───┴──┴────┴────┴─── network identification code
     │  │    │    │    (033 for FRANCE)
     │  │    │    │
     └──┴────┴────┴─── hyphen
        │    │    │
        └────┴────┴─── national subscriber number
             │    │    (area- + subscriber-number +
             │    │    terminal selection)
             │    │
             └────┴─── equal sign
                  │
                  └─── group of letters
```
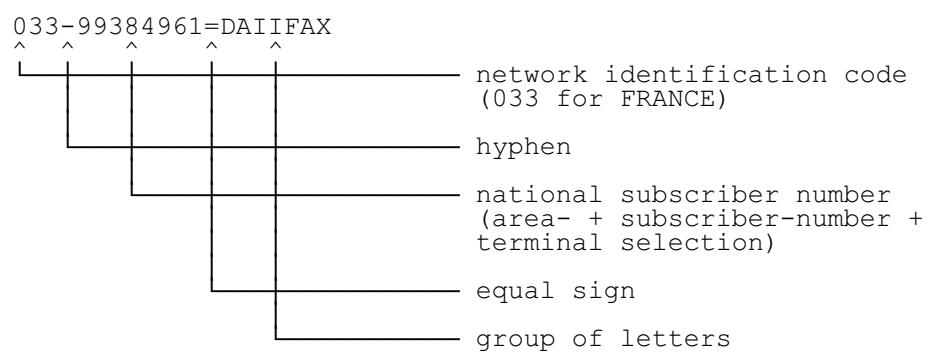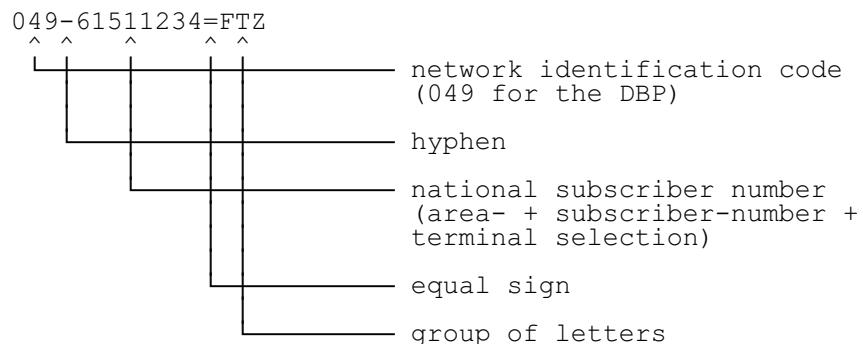
Figure 2: Example of telefax group 4 identifications

5.5 Receiving telefax documents

Every telefax group 4 facsimile terminal shall be able to receive documents automatically from telefax group 4 stations.

In case of standardised mode communication, and provided the printer is available, the terminal shall print at least the first page of the document as soon as possible.

5.5.1 Description of the call identification line

The recipient shall receive a message and additional information for the call identification line. The format of the call identification line is shown in figure 3.

```
 _____       _____       _____       _____
| Field 1                |     | Field 2                |     | Field 3               |     | Field 4             |
|_____|     |_____|     |_____|     |_____|
| identification         |     | identification         |     |                       |     | additional          |
| of called          /   |  /  | of calling          /  |  /  | date and time      /  |  /  | reference           |
| terminal               |     | terminal               |     |                       |     | information         |
|                        |     |                        |     |                       |     |                     |
| <——————24——————> | 1 | <——————24——————> | 1 | <——————14——————> | 1 | <————7————> |
| <——————————————————————————— 72 characters ———————————————————————————————> |
```

Figure 3: Format of the Call Identification Line (CIL)

An example of the relevant information is as follows:

       33-61511234=DAII/049-228123456=BPM/87-09-25-11:30/001-002

    Field 1:   contains the identification of the called terminal.
               Field 1 contains up to 24 characters.

    Field 2:   contains the identification of the calling terminal installation.
               Field 2 contains up to 24 characters.

    Field 3:   contains date and time of call origination in the following form on a call basis.

               e.g. 87-09-25-11:30

               87   : year
               09   : month
               25   : day
               11:30 : time

               (The hyphens and the colon separate the individual groups of numbers).

               The calling terminal shall be able to provide the local date and time information required in the CIL. This information shall be obtained from the network (private or public) on a per call basis when the facility is provided by the network. If the network does not provide this facility the terminal shall include an internal clock and calendar.

               If a network subsequently provides the date and time facility, terminals which only make use of an internal clock and calendar may continue to be provided and approved for connection to the network for a transition period of not less than 12 months from the date of introduction of the network facility. After this period, newly approved terminals shall use the network facility instead.

Field 4:   consists of the supplementary reference information:

during one connection one message of several pages and even several documents (different texts) can be transmitted to the recipient;

each page is marked by sending the telefax terminal installation with a document and a page number for the purpose of transmission;

e.g. 001-002

001   : document number
-      : hyphen to separate document and page number
002   : page number

The pages of a document shall be numbered consecutively. An area either at the top or at the bottom of each received page shall be reserved for printing of the CIL.

5.5.2   Partially received messages

If a message from a telefax station has not been received completely (e.g. because the receiving terminal has no paper), an indication shall be given to the users (sending and receiving sides).

5.5.3   Conditions allowing deletion of a received document from reception memory

A received document can be deleted upon an operator's instruction only if, at a minimum, its first page has been printed or visualised.

5.6   Transmitting telefax messages

5.6.1   Dialling information

The telefax terminal shall provide the means for entering the CCITT Recommendation E.164 [8] number of the called party.

5.6.2   Terminal identification check between group 4 facsimile terminals

The telefax terminal shall provide the means for entering the group of letters mnemonic of the telefax identification of the requested recipient. To establish calls to telefax stations, the telefax number of the requested recipient shall be entered. Optionally, the mnemonic can also be entered. However, the group of letters of the telefax identification may be used as end to end information but is never checked or processed by the network and not used consequently for routing purposes.

After reaching a telefax station the calling telefax terminal shall retrieve its identification. Before transmitting the document the mnemonic abbreviation (part 4 of figure 1) (if entered by the operator) of the identification of the called telefax station shall be compared with the one the calling user entered. In this case, the document shall only be transmitted if the entered letters are identical to the beginning of the letter sequence of the receiver. The telefax terminal shall not distinguish between upper-case and lower-case letters. The sequence of letters in the telefax identification, e.g. "ABCDEF" and its entry "abCDef", shall be considered identical.

To establish national calls the dialling information for the country code included in the telefax identification should not be entered.

5.6.3   Maximum receiving time

The transfer time from a tester to facsimile equipment for an electronically synthesised Slerexe letter (CCITT reference document N°1) as measured from having received CONNECT - message to having received DISCONNECT - message at the receiving side shall not be greater than 30 seconds at 200 pels resolution.

5.7   Information on the process of document transmission

5.7.1   Information on communication logs

Two kinds of local operational logs may be managed by the telefax group 4 application. They are:

1)   the journal: this provides the operator with a trace of any communication event or any communication incident; and

2)   the transmission books: these provide the operator with the means of handling documents (or files) waiting for, or in the course of, processing.

The description of these books in this subclause concern only the information which can be presented to the operator. The way this information is presented is unrestricted and the choice of the manufacturer.

5.7.1.1   Journal

5.7.1.1.1   General

Facilities shall be provided to clearly indicate to the user the result of each communication process. It is recommended that this indication is provided by a journal which contains the information in chronological order.

The journal includes three kinds of events:

-        the sending events;

-        the receiving events;

-        the incident events.

The journal is composed of a set of records, each one corresponding to all the elements (e.g. the document) processed during a call.

The journal may be printed, archived or deleted as a whole, for a period of time, on the operator's request.

5.7.1.1.2   Content of the history book

This book should contain for each document (or file) sent or received:

-        parameters concerning the sent or received document (file):

    -        document reference number;
    -        number of last acknowledged page;
    -        type of document (if different from normal document);
    -        indicator: complete or partial document;

-        parameters concerning the communication status:

    -        calling terminal TID;
    -        called terminal TID;
    -        communication date and time;
    -        reason for non-delivery or for interruption.

Additional information (such as options used) may be given.

5.7.1.2 Transmission books

A transmission book is composed of a set of records corresponding to the documents (or files) waiting for, or in course of, a communication process.

The transmission book may include two kinds of information:

- sending transmission information; and

- receiving transmission information.

The transmission book can be modified in local application only on request of the operator.

5.7.2 Journal memory

When the journal is full and if the terminal is not able to print it or to archive it, an indication shall be given to the user. The information already stored in the journal shall be kept.

6 Directory enquiry service

Each telefax subscriber shall be given information:

- on telefax user accesses or telefax subscribers (up-to-date information);

- on telefax user accesses or telefax subscribers from other countries (if respective directories are available);

- on general matters, e.g. codes and charges;

- on the bureaufax service.

7 Network interworking and service intercommunication

The telefax group 4 teleservice shall be offered in the following networks:

1) ISDN (user class of service); and

2) analogue telephone network (group 3).

Network interworking between the two networks shall be provided. The following figure indicates which terminals may be able to communicate with each other:

to from	Group 3/2° PSTN	Group 3/2*° ISDN	Group 4 ISDN	Group 4/3 ISDN
Group 3/2° PSTN	x	x	–	x
Group 3/2*° ISDN	x	x	–	x
Group 4 ISDN	–	–	x	x
Group 4/3 ISDN	x	x	x	x

PSTN =   Analogue telephone network.
X =   Possible intercommunication.
* =   At a terminal adapter.
° =   Group 2 mode is optional.

Figure 4: Interworking capabilities

8 Attributes and attribute values

8.1 Lower layer attributes

8.1.1 Information transfer attributes

1) Mode:	Circuit
2) Rate:	64 kbit/s
3) Information transfer capability:	Unrestricted
4) Structure:	8 kHz integrity
5) Establishment:	Demand
6) Configuration:	Point-to-point
7) Symmetry:	Bidirectional symmetry

8.1.2 Access attributes

8) Access channel and rate:	B for user information, D for signalling
9) Signalling access protocol:	ETSs 300 125 [7] and 300 102 [5]
10) Information access protocol:	ETS 300 080 [3]

8.2 Higher layer attributes

11) Type of user information: Layers 4,5,6 and 7 protocols:	(facsimile) telefax group 4 ETS 300 112 [6]

8.3 General attributes

This standard does not provide values for general attributes.

Annex A (informative): Bibliography

The following references provide additional information to the users of this standard.

CCITT Recommendation F.184 (1988): "Operational provisions for the international public facsimile service between subscriber stations with group 4 facsimile machines (telefax 4)".

CCITT Recommendation T.0 (1988): "Classification of facsimile apparatus for document transmission over the public networks".

CCITT Recommendation T.4 (1988): "Standardization of group 3 facsimile apparatus for document transmission".

CCITT Recommendation T.30 (1988): "Procedures for document facsimile transmission in the general switched telephone network".

CCITT Recommendation T.62 (1988): "Control procedures for Teletex and group 4 facsimile services".

CCITT Recommendation T.62 bis (1988): "Control procedures for teletex and G4 facsimile services based on Recommendations X.215 and X.225".

CCITT Recommendation T.70 (1988): "Network-independent basic transport service for the telematic services".

CCITT Recommendation T.521 (1988): "Communication application profile BT0 for document bulk transfer based on the session service (according to the rules defined in T.62 bis)".

History

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