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## TELEGRAPH SWITCHING

## INTERNATIONAL TELEX SERVICE

# TECHNICAL REQUIREMENTS TO BE MET FOR THE TRANSFER OF MESSAGES BETWEEN TERMINALS OF THE INTERNATIONAL TELEX SERVICE AND GROUP 3 FACSIMILE TERMINALS CONNECTED TO THE PSTN

## ITU-T Recommendation U.207

(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 U.207 was prepared by the ITU-T Study Group IX (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

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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 Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.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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# TECHNICAL REQUIREMENTS TO BE MET FOR THE TRANSFER OF MESSAGES BETWEEN TERMINALS OF THE INTERNATIONAL TELEX SERVICE AND GROUP 3 FACSIMILE TERMINALS CONNECTED TO THE PSTN

*(Helsinki, 1993)*

## 1 Introduction

This Recommendation defines the technical requirements to be met for the transfer of messages between terminals of the international telex service and Group 3 facsimile terminals connected to the public switched telephone network.

Interworking with Group 4 facsimile terminals is for further study.

## 2 Basic interworking service

**2.1** The interworking shall be established by provision of a Telex/Facsimile Interworking Facility (FAXIWF). Message transfer shall be provided on a store-and-forward basis via the FAXIWF.

**2.2** The FAXIWF shall cater for access from both manual operated telex terminals and telex automatic emitting devices (TAEDs).

**2.3** In the telex to facsimile direction the following functions shall be provided by the FAXIWF:

- acceptance of messages from the telex side, with accompanying addressing information,
- division of the text received into pages and preparation of a "Header Page" (or a herald), containing all necessary recall information, for delivery to the facsimile side,
- delivery of these messages immediately after complete reception to the requested facsimile terminal, with retries if necessary,
- provision of non-delivery notifications.

**2.4** In addition to the basic functions the following facilities may be provided:

- multi-address (not applicable in one-stage access method). This facility shall be barred for international access, except if a bilateral agreement exists between the Administration of the caller and the provider of the FAXIWF. Where this facility is provided, the FAXIWF should be capable of accepting at least 20 facsimile terminal (PSTN) addresses in a multi-address call;
- follow-on messages (not applicable in one-stage access method);
- message cancellation during text input. Request for message cancellation shall be indicated by the caller by an FFFF sequence. As response, the FAXIWF shall send the sequence ANUL ANUL;
- positive delivery notification;
- enquiry, e.g. for status or cancel as defined in Recommendation U.220;
- attention information as in Recommendation U.80;
- short code selection and pre-recorded address lists as a national matter (not applicable in one-stage access method).

### 2.5 Types of interworking

Interworking between the telex service and facsimile terminals consists of two directions:

a) telex-to-facsimile. This is described in clause 3;

b) facsimile-to-telex. This is described in clause 5.

### 2.6 Access methods for the telex subscriber

The following methods to access the FAXIWF can be provided for the telex subscriber. However, all three methods are based on store-and-forward principles.

a) one-stage selection. This method is described in 3.1;

b) two-stage selection. This method is described in 3.2;

c) via a store-and-forward unit. This method allows to mix addresses of different services (e.g. telex, Teletex, Videotex, ... ) in a multi-address call and is described in Recommendations U.80 and U.200.

The service requirements for methods a) and b) are described in Recommendation F.87.

**2.7** Where a TPIWF in accordance to Recommendation U.203 is provided, provisions can be made to allow Data Terminal Equipments (DTEs) connected on a Packet Switched Public Data Network (PSPDN) access to the telex side of a FAXIWF.

## 3 Interworking in the telex to facsimile direction

### 3.1 One-stage selection access to the Telex/Facsimile Interworking Facility (FAXIWF)

For a telex subscriber, the procedure to be followed is the same as for a normal telex call. The telex subscriber shall, but is by no means forced to, transmit his answerback at the beginning and at the end of a call in accordance to Recommendation F.60.

No distinction is necessary to identify a terminal to be manual or automatic (TAED).

Figure 1 and the appending notes show the procedure in detail.

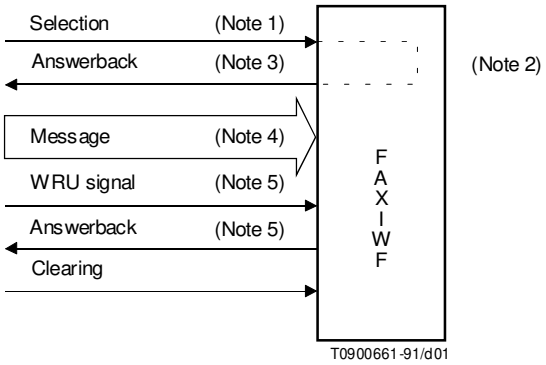


FIGURE 1/U.207

**One-stage selection access to a Telex/Facsimile Interworking Facility (FAXIWF)**

#### 3.1.1 Note 1 to Figure 1

The total selection information (including the F.69 area code and a possible national prefix) for the facsimile user shall not consist of more than 12 digits.

This requirement has normally the consequence to register each facsimile user who wants to communicate with telex subscribers and assign to him a telex number, different from his facsimile number.

#### 3.1.2 Note 2 to Figure 1

Validation is done in the FAXIWF to get the following information:

– if the selection corresponds to a registered facsimile user;

– status of the facsimile user (could be any not-ready condition on a registration basis).

If the validation fails, the FAXIWF shall return the service signal NP and clear the call.

In case the facsimile user is in a registered "not ready" condition, the FAXIWF shall return the appropriate service signal (in accordance with Recommendation U.45) to the calling telex subscriber and clear the call.

### 3.1.3 Note 3 to Figure 1

The answerback code of the facsimile user shall be in accordance to Recommendation F.74 and shall contain the complete national call number, including a possible prefix.

The letterpart of the answerback may be registered in the FAXIWF, specific for each registered facsimile user.

In case of no registration, "FAX" shall be used as letterpart for all answerbacks.

### 3.1.4 Note 4 to Figure 1

After provision of the answerback the link shall be transparent to the caller. See Annex A (abnormal conditions) for the reaction of the FAXIWF to characters or character strings which are not possible to be displayed on a facsimile terminal.

### 3.1.5 Note 5 to Figure 1

A WRU signal received from the telex subscriber in any stage of the message input causes the FAXIWF to return the answerback of the facsimile user as described in 3.1.3.

## 3.2 Two-stage selection access to the Telex/Facsimile Interworking Facility (FAXIWF)

Interworking in the telex-to-facsimile direction, using two-stage selection, is described in Figure 2 and the appending notes.

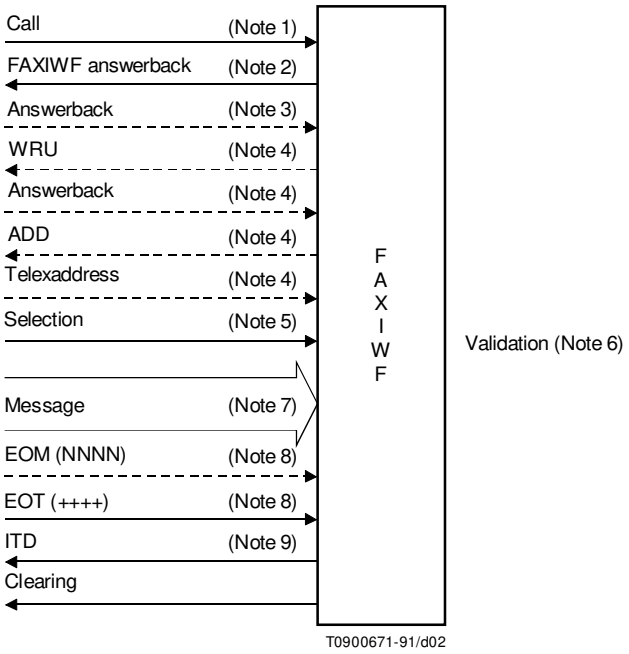


FIGURE 2/U.207

**Two-stage selection access to a Telex/Facsimile Interworking Facility (FAXIWF)**

### 3.2.1 Note 1 to Figure 2

Normal telex procedures apply for the telex subscriber to set up the call to the FAXIWF.

### 3.2.2 Note 2 to Figure 2

Coding of the FAXIWF answerback is the following:

"Figs", "CR", "LF", FAXIWF National Number, "Lttrs", "SP", FAXIWF, "SP", 0

0 means the TNIC, e.g. "A" for Austria

To be filled with "Lttrs" according to Recommendation F.60.

*Example:* 760000 faxiwf a

### 3.2.3 Note 3 to Figure 2

The telex subscriber can send his answerback in this stage of the procedure. This shall always be the case if a Telex Automatic Emitting Device (TAED) is in use. In the TAED case, the answerback shall be followed by a CI sequence.

### 3.2.4 Note 4 to Figure 2

A WRU may be sent in accordance with Recommendation S.23 to the caller to get his answerback. This answerback will be evaluated in accordance with Recommendation U.74.

In case of a manual terminal and if the telex address cannot be found on the basis of this answerback, the FAXIWF shall send an "ADD" prompt to the caller to get the calling telex address.

In response to the "ADD" prompt the caller shall provide his telex address in the form:

"Figs", Telexaddress, "CR", "LF", "CR", "LF"

The telex address may be preceded by "ADD".

The telex address has to consist of the F.69 code and the national number. The FAXIWF may validate the telex address, e.g. for valid F.69 code and number length.

In case the calling terminal is a TAED the answerback should have been provided by the caller as described in 3.2.3. The telex address, if not extracted from the answerback should have been provided by the caller at the address input as described in 3.2.5.2. If the telex subscriber does not provide his telex address within 15 seconds, the FAXIWF shall send another ADD prompt. If the telex subscriber fails again to input his telex address the FAXIWF shall clear the call.

The answerback and the telex address of the telex subscriber shall be included in the header page (or the herald) which is to be transmitted to the called facsimile terminal.

### 3.2.5 Note 5 to Figure 2

The facsimile address is generally the E.164 address of the facsimile terminal and may be (optional for the caller) preceded by the service identifier "FAX".

If selection input does not commence within three seconds, the FAXIWF shall return the service code GA.

The selection shall be delimited from the message by the End of Address sequence "BT"

Where the FAXIWF offers an (optional) Positive Delivery Notification (PDN), the caller may request this PDN by terminating the relevant address line by, ACK. See the following examples.

The selection can have one of the following formats:

#### 3.2.5.1 "CR", "LF", "Figs", Facsimile address, +, "CR", "LF", "Lttrs", BT

This format is normally used by a manual operated telex terminal, allowing the FAXIWF to send prompts.

*Example:*

43150145207+
BT

#### 3.2.5.2 "CR", "LF", "LTTRS", CI, "CR", "LF", ADD, "Figs", telex address, "CR", "LF", "CR", "LF", "Figs", facsimile address, +, "CR", "LF", "Lttrs", BT

Telex address is the callers own telex address consisting of the F.69 code and the national number. In case the caller has an answerback which is processable in accordance with Recommendation U.74 and provided the answerback already (see 3.2.3), input of the telex address can be omitted.

When the caller did not provide his telex address and his answerback is not processable in accordance with Recommendation U.74, the FAXIWF shall clear the call.

This format is normally used by a Telex Automatic Emitting Device (TAED). In this case the FAXIWF is not allowed to send prompts.

*Examples:*

a) CI
ADD42609600
43150145207+
BT

b) CI
3531778800+,ACK
BT

#### 3.2.5.3 Where multi-address is provided, all single addresses shall start on a new line and shall be terminated with the End of Address sign "+"

*Examples:*

a) 43150145207+ (zu handen herrn berger)
43250260+
33130731660+ (à l'attention de m. prost), ACK
BT

b) CI
ADD4710050
33130731660+
44188002500+(attention mr mansell), ACK
4978122273+
BT

### 3.2.6 Note 6 to Figure 2

As an option, a data base validation can be done, e.g. on the number length, significant digits, correct Telephone Country Code, ... .

If the validation result is negative, the FAXIWF shall stop the message input by sending a sequence of "TTT..." characters, followed by a "NP" service signal.

### 3.2.7 Note 7 to Figure 2

As described in A.6 a "GA" shall be sent to the telex subscriber if he does not start message input within 30 seconds.

See Annex A (abnormal conditions) for the reaction of the FAXIWF to characters or character strings which are not possible to be displayed on a facsimile terminal.

### 3.2.8 Note 8 to Figure 2

In case of a follow-on-message the telex subscriber shall use four combinations No. 14 (NNNN) as End Of Message (EOM) indicator. This allows him to input the next message, starting with the called address (as described in 3.2.5), immediately.

Alternatively, the telex subscriber may use the sequence NNNNACK. This causes the FAXIWF to acknowledge those messages not previously acknowledged and provide an IMA, containing:

- The text "IMA"
- Date and Time
- The message reference number(s)

After the last (or only one) call in one session the telex subscriber shall send a sequence of four combinations No. 26 (++++) which is considered by the FAXIWF as End Of Transaction (EOT).

If a calling telex subscriber does not send an EOT sequence (this is the normal case for a TAED), the message shall be accepted as complete and forwarded as received.

#### 3.2.9 Note 9 to Figure 2

After reception of the EOT, an ITD as described in Recommendation U.80 shall be sent to the telex subscriber by the FAXIWF.

### 3.3 Delivery to facsimile terminals

**3.3.1** After complete reception of a message from the telex side, the FAXIWF shall attempt to deliver the message to the facsimile side as soon as operationally feasible. The delivery procedure shall be the same as for normal Group 3 Fax-to-Fax communication as described in Recommendation T.30. If the first delivery attempt is unsuccessful, i.e. the complete message was not delivered, the FAXIWF may initiate re-attempts in accordance with national rules laid down for recalling into the PSTN.

**3.3.2** Messages deposited into a FAXIWF or into a store-and-forward unit for delivery to a facsimile terminal may be of any length.

**3.3.3** The FAXIWF shall divide a message into portions, each (except the last one) consisting of 55 lines. Each portion will be delivered to the facsimile terminal as a "page". The header line of each page shall contain the message reference and the pagination information (e.g. page 1 of 4 pages).

**3.3.4** A message delivery shall consist of:

a) An optional "header page" containing:

- a message reference information, which may contain date/time of deposit;
- the identification (answerback and telex address) of the calling subscriber. This is only relevant in case of a two-stage FAXIWF (see 3.2) or in case of a store-and-forward unit (see Recommendation U.200). In case of a one-stage FAXIWF the answerback of the caller appears as part of the message;
- indication of number of pages;
- selection, as provided by the caller. This is the registered telex number in case of one-stage access (see 3.1) or the E.164 number in case of two-stage access (see 3.2) and in case of store-and-forward access (see Recommendation U.200);
- attention information (only in case of two-stage access or access via store-and-forward and if provided by the caller);
- date/time of deposit, if not contained in the message reference information (optional);
- date/time of delivery (optional).

b) The message page(s), each with a header line, containing:

- the message reference information;
- the page number.

If a "header page" is not provided, a herald containing as minimum the backcall information (telex answerback and telex address) shall be attached to the beginning of the first page of the message.

#### 3.3.5 Partial delivery

Where a message is only partially delivered (e.g. due to disconnection from the PSTN), the FAXIWF shall re-establish the connection and re-send the message commencing after the last successfully delivered page.

# 4 Notifications

Normally, notifications are applicable only for two-stage FAXIWFs.

In case of multi-address input, notifications shall always be returned on a “per address” basis.

If the FAXIWF is unable to deliver any notification message to the originating subscriber after a maximum of eight attempts to do so, the message should be spilled out to an assistance position for manual processing.

## 4.1 Non-Delivery-Notification (NDN)

In case a message was not or not completely delivered to the destination, an NDN is mandatory to be provided to the telex subscriber. However, where the telex address of the calling subscriber is not available (see 3.2.4) the notification shall be spilled out to an assistance position for manual processing.

The NDN shall contain:

- message reference number;
- date/time of message acceptance;
- date/time of the final delivery attempt;
- number of delivery attempts made;
- answerback and telex address of the originator;
- address line, as provided by the caller;
- number of pages delivered (e.g. 2 of 3);
- called station identity (CSID), if available.

The NDN is to be provided as soon as possible after expiry of the retry cycle.

## 4.2 Positive-Delivery Notification (PDN)

A PDN may be provided by the FAXIWF either global or by request of the calling telex subscriber (see 3.2.4). If provided, the PDN shall contain:

- message reference number;
- date/time of message acceptance;
- date/time of delivery completion;
- number of delivery attempts made;
- answerback and telex address of the originator;
- address line as provided by the caller;
- number of pages delivered (e.g. 3 of 3);
- called station identity (CSID), if available.

## 4.3 Journal

A journal may be provided by the FAXIWF, either generally or on a subscription basis for each 24 hours period. Content and layout of the journal is a national matter.

**4.4** If the delivery of any notification fails due the telex subscriber was not possible to be reached for a maximum of eight hours, the notification shall be spilled out to an assistance position for manual handling.

# 5 Interworking in the facsimile-to-telex direction

Interworking in the facsimile-to-telex direction is for further study.

# Annex A

## Reactions to abnormal conditions during text input from telex

(This Annex forms an integral part of this Recommendation)

This annex is only valid for one-stage (see 3.1) and two-stage (see 3.2) access. For access to a store-and-forward unit, as described in Recommendation U.200, the relevant information can be found in Recommendation U.80 (clause 6).

### A.1 Telex connection clearing without End of Transaction (EOT) signal (applicable for two-stage access only)

After a clear without End of Message (EOM) or End of Transaction (EOT) signal, the FAXIWF shall forward the message to the facsimile terminal. A header, as defined in Recommendation F.87, should be added to the message, either on the header page (if provided) or on the first message page, informing the facsimile user that the message might be incomplete.

### A.2 The telex subscriber pauses during input of address information (applicable for two-stage access only)

If there is a delay greater than 15 seconds before starting the address input or between any characters within the address input, the FAXIWF shall return a "NP" service message and clear.

### A.3 The FAXIWF detects no valid address before the End of Address ("BT") sequence (applicable for two-stage access only)

If the FAXIWF detects, as result of the validation, no valid facsimile address, it shall return "ITR" to the caller and disconnect.

### A.4 The telex subscriber inputs more addresses than permitted (applicable for two-stage access only)

The FAXIWF shall continue to accept input of another "X" address lines and inform the caller together with the IMA how many addresses are accepted.

The FAXIWF tries to stop transmission of the caller, and

- if the caller stops transmission, the FAXIWF shall inform him how many addresses are accepted and send "GA" for message input;
- if the caller does not stop the FAXIWF shall disconnect.

The FAXIWF shall send "TMA" and disconnect.

### A.5 The FAXIWF detects EOM or EOT, but no message (applicable for two-stage access only)

The FAXIWF shall send "ANUL ANUL" to the caller and disconnect.

### A.6 The telex subscriber pauses during or before input of his message

a) If there is a delay greater than 30 seconds before starting the message input the FAXIWF shall send a "GA" prompt to the telex subscriber. If there is no text input for another 30 seconds the FAXIWF shall clear the call with the service code BK.

b) If there is a pause of 30 seconds within the message input the FAXIWF shall send a "GA" prompt to the telex subscriber. If there is no further text input for another 30 seconds the FAXIWF shall clear the call in the telex direction with the service code BK and send the message to the facsimile terminal as received, with a header as defined in abnormal condition A.1.

### A.7 The telex subscriber sends a WRU signal to the FAXIWF during text input

a) In case of one-stage access this is not considered as an abnormal condition. See Note 5 to Figure 1.

b) In case of two-stage access, the FAXIWF shall return its own answerback. The WRU signal (and the FAXIWF answerback) shall not be part of the message sent to the facsimile terminal.

### A.8 The telex subscriber sends text after the End of Transaction (EOT) signal (applicable for two-stage access only)

Any characters received (except a WRU signal) after the End of Transaction (EOT) signal will be ignored. The FAXIWF shall use the "TTT..." characters to stop the telex transmission,

– if the telex subscriber stops input, the FAXIWF shall send the input message acknowledgement signal followed by clearing;

– if the telex subscriber does not stop input, the FAXIWF shall clear.

In both cases the received message (up to the EOT) shall be delivered to the facsimile terminal.

If a WRU signal follows the EOT sequence, the FAXIWF shall respond and not attempt to send the IMA.

### A.9 The telex subscriber clears after the End of Transaction (EOT) signal before he receives the Input Message Acknowledgement signal (IMA) (applicable for two-stage access only)

The message shall be forwarded to the facsimile terminal.

### A.10 The telex subscriber sends comb. 6, 7 or 8 in figure case

The FAXIWF shall either:

– ignore these characters; or

– replace them by non ITA2 characters (e.g. "*").

### A.11 The telex subscriber sends comb. 10 in figure case (bell)

The FAXIWF shall either:

– ignore in case other characters follow; or

– return a "CI".

### A.12 The telex subscriber sends repeated Letter-shift and/or Figure-shift signals

The FAXIWF shall ignore these signals.

### A.13 Storage capacity overflow in the FAXIWF

a) In order to avoid memory overflow during message input, a guaranteed message length of 24 000 characters is defined.

b) The FAXIWF shall return a "NC" service signal if less than 24 000 characters of memory are available for this message.

c) If a message exceeds 24 000 characters the FAXIWF shall continue acceptance if storage is available.

d) If the number of characters received by the FAXIWF during a message input exceed the available storage, the FAXIWF shall discard the excess characters. The FAXIWF shall attempt to stop further input by sending "TTT..." characters:

– if the telex subscriber stops transmission the FAXIWF shall return "LDE" (followed by "IMA" in case of two-stage access);

– if the telex subscriber does not stop transmission, the FAXIWF shall clear.

In both cases the FAXIWF shall forward the message to the facsimile terminal with a header, as defined in abnormal condition A.1.