france telecom

STI 4

Edition 6 / March 2004

Interface Technical Specifications
for France Telecom's network

As required by Directive 1999/5/EC

USER-NETWORK INTERFACE CHARACTERISTICS FOR FSK DATA TRANSMISSION (V23)

Summary: This document describes the PSTN analogue line Z interface characteristics for FSK data transmission over V.23 modem, in on-hook and off-hook states.

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1. timer values are indicative and can be subject to modification,
2. due to various technical constraints, some services or service options may not be available on some interfaces,
3. the fact that a service not yet commercially open is described in this document can in no case be considered as a binding commitment on France Telecom part to actually open this service.

Contents

1. EVOLUTION OF INTERFACE Z FOR USER'S ANALOGUE ATTACHMENT 1

2. EVOLUTION OF SIGNALLING AT THE INTERFACE, DATA LINK LAYER 1

3. SIGNALLING EVOLUTION AT THE INTERFACE, PRESENTATION LAYER 2

3.1 SIGNALLING MESSAGE STRUCTURE 2
3.1.1 Data format 2
3.1.2 Signalling message organisation 2
3.2 MESSAGE CHARACTERISTICS 3
3.2.1 Message data characteristics 3
3.2.2 On-Hook phase transmission 3
3.2.3 Off-Hook phase transmission 4
3.3 DATA TRANSMISSION 4
3.4 ON-HOOK TRANSMISSION PHASE ASSOCIATED TO A RINGING SIGNAL 4
3.4.1 Transmission phases 4
3.4.2 Various constraints imposed during transmission 5
3.5 ON-HOOK TRANSMISSION NON ASSOCIATED TO A RINGING SIGNAL 5
3.5.1 Transmission phase 6
3.5.2 Various constraints imposed during transmission 6
3.6 TRANSMISSION IN OFF-HOOK PHASE ASSOCIATED TO A CALL WAITING SIGNAL 7
3.6.1 General description 7
3.6.2 Case: No terminal A acknowledgement 9

4. CODING OF DATA IN THE MESSAGES 9

4.1 MESSAGE TYPE CODING (FIRST LEVEL) 9
4.2 MESSAGE STRUCTURES (SECOND LEVEL) 10
4.2.1 Call Setup message 10
4.2.2 Message Waiting Indicator 11
4.3 PARAMETER CODING (SECOND LEVEL) 11
4.3.1 Coding of the "Date and time" parameter 11
4.3.2 Coding of the " Calling Line Identity" parameter 12
4.3.3 Coding of the "Reason for absence of Calling Line Identity" parameter 12
4.3.4 Coding of the "Called Line Identity" parameter 12
4.3.5 Coding of the "Type of Forwarded Call" parameter 13
4.3.6 Coding of the "Type of Calling user" parameter 13
4.3.7 Coding of the "Calling Party Name" parameter 14
4.3.8 Coding of the "Reason for absence of Calling Party Name" parameter 14
4.3.9 Coding of the "Visual Indicator" parameter 14
4.3.10 Coding of the "Call Type" parameter 15

4.3.11 Coding of the "Called Line Identity" parameter 15
4.3.12 Coding of the "Number of Messages" parameter 15
4.3.13 Coding of the "Last Message CLI" parameter 16
4.3.14 Coding of the "Message Identification" parameter 16
5. USE OF THE MESSAGES FOR SERVICES 17
5.1 CALLING LINE IDENTIFICATION PRESENTATION SERVICE (CLIP) 17
5.2 CALLING LINE IDENTIFICATION PRESENTATION AND CALLING NAME IDENTIFICATION PRESENTATION SERVICES (CLIP AND CNIP) 18
5.3 CALL COMPLETION ON BUSY SUBSCRIBER (CCBS) 19
5.4 MESSAGE WAITING INDICATOR SERVICE 19
6. REFERENCES 20
7. GLOSSARY 20
8. HISTORY 20
9. ANNEX A: INTERNATIONAL ALPHABET REFERENCE 1

PREAMBULE

This specification describes the Z interface for subscriber analogue attachment. It defines data transmission in on-hook and off-hook states of the terminal, gives the message structure and the coding of various parameters used in the messages for the various services concerned.

1. Evolution of interface Z for user's analogue attachment

The subscriber's analogue interface, i.e. the Z interface, does not evolve as far as electrical characteristics are at stake (bridge and feeding conditions).

Communications established by switching on PSTN must presently be able to support data transmission through modulation called "phase consistent", conforming to ITU-T Recommendation V.23 [4].

Line interface characteristics following relating to the V.23 modem transmission:

- Half-duplex transmission mode asynchronous version at 1200 bauds,

- Modulation frequencies used for coding:

  * F_0 = 1700 Hz,

  * F_Z = 1300 Hz ± 10 Hz (logical level 1),

  * F_A = 2100 Hz ± 10 Hz (logical level 0),

- Emission level: - 6 dBm0 +/- 1,5 dB [1]

- The respective emission levels for frequencies F_Z, F_A must be constant,

- Quality of the signal: following the modem characteristics.

2. Evolution of signalling at the interface, data link layer

The signalling protocol is not secured. There is no acknowledgement of successful reception of information by a response message.

However there is a consistency check by a checksum in one octet (CS). The checksum, computed by the exchange and then transmitted at the end of the message, contains the complement to two of the sum modulo 256 of the other octets of the message (that is type of message, length, all parameters type, their length and content).

[1] The emission levels defined in this document take into account the France Telecom's transmission plan which advise, for access from the subscriber line, - 7 dBr at the output of the exchange and 0 dBr at the input of the exchange, and a maximum loss of 11 dB at a frequency of 1020 Hz on the subscriber line.

3. Signalling evolution at the interface, presentation layer

3.1 Signalling message structure

3.1.1 Data format

Data are of the type asynchronous series, with a symbol format of 8 bits (one octet) without parity bit , framed by a start (logical 0) and a stop (logical 1) bit:

start / 2^0 / 2^1 / 2^2 / 2^3 / 2^4 / 2^5 / 2^6 / 2^7/ stop

3.1.2 Signalling message organisation

The exchange interface transmits the messages defined as follows:

A message (ref. Figure 1) is defined by its type, length, value (T L V), the field value is itself composed of parameters defined by their type, length, value.

The multiple message is composed of the following fields:

- a field message type (1 octet),
- a field message length (1 octet),
- a field value containing the message parameterised data (1 or several octets),
- a field checksum (1 octet).

Each parameter is composed of:

- a parameter type field (1 octet),
- a parameter length field (1 octet),
- a parameter data field (1 or several octets),

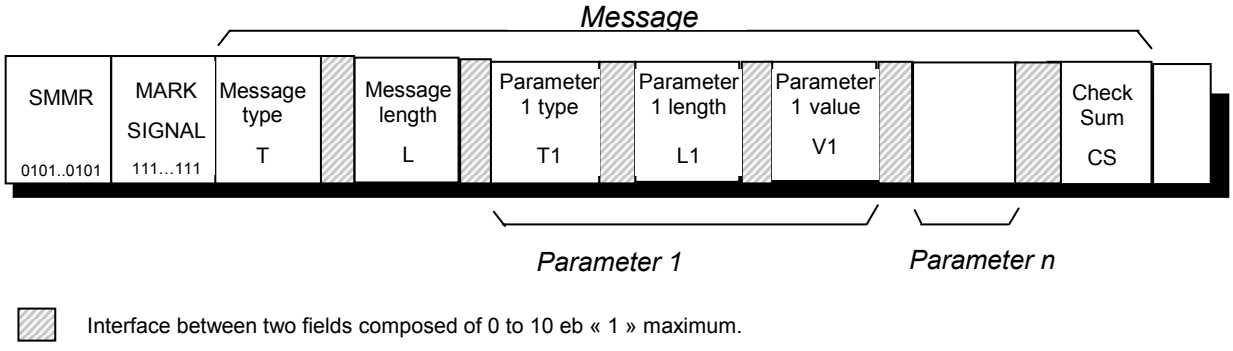

Figure 1: FORMAT OF A MULTIPLE MESSAGE

V.23 transmission begins with the first bit of the SMMR and ends with the checksum stop bit.

In order to ensure a correct reception of the "checksum", the last stop bit following the "checksum" is followed by the emission of 1 to 10 "1" bits.

NOTE: Stuffing schemes (consisting of 0 to 10 "1" bits) may be inserted, if necessary, between the fields.

3.2 Message characteristics

3.2.1 Message data characteristics

All the fields of the message (type, length, value) consist of a sequence of octets and conform to the format described in 3.1.1. Each octet is preceded by a Start (logical 0) bit and is followed by a Stop (logical 1) bit.

Octets are transmitted in increasing order of the index of each octet defined for each field or parameter (octet 1, octet 2, ... octet n).

Pursuant to 3.1.1, the least order binary items are transmitted first.

Parameters are transmitted in any order of the values defining their type.

If two parameters which are mutually exclusive are present in the same message, the second parameter is not taken into account by the terminal equipment.

If two identical parameters (same type) are present within a message, the second parameter is not taken into account by the terminal equipment. The message must not be truncated (transparency must be ensured).

Bits equal to 1 (from 0 to 10) may be inserted if necessary between two elements of the message, between the message type octet and the checksum octet (ref. figures 1 and 2), that is between:

- the message type field (one octet) and the associated length field (one octet),
- the length field (one octet) and the first octet of the associated parameter field data (simple message) or the field type (one octet) of the first parameter contained in the associated field value (multiple message),
- the parameter type field (one octet) and the associated length field (one octet),
- the length field (one octet) and the first octet of the associated first parameter field data (multiple message),
- the last octet of the parameter n field and the type field of the parameter n+1 (multiple message),
- and so on,
- the last octet of the field value of the parameter (multiple message) or of the content of the message (simple message) and the checksum field (one octet).

The number of bits (all equal to logical value “1”) inserted between the fields shall not exceed 10.

The transmission of all 8 bits-coded items must be possible, the coding of which is detailed for each message format. When information is coded in AIR-IRV (see note in Section 3.4), the most significant bit of each octet is set to 0 (AIR-IRV coding only needs 7 bits). Message length: is the total number of octets in the message following the length field but excluding the octet of the checksum field.

Parameter length: is the number of octets of the parameter field following the length field (excluding the checksum octet, in the case of the last parameter in a message).

3.2.2 On-Hook phase transmission

Any message must be preceded by:

- a Reception Mode Signal (RMS) consisting of a 300 bits sequence beginning by 0 then followed by 1 and 0 alternatively, the last bit being a 1,
- and an 180 +/- 10 bits sequence equal to 1 (Mark Signal).

3.2.3 Off-Hook phase transmission

Any message must be preceded by:

- an 80 +/- 10 bits sequence equal to 1 (Mark Signal).

3.3 Data transmission

The interface shall allow for transmission of data on a line with a hanged up terminal handset.

In case of a transmission towards a hanged up terminal, the transmission can be associated with a call phase (sending of cadenced call current after the sending of the message: e.g. for Calling Line Identity) or not associated with a call phase (no sending of cadenced call current after the sending of the message: notification).

The sending of a ringing current phase, preceding the sending of the message, defined by FRANCE TELECOM, shall not be considered as a calling phase, but as a recall signal of the receiving device at the customer premises.

During data transmission, monitoring of the line state (hook-off, ...) shall be performed.

Data transmission is not allowed in the transmission phase of the immediate ringing current or in cadenced ringing phase. Data transmission is only allowed during the period following the immediate ringing and before the transmission of the cadenced ringing.

During phases B and D, the exchange must not generate a level of noise above - 48 dBm0p at the mainframe interface (ref. § 3.4.1 and § 3.5.1).

No acknowledgement of the received messages is required.

3.4 On-Hook transmission phase associated to a ringing signal

NOTE: As an example, on-hook transmission mode associated to a ringing signal is used in case of the CLIP (Calling Line Identification Presentation) supplementary service.

3.4.1 Transmission phases

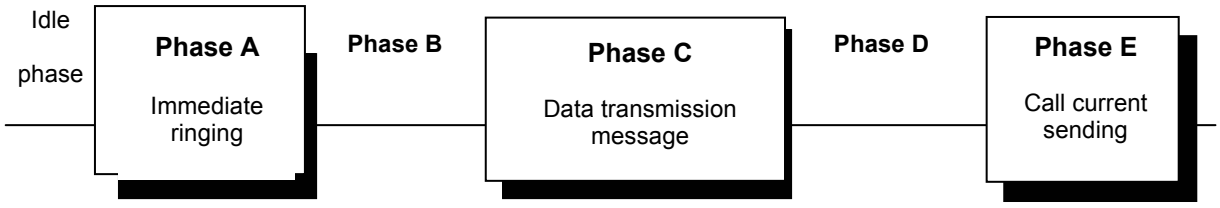

Figure 2: The various phases involved in the data transmission procedure

Duration of the various phases:

Phase A:

Duration between 200 ms and 300 ms.

Phase B:

Duration between 500 ms and 800 ms.

NOTE: Duration required in order to allow for current stabilisation, with terminal impedance adaptation, after recognition of the recall signal by this terminal equipment.

Phase C:

Duration not limited in practice.

NOTE: The message transmission average duration is between 0,7 s and 1,2 s.

Transmission occurs during a silence phase following the first ringing burst (recall signal) and cannot occur in another silence phase.

Phase D:

Duration between 200 ms and 500 ms before ringing current emission.

NOTE: The terminal equipment, which has adapted its impedance, must in this phase come back into high impedance.

Phase E:

Cadenced ringing. Duration not limited.

3.4.2 Various constraints imposed during transmission

Transmission of the SMMR can only begin at least 500 ms after the end of the recall signal (end of the immediate ringing). The sending of the next ringing sequence shall only be made 200 ms minimum after the end of the message transmission.

If before or during the message transmission (phases A, B, C) there is a subscriber answering (unhooking of a subscriber's terminal equipment), the message transmission must immediately stop and the incoming call is processed normally, the correspondents get in communication, the message doesn't exist or is truncated and thus non exploitable. The exchange shall make no attempt to transmit a message when the line loop is closed, or the terminal equipment is off-hook.

If before or during the message transmission, the calling party hangs on, the on going procedure is abandoned (phases A, B, C, D) with holding down of the line in the unavailable state for a duration between 1 second and 1,1 second. For an incoming call to this on-hook line, the unavailable state might be confused with the busy state. If the subscriber hangs-off during this period, the outgoing call is processed normally.

During the message transmission procedure (phases A, B, C, D), the line is in the unavailable state, the possible incoming call is rejected with waiting call indication. The calling party receives notification of his call's failure (i.e. the network returns him the busy tone).

3.5 On-hook transmission non associated to a ringing signal

NOTE: As an example, the on-hook transmission mode non-associated to a ringing burst is used in the case of Message Waiting Indicator.

3.5.1 Transmission phase

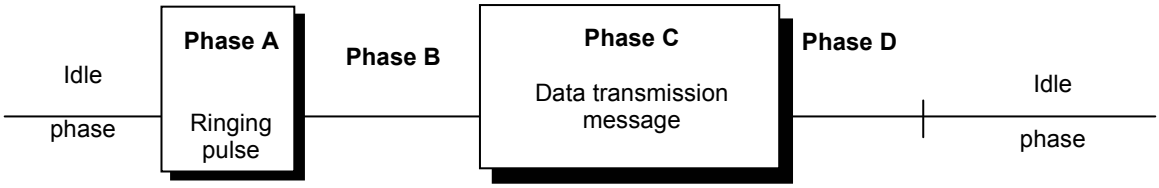

Figure 3: The various phases involved in the data transmission procedure

Various phases duration:

Phase A:

Duration between 200 ms and 300 ms.

Phase B:

Duration between 500 ms and 800 ms.

NOTE: This duration is required in order to stabilise the current, with terminal impedance adaptation after recognition of the recall signal by this terminal equipment.

Phase C:

Duration non limited practically.

NOTE: The message transmission mean duration is around 0,8 s.

Data transmission is not allowed during immediate ringing current transmission phase. Data transmission is only allowed during the period following the ringing pulse.

Phase D:

Duration between 200 ms and 500 ms before the line release (i.e. passing to idle phase).

NOTE: The terminal equipment, which has adapted its impedance, must in this phase come back to high impedance.

3.5.2 Various constraints imposed during transmission

The procedure is identical to the one used for message transmission in calling phase for phases A, B, C, D; phase E does not exist in this case.

If before or during a message transmission the subscriber's line becomes active (off-hook, outgoing call), the transmission procedure of the message is immediately handed over by the network. The called party hand-off is treated like an outgoing call. If before or during the message transmission, there is an hook-on by the calling party, the on-going procedure is abandoned (phases A, B, C, D), holding down of the line unavailable state for a duration between 1 second and 1,1 second. For an incoming call towards this line, which is on-hook, the unavailable state might be confused with the busy state. If the subscriber takes the line during this time, the outgoing call is processed normally.

The network shall not attempt to transmit a message when the line is in a ringing phase, or already transmitting a message, or is in closed loop state, or has an off-hook position terminal equipment. During a message transmission (phases A, B, C, D), the line is unavailable for a possible incoming call which will be rejected without any call waiting indication. The calling party receives notification of the failure of his call (i.e. the network returns him the busy tone).

3.6 Transmission in off-hook phase associated to a call waiting signal

This message transmission configuration requires phase sequences and parameter tolerances more stringent than those used in a transmission towards an installation whose line is idle (on-hook device).

NOTE: As an example, the off-hook phase transmission mode associated to a call waiting signal is used in the case of the calling party identification service after a call signal (i.e. Call Waiting Indication, CW supplementary service).

3.6.1 General description

During the calling party's identity presentation procedure associated with call waiting indication, the exchange shall open the communication channels for the time T_{sau} in order to transmit the signal SAU, re-establish and hold on the communication channels during the time T_a, and re-open the conversation channels during T_b to T_e times.

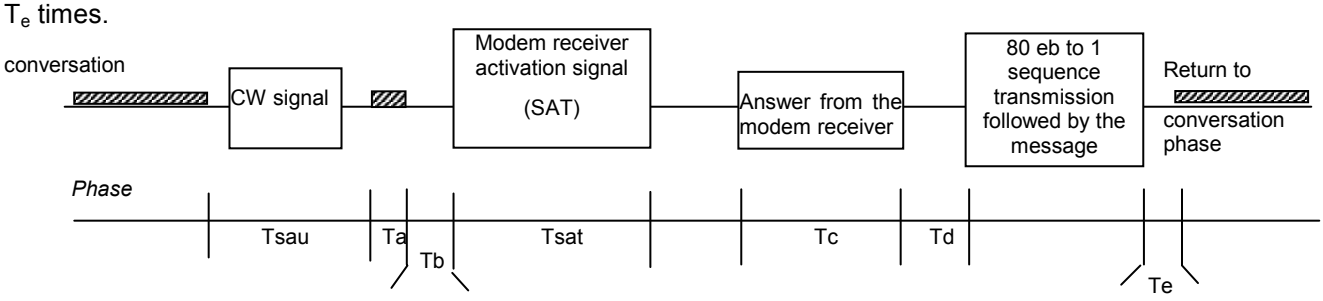

Figure 4: VARIOUS PHASES

The exchange shall provide a combination of two frequencies F1 + F2 (signal SAT) as a receiver activation signal:

- F1 : 2130 Hz ;
- F2: 2750 Hz;
- The tolerance for the transmitted frequencies is +/- 0,5 % of the nominal value;
- The nominal level of each frequency is - 9 dBm0 ± 1,5 dB;
- The level of the harmonics or unwanted frequencies, shall be lower than 30 dB relating to the level of the transmitted signal.

After sending the activation signal of the receiving modem (SAT), the exchange shall enter a T_{out} timer limiting the waiting time of the DTMF code from the terminal equipment.

Upon receipt of the answer from the receiving Modem, before the end of the T_{out} timer, the exchange shall begin transmitting the message (Figure 5). If, on expiry of the T_{out} timer, no answer was received, the exchange shall re-establish the communication channels within the time T_{cx} (Figure 6). The message transmission shall, in no case, occur during the reception phase of the acknowledgement sequence.

Duration and phases are:

On-going call phase.

Tsau	Lower or equal to 400 ms	Call signal from the user (CW service indication 440 Hz during 300 ± 50 ms). Last BIP if multiple BIP.
Ta	between 270 and 800 ms	Re-establishment of the communication channels. For the user's comfort, it is recommended not to go beyond 500 ms (NOTE 1).
Tb	between 50 and 85 ms	Time between channel opening and sending the SAT signal (NOTE 2).
Tsat	between 75 and 85 ms	Dual tone recall signal of the modem-receiving module (SAT signal, 2 130 Hz + 2 750 Hz).
Tout	between 155 and 165 ms	Terminal acknowledgement maximum waiting timer.
Tc	between 40 and 55 ms	Minimum duration for taking into account of the terminal transmitted acknowledgement (DTMF code "D") (NOTE 3).
Td	between 55 and 200 ms	Waiting duration before sending the V.23. message.
Te	between 40 and 120 ms	Duration between the end of modulation and the re-establishment of the communication channel (NOTE 4).
Tcx	between 0 and 60 ms	Time the exchange needs to come back to conversation phase (see NOTE 2).
Tb+Tsat+Tout+Tcx	Lower or equal to 400 ms	Global condition for the synchronisation phase (see NOTE 5).

NOTE 1: In order to ensure an adequate operation of MINITEL terminal equipment, this re-establishment phase is needed to prevent possible teleprocessing communications interruption for more than 400 ms until the end of synchronisation.

NOTE 2: The exchange shall not generate a noise level above - 48 dBm0p at the mainframe interface.

NOTE 3: If the DTMF signal exceeds time Tc, the exchange proceeds as with the current call processing procedures.

NOTE 4: Minimum time the terminal needs to detect carrier loss. The exchange shall not generate a noise level above - 48 dBm0p at the mainframe interface.

NOTE 5: Synchronisation phase between the exchange and the terminal equipment. 400 ms maximum duration to avoid that existing Minitel terminals loose the carrier signal.

3.6.1.1 Case: Transmission with terminal A acknowledgement

The following figure shows the phase sequence diagram in this case.

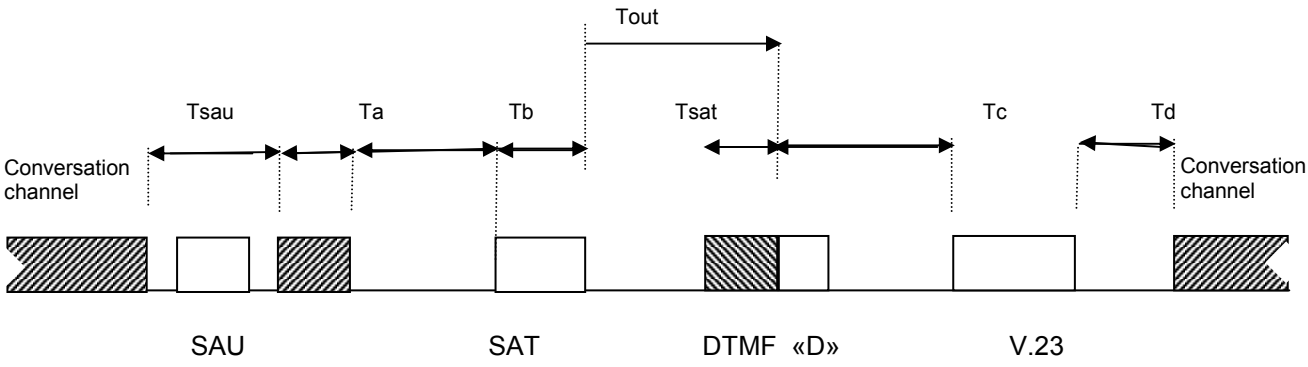

Figure 5: TRANSMISSION WITH TERMINAL ACKNOWLEDGEMENT

3.6.2 Case: No terminal A acknowledgement

The following figure shows the phase sequence diagram in this case.

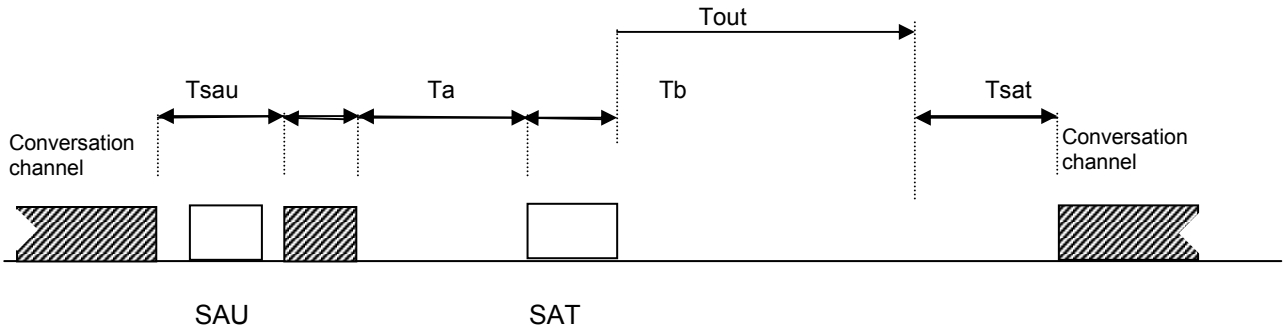

Figure 6: NO TERMINAL ACKNOWLEDGEMENT

4. Coding of data in the messages

4.1 Message type coding (first level)

Coding of the octets defining the message (first level) with T type and L length fields.

binary T (type) HGFE DCBA	T hexa	binary L (length)	Signalling message function
1000 0000	80H	variable	Call Setup
1000 0010	82H	variable	Message Waiting Indicator

T field (binary coded on one octet) defines the signalling message type.

L field (binary coded on one octet) gives the number e of octets the message contains after the L field, excluding the checksum field (of 1 octet).

4.2 Message structures (second level)

The parameters are either mandatory or optional.

When mandatory, they must be always present.

Regarding optional parameters, if present in the message, the field corresponding to the parameter value contains the parameter data. If absent, this shall be interpreted as "unavailable data" and must not be interpreted in another way.

Parameters may be either:

- mandatory ETSI parameters, or
- optional ETSI parameters, or
- optional non ETSI standardised parameters (national or network optional parameters).

An extension code is used to identify national or network parameters.

The mandatory or optional characteristic of the parameters depends on the service invoked and intervenes only at the level of the local exchange. The terminal equipment makes no distinction between parameters characteristic.

NOTE: Optional information is provided to the access line only in the case where they are actually available within the called party subscriber's local exchange.

4.2.1 Call Setup message

This message is used to send information:

- to the called user for an incoming call, within Calling Line Identification Presentation on idle phase and after a call waiting indication signal,
- to the calling user in case of ring back when free call (CCBS service).

The statute (mandatory, optional) of the various parameters is defined by the use of this message type in each of the concerned services. Depending on the services invoked, this message may contain the following parameters:

Type (Hexa)	Parameter name	Reference
01H	Date and time	4.3.1
02H	Calling Line Identity	4.3.2
03H	Called Line Identity	4.3.11
04H	Reason for absence of Calling Line Identity	4.3.3
07H	Calling Party Name	4.3.7
08H	Reason for absence of Calling Party Name	4.3.8
11H	Call Type	4.3.10
12H	First Called Line Identity	4.3.4
15H	Type of Call Forwarding	4.3.5
16H	Type of Calling User	4.3.6

4.2.2 Message Waiting Indicator

This message is used within the immediate notification service: AIM. The statute (mandatory, optional) of the various parameters is given by the use of this message within AIM service. It may contain the following parameters:

Type (Hexa)	Parameter name	Reference
01H	Date and time	4.3.1
02H	Calling Line Identity	4.3.2
07H	Calling Party Name	4.3.7
0BH	Visual indicator (control)	4.3.9
0DH	Message Identification	4.3.14
0EH	Last message CLI	4.3.13
13H	Number of messages	4.3.12

4.3 Parameter coding (second level)

The parameter field, which actual content is represented below with the HGFE DCBA letters per bit, are structured as follows:

MSB							LSB	
8	7	6	5	4	3	2	1	BINARY
H	G	F	E	D	C	B	A	ITEMS
PARAMETER TYPE(T)								Octet 1
PARAMETER LENGTH (L)								Octet 2
PARAMETER VALUE (V1)								Octet 3
PARAMETER VALUE (V2)								Octet 4
...								...
PARAMETER VALUE (Vm)								Octet n

4.3.1 Coding of the "Date and time" parameter

Octet number	Binary coding	Hexa coding	Contents
1	0000 0001	01H	"Date and time" parameter Type
2	0000 1000	08H	Parameter length
3			MONTH'S (tens)
4			MONTH'S (unit)
5			DAY'S (tens)
6			DAY'S (unit)
7			HOUR'S (tens)
8			HOUR'S (unit)
9			MINUTE'S (tens)
10			MINUTE'S (unit)

Days shall range from 01 to 31, months shall range from 01 (January) to 12 (December), hours from 00 (Midnight) to 23 and minutes from 00 to 59.

Each digit shall be AIR-IRV encoded.

4.3.2 Coding of the " Calling Line Identity" parameter

Octet number	Binary coding	Hexa coding	Contents
1	0000 0010	02H	" Calling Line Identity " parameter Type
2	000X XXX	xxH	Parameter length (max. 18)
3		xxH	Digit 1
...			...
n+2		xxH	Digit n

Digits shall be AIR-IRV encoded.

Digit n stands for the unit's digit.

Content of the number information:

- Within the Calling Line Identification Presentation service, the principle consists in providing the subscriber with a "ready-to-use" number. Thus this number includes a user designation number preceded by an adequate prefix (ref. definition of the service, [3]).

- Within the Immediate Notification service (AIM), the number is forwarded as received from the network.

4.3.3 Coding of the "Reason for absence of Calling Line Identity" parameter

This parameter is used to indicate the reason of absence of the parameter Calling Line Identity. The parameters Calling Line Identity and Reason of absence of Calling Line Identity are mutually exclusive in a given message.

Octet number	Binary coding	Hexa coding	Contents
1	0000 0100	04H	"Reason for absence of Calling Line Identity" parameter Type
2	0000 0001	01H	Parameter length
3	0100 1111 0101 0000	4FH 50H	("O"): Unavailable (AIR-IRV coded) ("P"): Privacy invoked (i.e. CLIR) (AIR-IRV coded)

4.3.4 Coding of the "Called Line Identity" parameter

The purpose of the Called Line Identity parameter is to identify the initial called party of a call in case of a forwarded call.

Octet number	Binary coding	Hexa coding	Contents
1	0001 0010	12H	"Called Line Identity" parameter Type
2	000X XXX	xxH	Parameter length (max. 18)
3			Digit 1
…			…
n+2			Digit n

Digits shall be AIR-IRV encoded.

Digit n stands for unit's digit.

Content of the number information

The principle consists in providing to the subscriber with a "ready-to-use" number. Thus, this number includes a user designation number preceded by an adequate prefix.

4.3.5 Coding of the "Type of Forwarded Call" parameter

Octet number	Binary value	Hexa value	Content
1	0001 0101	15H	"Type of forwarded call" parameter Type
2	0000 0001	01H	Parameter length
3	0000 0000	00H	Unavailable or unknown forwarded call type
	0000 0001	01H	Forwarded call on busy
	0000 0010	02H	Forwarded call on no reply
	0000 0011	03H	Unconditional forwarded call
	0000 0100	04H	Deflected call (after alerting)
	0000 0101	05H	Deflected call (immediate)
	0000 0110	06H	Forwarded call on inability to reach mobile subscriber

This parameter exists only in case of forwarded calls.

4.3.6 Coding of the "Type of Calling user" parameter

Octetnumber	Binary coding	Hexa coding	Contents
1	0001 0110	16H	"Type of Calling user" parameter Type
2	0000 0001	01H	Parameter length
3	0000 0000	00H	Origination unknown or unavailable
	0000 0011	03H	TRANSGROUPE call (VPN)
	0000 0100	04H	*Mobile* phone*(NOTE)*.
	0000 0101	05H	*TRANSGROUPE mobile phone (NOTE)*.
	0000 1010	0AH	Ordinary calling subscriber.
	0000 1011	0BH	Calling subscriber with priority.
	0000 1100	0CH	*Data call (NOTE)*.
	0000 1101	0DH	*Test call (NOTE)*.
	0000 1111	0FH	Payphone.

When the origin is unknown or unavailable (value 00H), the parameter "calling user" is not transmitted.

NOTE: not provided by the network.

4.3.7 Coding of the "Calling Party Name" parameter

The purpose of the Calling Party Name parameter is to identify the name of the party originating a call.

octet number	Binary coding	Hexa coding	Contents
1	0000 0111	07H	"Calling Party Name" parameter Type
2	00XX XXXX	XXH	Parameter length (max. 50 octets)
3			Character 1
…			…
n+2			Character n

Characters shall be AIR-IRV encoded.

The first character (character 1) corresponds to the first letter on the left of the characters string to be transmitted or to character "*".

4.3.8 Coding of the "Reason for absence of Calling Party Name" parameter

The purpose of the Reason for absence of Calling Party Name parameter is to describe the reason for absence of the Calling Party Name. Calling Party Name and Reason of absence of Calling Party Name parameters are mutually exclusive in a given message.

Octetnumber	Binary coding	Hexa coding	Contents
1	0001 0000	08H	"Reason of absence of Calling Party Name" parameter Type
2	0000 0001	1H	Parameter length
3	0100 1111 0101 0000	4FH 50H	“O” Unavailable “P” Private (Secret invoked)

Characters “O” and “P” are AIR-IRV encoded.

4.3.9 Coding of the "Visual Indicator" parameter

The purpose of the Visual Indicator parameter is to switch on/off a terminal equipment visual indicator (presence/absence of waiting messages).

Octet number	Binary coding	Hexa coding	Contents
1	0000 1011	0BH	"Visual indicator" parameter Type
2	0000 0001	01H	Parameter length
3	0000 0000 1111 1111	00H FFH	Deactivation (indicator off) Activation (indicator on)

4.3.10 Coding of the "Call Type" parameter

The purpose of the Call Type parameter is to identify an incoming call related with CCBS service.

Octetnumber	Binary coding	Hexa coding	Contents
1	0001 0001	11H	"Call Type" parameter Type
2	0000 0001	01H	Parameter length
3	0000 0010	02H	CCBS recall (B available indication)

4.3.11 Coding of the "Called Line Identity" parameter

The purpose of the Called Line Identity parameter is to identify the called party of a call (used on a CCBS recall, to code the initial called party number for CCBS service).

Octet number	Binary coding	Hexa coding	Contents
1	0000 0011	03H	"Called Line Identity" parameter Type
2	000X XXXX	XXH	Parameter length (max. 20)
3			Digit 1
			…
n+2			Digit n

Digits shall be AIR-IRV encoded.

Digit n stands for unit's digit.

4.3.12 Coding of the "Number of Messages" parameter

The purpose of Number of Messages is to specify the number of waiting messages in a message system.

Octet number	Binary coding	Hexa coding	Contents
1	0001 0011	13H	"Number of Messages" parameter Type
2	0000 0001	01H	Parameter length (1)
3	0000 0000	00H	No waiting messages
	0000 0001	01H	One message or unspecified number of messages waiting
	0000 0010 to 1111 1111	 FFH	Number of messages waiting in the message system (binary coded)

4.3.13 Coding of the "Last Message CLI" parameter

The purpose of Last Message CLI parameter is to provide the CLI of the calling party who has left the last message in the message system.

Octet number	Binary value	Hexa value	Content
1	0000 1110	0EH	"Number of the last depositor" parameter Type
2	000X XXXX	XXH	Parameter length (max 20)
3	XXXX XXXX	XXH	Digit 1
…			...
n+2	XXXX XXXX	XXH	Digit n

Digits shall be AIR-IRV encoded.

Digit n stands for unit's digit.

4.3.14 Coding of the "Message Identification" parameter

The purpose of the Message Identification parameter is to provide the reference and status of the indicated (displayed or not) message.

Octet number	Binary value	Hexa value	Content
1	0000 1101	0D	"Message identification" parameter Type
2	0000 0011	03H	Parameter length (3)
3	XXXX XXXX	XXH	Status indicator 0000 0000 00H: off (withdrawal) 0101 0101 55H: indicator not used (default value) (Note) 1111 1111 FFH: on (add)
4	XXXX XXXX	XXH	Message reference (MSB)
5	XXXX XXXX	XXH	Message reference (LSB)

Note: Coding not used

5. Use of the messages for services

If compatible services are invoked at the same time, their information are transmitted in a unique message, with no parameter duplication.

5.1 Calling Line Identification Presentation Service (CLIP)

The following call message is used to forward information relating to the calling entity, on incoming call, within a Calling line identification presentation service, on idle phase and after a call waiting signal. It is coded as follows:

T field (1 octet) binary coded HGFE DCBA	T Hexa coded	L octets	V content Coding	Meaning and values of the parameters	Parameter statute
0000 0010	02H	1 - 18 (NOTE 1)	AIR-IRV (NOTE 2)	**Calling Line Identity**	Mandatory parameter (1)
0000 0100	04H	1	AIR-IRV (NOTE 2)	**Reason of absence of Calling Line Identity**	Mandatory parameter (1)
0000 0001	01H	8	AIR-IRV (NOTE 2)	**Date and time**	Mandatory parameter
0001 0010	12H	1 - 18 (NOTE 1)	AIR-IRV (NOTE 2)	**First Called Line Identity**	Optional parameter (2)
0001 0101	15H	1	binary	**Type of Forwarded Call**	Optional parameter (2)
0001 0110	16H	1	binary	**Type of Calling User**	Optional parameter

(1): Parameters "Calling Line Identity " and "Reason of absence of Calling Line Identity " are mutually exclusive.

(2): In case of a forwarded call.

T field (binary coded on one octet) defines the type of the parameter.

L field (binary coded on one octet) gives the number of octets in the V field of the parameter.

NOTE 1: Pursuant to ETSI ongoing studies, this value might be risen to 20 in future versions.

NOTE 2: ref. "International alphabet reference (AIR), ITU-T Recommendation T.50, White Book". The G0 set of AIR-IRV is used. Characters 0/0 to 1/15 and 7/15 of the set are not used.

5.2 Calling Line Identification Presentation and Calling Name Identification Presentation Services (CLIP and CNIP)

The following call message is used to send information relating to the number and the name of the calling party, on an incoming call within the calling line and calling name identification presentation services in idle phase and after a call waiting signal. It is coded as follows:

T field (1 octet) binary coded HGFE DCBA	T Hexa coded	L octets	V content Coding	Meaning and values of the parameters	Parameter statute
0000 0001	01H	8	AIR-IRV (NOTE 2)	**Date and time**	Mandatory parameter
0000 0010	02H	1 – 18 (NOTE 1)	AIR-IRV (NOTE 2)	**Calling Line Identity**	Mandatory parameter (1)
0000 0100	04H	1	AIR-IRV (NOTE 2)	**Reason of t absence of Calling Line Identity**	Mandatory parameter (1)
0000 0111	07H	1 - 50	AIR-IRV (NOTE 2)	**Calling Name Party**	Mandatory parameter (2)
0000 1000	08H	1	AIR-IRV (NOTE 2)	**Reason of absence of Calling Name Party**	Mandatory parameter (2)
0001 0010	12H	1 – 18 (NOTE 1)	AIR-IRV (NOTE 2)	**First Called Line Identity**	Optional parameter (3)
0001 0101	15H	1	binary	**Type of Forwarded Call**	Optional parameter (3)
0001 0110	16H	1	binary	**Type of Calling User**	Optional parameter

(1): Parameters "Calling Line Identity " and "Reason of absence of Calling Line Identity" are mutually exclusive.

(2): Parameters "Calling Name Party" and "Reason of absence of Calling Name Party" are mutually exclusive

(3): In case of a forwarded call.

T binary coded on one octet, defines the type of the parameter.

L binary coded on one octet, counts the octets composing the V field of the parameter.

NOTE 1: Pursuant to ETSI ongoing studies, this value might be raised to 20 in future versions.

NOTE 2: ref. [1]. The G0 set of AIR-IRV is used. Characters 0/0 to 1/15 and 7/15 of the set are not used.

5.3 Call completion on busy subscriber (CCBS)

The following message is used to send additional V.23 information, on a CCBS recall:

T field (1 octet) binary coded HGFE DCBA	T Hexa coded	L octets	V content Coding	Meaning and values of the parameters	Parameter statute
0000 0001	01H	8	AIR-IRV (NOTE 1)	**Date and time**	Mandatory parameter
0000 0011	03H	1 - 20	AIR-IRV (NOTE 1)	**Called Line Identity**	Optional parameter
0001 0001	11H	1	binary	**Call Type**	Mandatory parameter

T field (binary coded on one octet) defines the type of the parameter.

L field(binary coded on one octet) gives the number of octets in the V field of the parameter.

NOTE 1: Pursuant to ETSI ongoing studies, this value might be raised to 20 in future versions.

NOTE 2: ref. [1]. The G0 set of AIR-IRV is used. Characters 0/0 to 1/15 and 7/15 of the set are not used.

5.4 Message Waiting Indicator service

The following notification message is used to forward information relating to the message waiting indicator service.

T field (1 octet) binary coded HGFE DCBA	T Hexa coded	L octet	V content Coding	Meaning and values of the parameters	Parameter statute
0000 0001	01H	8	AIR-IRV (NOTE)	**Date and time**	Mandatory parameter
0000 0010	02H	1 - 20	AIR-IRV (NOTE)	**Calling Line Identity (number to recall)**	Mandatory parameter
0000 0111	07H	1 - 50	AIR-IRV (NOTE)	**Calling Party Name**	Optional parameter
0000 1011	0BH	1	Binary	**Visual Indicator**	Mandatory parameter
0000 1101	0DH	3	Binary	**Message Identification**	Optional parameter
0000 1110	0EH	1- 20	AIR-IRV (NOTE)	**Last message CLI**	Optional parameter
0001 0011	13H	1	binary	**Number of messages**	Optional parameter

T field (binary coded on one octet) defines the type of the parameter.

L field (binary coded on one octet) gives the number of octets in the V field of the parameter.

NOTE: ref. [1]. The G0 set of AIR-IRV is used. Characters 0/0 to 1/15 and 7/15 of the set are not used.

6. References

[1] ITU-T Recommendation T.50, White book: International Alphabet Reference (AIR).

[2] ETS 300 659-1 Public Switched Telephone Network (PSTN): Subscriber line protocol over the local loop for display (and related) services; Part 1: On hook data transmission

ETS 300 659-2: Part 2: Off hook data transmission

[3] STI 2: Supplementary services accessible through analogue lines on the France Télécom's network

[4] CCITT Recommendation V.23 (1988): "600/1200-baud modem standardised for use in the general switched telephone network".

7. Glossary

AIM	Message Immediate Notice
CLIP	Calling Line Identification Presentation
CNIP	Calling Name Identification Presentation
CCBS	Call completion to busy subscriber
AIR-IRV	International Alphabet Reference
CWI	Call Waiting Indication
LSB	Less significant bit
MSB	Most significant bit

8. History

Edition	**Date**	**Commentary**
1	March 2000	Initial version
2	October 2000	Consistency of note 1 with note 2 STI 3
3	February 2002	Taking into account of the notification message evolution (new parameters)
4	September 2002	Some formal amendments
5	October 2003	§ 4.3.5, the last sentence has been deleted
6	March 2004	§ 5.4, note1 and note 2 have been deleted. § 5.4, modification of the length of Calling Line Identity (number to recall).

9. ANNEX A: International Alphabet Reference

Information Technology – 7 bit coded character sets
for information exchange *(modified 1992)*

Bit	b_7	b_6	B_5	b_4	b_3	b_2	b_1
Weight	64	32	16	8	4	2	1

b_4	b_3	b_2	b_1		b_7 0	0	0	0	1	1	1	1
					b_6 0	0	1	1	0	0	1	1
					b_5 0	1	0	1	0	1	0	1
					0	1	2	3	4	5	6	7
0	0	0	0	0			SP	0	@	P	`	p
0	0	0	1	1			!	1	A	Q	a	q
0	0	1	0	2			"	2	B	R	b	r
0	0	1	1	3			#	3	C	S	c	s
0	1	0	0	4			¤	4	D	T	d	t
0	1	0	1	5			%	5	E	U	e	u
0	1	1	0	6			&	6	F	V	f	v
0	1	1	1	7			'	7	G	W	g	w
1	0	0	0	8			(	8	H	X	h	x
1	0	0	1	9			)	9	I	Y	i	y
1	0	1	0	10			*	:	J	Z	j	z
1	0	1	1	11			+	;	K	[	k	{
1	1	0	0	12			,	<	L	\	l	|
1	1	0	1	13			–	=	M	]	m	}
1	1	1	0	14			.	>	N	^	n	¯
1	1	1	1	15			/	?	O	_	o	DEL

Characters not in use. The MSB (b_8) is always set to 0.

International reference version (G0 set)