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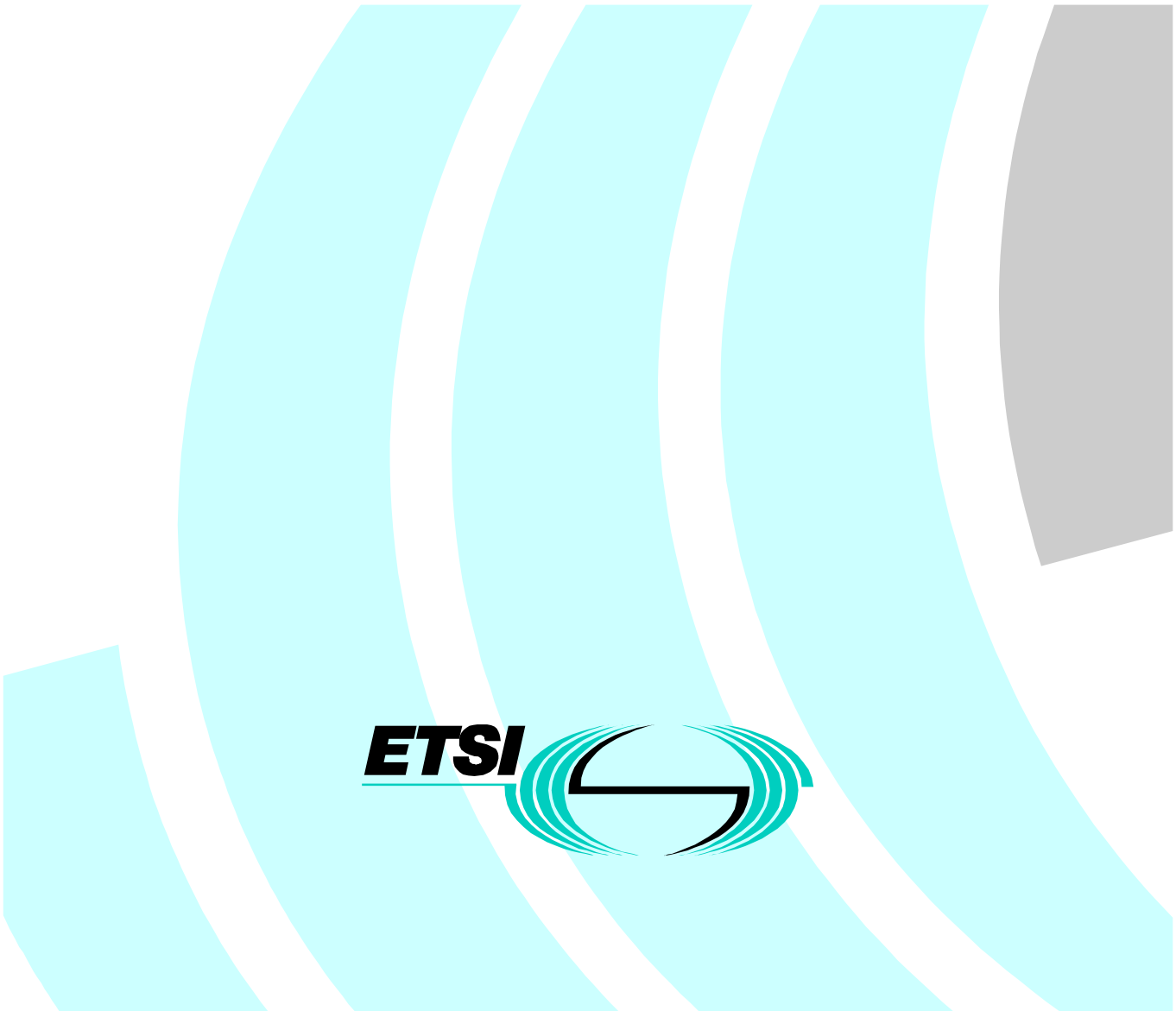
European Standard (Telecommunications series)

Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 3: Data link message and parameter codings



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Contents

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Analogue Terminals and Access (ATA), and is now submitted for the ETSI standards One-step Approval Procedure.

The present document is part 3 of a multi-part standard covering the PSTN subscriber line protocol over the local loop for display (and related) services, as described below:

Part 1: "On-hook data transmission";

Part 2: "Off-hook data transmission";

Part 3: "Data link message and parameter codings".

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1 Scope

The present document specifies the data link message and parameter codings for the PSTN subscriber line protocol to support display and related services sent by the Local Exchange (LE). The subscriber line protocol is accomplished by using asynchronous voice-band Frequency-Shift Keying (FSK) signalling.

The requirements imposed on the FSK signalling-based subscriber line protocol deal with data encoding, data transmission requirements and the three layers of the protocol at the network side of the interface: presentation layer, data link layer and physical layer.

Terminal Equipment (TE) can be connected by analogue access directly to the LE or via an Access Network (AN). In the latter case, data transmission can be applied from the LE or from elsewhere in the network hence a transmission path needs to exist from the LE to the TE before data transmission. It is the network operator's responsibility to ensure transmission path establishment. Transmission path establishment procedures are outside the scope of the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ETS 300 648 (1997): "Public Switched Telephone Network (PSTN); Calling Line Identification Presentation (CLIP) supplementary service; Service description".

[2] CCITT Recommendation Q.11 (1988): "Numbering plan for the international telephone service".

[3] CCITT Recommendation T.50 (1992): "International Reference Alphabet (IRA) (Formerly International Alphabet No. 5 or IA5) - Information technology - 7-bit coded character set for information interchange".

[4] TR 101 292 (V1.1): "Public Switched Telephone Network (PSTN); Protocol over the local loop for display and related services; Proposed enhancements and maintenance of existing standards".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

calling line identity: see ETS 300 648 [1]

graphic character: character that has a visual representation normally hand-written, printed or displayed; in IRA characters 2/1 to 7/14 (see CCITT Recommendation T.50 [3])

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AOC-D	Advice Of Charge During the call
AOC-E	Advice Of Charge at the End of the call
AOC-S	Advice Of Charge at call Set-up
AN	Access Network
CCBS	Completion of Calls to Busy Subscriber
CCNR	Completion of Calls on No Reply
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CNIP	Calling Name Identification Presentation
CNIR	Calling Name Identification Restriction
CT	Connection Type
FSK	Frequency-Shift Keying
IRA	International Reference Alphabet
LE	Local Exchange
MSN	Multiple Subscriber Number
MWI	Message Waiting Indication
NPI	Network Provider Identity
NPN	Network Provided Number
PSTN	Public Switched Telephone Network
SDSS	Server Display and Script Services
SMS	Short Message Service
SUB	Subaddressing
TE	Terminal Equipment
UPN	User Provided Number
VPN	Virtual Private Network

4 Data encoding

Graphic characters and the "space" character are coded according to national versions of the IRA as specified in CCITT Recommendation T.50 [3] (see annex C).

Control characters 0/0 to 1/15 and 7/15 are not used within this protocol. Characters 8/0 to 15/15 are reserved for network operator use.

5 Data Link message and parameter codings

5.1 Data Link message and general parameter requirements

A Data Link message (for simplicity: a message) is generally related to a given service, but the same message can be used in support of different applications (each of them can require different parameters).

At the LE, for each standard message type (or for each service if the same message type is used in support of different applications) a list of parameters is necessarily defined. Each list consists of two categories of parameters, mandatory or optional according to the service description.

Furthermore, each message can contain other parameters for network operator use only.

The mandatory/optional characteristics of a parameter within a message are service dependent as depicted in annex A and annex B. The TE does not need to know which parameters are mandatory/optional and the TE may decide how to handle the parameters (e.g. to display information or not).

In order to allow enhancement of the protocol with backward compatibility, all parameters shall be considered to calculate the checksum but any unknown message or any unknown parameter within a known message shall be discarded by the TE. Any unknown value of parameter data inside any known parameter shall be discarded by the TE.

Parameter data shall refer to only one type of information.

The meaning and the format of a given parameter are always identical.

The same parameter may be used within different messages (or different services).

If two parameters have the same meaning, they are required to have the same value.

Parameters may be sent in any order within a message.

If mutually exclusive parameters are found in a message, the TE should use the first and ignore any others.

If two parameters within a message are identical (same type coding value) the second parameter should be discarded by the TE.

A range within the Message type coding is reserved for network operator use.

A range within the Parameter type coding is reserved for network operator use.

A range within the values of a parameter can be reserved for network operator use.

The parameter "Extension for network operator use" (see subclause 5.4.27) shall be included in the message when a reserved value for network operator is used in Message type, Parameter type, Parameter data value in order to qualify without ambiguity for the TE the private extension of the standard used by the network operator.

In case of the presence of more than one reserved value for network operator (e.g. if the message contains two network operator parameters) the message shall contain only one "Extension" parameter.

If the TE recognizes all the "Extension for network operator" parameter data octets (i.e. the Country code, the Network Operator code and the Version), it should process the private values of Message type, Parameter type and Parameter data in accordance with the network operator specifications.

In order to allow enhancement of the protocol with backward compatibility if the TE does not recognize all of the "Extension for network operator" parameter data octets, the TE shall discard:

- the complete network operator message, if a reserved value is used in the type of Message;
- the network operator parameter, if a reserved value is used in the type of Parameter;
- the network operator parameter data, if a reserved value is used in the parameter data octets.

Message and parameter type codes that have not been assigned values in the present document may be used for other purposes that are outside the scope of this standard (e.g. SDSS).

5.2 Data Link message types

Table 1 summarizes the messages that the protocol should support.

Table 1: Data Link messages

Message name	Reference (subclause)
Call Setup	5.2.1
Message Waiting Indicator	5.2.2
Advice of Charge	5.2.3
Short Message Service	5.2.4

Table 2 summarizes the Message type coding.

Table 2: Message type coding

Type (binary) HGFE DCBA	Type (hexadecimal)	Message name
1000 0000	80H	Call Setup
1000 0010	82H	Message Waiting Indicator
1000 0110	86H	Advice of Charge
1000 1001	89H	Short Message Service
1111 0001 to 1111 1111	F1H To FFH	Reserved for network operator use

5.2.1 Call Setup message

This message is used to send information related with an incoming call. It supports Calling Line Identification Presentation (CLIP). It may also support CLIP related applications (e.g. CLIP on Call Waiting, CLIP on Ring-back-when-free-call, Calling Name Delivery).

The Call set-up message may contain the following parameters:

Table 3: Call set-up message parameters

Parameter name	Reference (subclause)
Date and Time	5.4.1
Calling Line Identity or Or Reason for absence of Calling Line Identity	5.4.2 5.4.4
Called Line Identity	5.4.3
Calling Party Name or Or Reason for absence of Calling Party Name	5.4.5 5.4.6
Complementary Calling Line Identity	5.4.11
Call type	5.4.12
First Called Line Identity	5.4.13
Network Message System Status	5.4.14
Type of Forwarded call	5.4.15
Type of Calling User	5.4.16
Redirecting Number	5.4.17
Network Provider Identity	5.4.22
Carrier Identity	5.4.23
Selection of Terminal Function	5.4.24
Display Information	5.4.25
Extension for network operator use	5.4.27
Network operator parameter	-

See annex A and annex B for the parameter status (mandatory/optional at the LE) according to service requirements.

5.2.2 Message Waiting Indicator message

This message is used to indicate the presence/absence of waiting messages in a network message system.

The Message Waiting Indicator message may contain the following parameters:

Table 4: Message Waiting Indicator message parameters

Parameter name	Reference (subclause)
Date and Time	5.4.1
Calling Line Identity or Or Reason for absence of Calling Line Identity	5.4.2 5.4.4
Calling Party Name or Or Reason for absence of Calling Party Name	5.4.5 5.4.6
Visual Indicator	5.4.7
Message Identification	5.4.8
Originating Identity	5.4.9
Complementary Date and Time	5.4.10
Complementary Calling Line Identity	5.4.11
Network Message System Status	5.4.14
Type of Calling User	5.4.16
Network Provider Identity	5.4.22
Selection of Terminal Function	5.4.24
Display Information	5.4.25
Extension for network operator use	5.4.27
Network operator parameter	-

See annex B for the parameter status (mandatory/optional at the LE) according to service requirements.

5.2.3 Advice of Charge message

This message is used to send information related to the charge of a call.

The Advice Of Charge message may contain the following parameters:

Table 5: Advice Of Charge message parameters

Parameter name	Reference (subclause)
Date and Time	5.4.1
Calling Line Identity or Or Reason for absence of Calling Line Identity	5.4.2 5.4.4
Called line identity	5.4.3
Complementary Calling Line Identity	5.4.11
Charge	5.4.18
Additional Charge	5.4.19
Extra Charge	5.4.20
Duration of the call	5.4.21
Network Provider Identity	5.4.22
Carrier Identity	5.4.23
Selection of Terminal Function	5.4.24
Display information	5.4.25
Extension for network operator use	5.4.27
Network operator parameter	-

See annex B for the parameter status (mandatory/optional at the LE) according to service requirements.

NOTE: The Advice of charge at call Set-up (AOC-S) has not been included in the present document because it has not been deemed feasible in the PSTN network. The charging information is very complex and not uniform with all operators. The information transfer may interfere with the communication and disturb the user or ongoing data transmission.

5.2.4 Short Message Service message

This message is used to send short text messages to a subscriber.

The Short Message Service message may contain the following parameters:

Table 6: Short Message Service message parameters

Parameter name	Reference (subclause)
Date and Time	5.4.1
Calling Line Identity or Or Reason for absence of Calling Line Identity	5.4.2 5.4.4
Calling Party Name or Or Reason for absence of Calling Party Name	5.4.5 5.4.6
Complementary Calling Line Identity	5.4.11
Type of Calling User	5.4.16
Network Provider Identity	5.4.22
Selection of Terminal Function	5.4.24
Display Information	5.4.25
Service Information	5.4.26
Extension for network operator use	5.4.27
Network operator parameter	-

See annex B for the parameter status (mandatory/optional at the LE) according to service requirements.

5.3 Parameter types

Table 7 summarizes the Parameter types that are supported.

Table 7: Parameter types

Type (binary) HGFE DCBA	Type (hexadecimal)	Length (note 1)	Parameter name
0000 0001	01H	8	Date and Time
0000 0010	02H	max. 20 (note 2)	Calling Line Identity
0000 0011	03H	max. 20 (note 2)	Called Line Identity
0000 0100	04H	1	Reason for Absence of Calling Line Identity
0000 0111	07H	max. 50	Calling Party Name
0000 1000	08H	1	Reason for absence of Calling Party Name
0000 1011	0BH	1	Visual Indicator
0000 1101	0DH	3	Message Identification
0000 1110	0EH	max. 20 (note 2)	Originating Identity
0000 1111	0FH	8 or 10	Complementary Date and Time
0001 0000	10H	max. 20 (note 2)	Complementary Calling Line Identity
0001 0001	11H	1	Call type
0001 0010	12H	max. 20 (note 2)	First Called Line Identity
0001 0011	13H	1	Network Message System Status
0001 0101	15H	1	Type of Forwarded call
0001 0110	16H	1	Type of Calling user
0001 1010	1AH	max. 20 (note 2)	Redirecting Number
0010 0000	20H	14	Charge
0010 0001	21H	14	Additional Charge
0010 0010	22H	14	Extra Charge
0010 0011	23H	6	Duration of the Call
0011 0000	30H	max. 20	Network Provider Identity
0011 0001	31H	max. 20	Carrier Identity
0100 0000	40H	max. 21	Selection Of Terminal Function
0101 0000	50H	max. 253	Display Information
0101 0101	55H	1	Service Information
1110 0000	E0H	10	Extension for network operator use
1110 0001 to 1111 1111	E1H To FFH	-	Reserved for network operator use

NOTE 1: Parameter type and Parameter length are defined in detail in subclause 5.4.

NOTE 2: New applications have been identified that require more than 20 digits and these may be implemented in the future by some network operators. As a result studies have been initiated to identify a method of extending the parameter fields that:
- allows existing terminals to display useful information when receiving more than 20 digits;
- allows further extension in the future (if required).

5.4 Parameter coding

5.4.1 Date and time parameter

The purpose of the Date and time parameter is to provide the date and the time to the user. It indicates the point in time when the message has been generated by the LE.

Table 8

Octet number	Contents
1	0000 0001 (01H): Date and Time
2	0000 1000 (08H): Parameter length (8)
3	Month's most significant octet
4	Month's least significant octet
5	Day's most significant octet
6	Day's least significant octet
7	Hour's most significant octet
8	Hour's least significant octet
9	Minute's most significant octet
10	Minute's least significant octet

Days shall range from 01 to 31. Months shall range from 01 (January) to 12 (December). Hours shall range from 00 (midnight) to 23. Minutes shall range from 00 to 59.

Each parameter octet shall be coded according to CCITT Recommendation T.50 [3].

5.4.2 Calling Line Identity parameter

The purpose of the Calling Line Identity parameter is to identify the origin of a call.

Table 9

Octet number	Contents
1	0000 0010 (02H): Calling Line Identity (CLI)
2	000X XXXX: Parameter length (max. 20)
3	Digit 1
...	...
n + 2	Digit n

Digits (0 to 9, * and #) shall be coded according to CCITT Recommendation T.50 [3]. The digits may be interspersed with characters "space" (2/0), "-" (2/13), "(" (2/8), or ")" (2/9).

5.4.3 Called Line Identity parameter

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

Table 10

Octet number	Contents
1	0000 0011 (03H): Called Line Identity
2	000X XXXX: Parameter length (max. 20)
3	Digit 1
...	...
n + 2	Digit n

Digits (0 to 9, * and #) shall be coded according to CCITT Recommendation T.50 [3]. The digits may be interspersed with characters "space" (2/0), "-" (2/13), "(" (2/8), or ")" (2/9).

5.4.4 Reason for Absence of Calling Line Identity parameter

The purpose of the Reason for Absence of Calling Line Identity parameter is to describe the reason for absence of Calling Line Identity. The parameters "Calling Line Identity" and "Reason for Absence of Calling Line Identity" are mutually exclusive within a message.

Table 11

Octet number	Contents
1	0000 0100 (04H):Reason for absence of CLI
2	0000 0001 (01H):Parameter length (1)
3	0100 1111 ("O"): Unavailable 0101 0000 ("P"): Private (CLIR involved) 1000 0000 to reserved for network operator use 1111 1111

Characters shall be coded according to CCITT Recommendation T.50 [3].

5.4.5 Calling Party Name parameter

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

Table 12

Octet number	Contents
1	0000 0111 (07H): Calling Party Name
2	00XX XXXX: Parameter length (max. 50)
3	Character 1
...	...
n + 2	Character n

Characters shall be coded according to CCITT Recommendation T.50 [3].

5.4.6 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.

Table 13

Octet number	Contents
1	0000 1000 (08H): Reason for absence of Calling Party Name
2	0000 0001 (01H): Parameter length (1)
3	0100 1111 ("O"): Unavailable 0101 0000 ("P"): Private (Name delivery has been blocked) 1000 0000 to Reserved for network operator use 1111 1111

Characters shall be coded according to CCITT Recommendation T.50 [3].

5.4.7 Visual Indicator parameter

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

Table 14

Octet number	Contents
1	0000 1011 (0BH): Visual Indicator
2	0000 0001 (01H): Parameter length (1)
3	0000 0000 (00H): Deactivation (indicator off) 1111 1111 (FFH): Activation (indicator on) 1000 0000 (80H) to Reserved for network operator use 1111 1110 (EFH)

5.4.8 Message Identification parameter

The purpose of the Message Identification parameter is to provide the current reference of the message in the network message system.

Table 15

Octet number	Contents
1	0000 1101 (0DH): Message Identification
2	0000 0001 (01H): Parameter length (3)
3	0000 0000 (00H): Removed Message 1111 1111 (FFH): Added Message
4	XXXX XXXX (XXH): Message Reference: most significant octet
5	XXXX XXXX (XXH): Message Reference: least significant octet

5.4.9 Originating Identity parameter

The purpose of the Originating Identity parameter is to provide the CLI of the calling party who has left the last message in the mail-box system.

Table 16

Octet number	Contents
1	0000 1110 (0EH): Originating Identity
2	000X XXXX (XXH): Parameter length (max. 20)
3	Digit 1
...	...
n + 2	Digit n

Digits (0 to 9, * and #) shall be coded according to CCITT Recommendation T.50 [3]. The digits may be interspersed with characters "space" (2/0), "-" (2/13), "(" (2/8), or ")" (2/9).

5.4.10 Complementary Date and Time parameter

The purpose of the Complementary Date and Time parameter is to provide an additional (service specific) date and time information to the user. The Complementary Date and Time parameter may optionally contain the indication of seconds.

In case of Message Waiting Indication, the Complementary Date and Time parameter indicates the point in time when the related message has been left in a network message system. This information is not generated by the LE but provided by the controlling user.

Table 17

Octet number	Contents
1	0000 1111 (0FH): Complementary Date and Time
2	0000 10X0 (0XH): Parameter length (8 or 10)
3	Month's most significant octet
4	Month's least significant octet
5	Day's most significant octet
6	Day's least significant octet
7	Hour's most significant octet
8	Hour's least significant octet
9	Minute's most significant octet
10	Minute's least significant octet
11	Second's most significant octet (optional)
12	Second's least significant octet (optional)

Days shall range from 01 to 31. Months shall range from 01 (January) to 12 (December). Hours shall range from 00 (midnight) to 23. Minutes shall range from 00 to 59. Seconds shall range from 00 to 59.

Each parameter octet shall be coded according to CCITT Recommendation T.50 [3].

5.4.11 Complementary Calling Line Identity parameter

The purpose of the Complementary Calling Line Identity is to convey the Network Provided Number (NPN) when a User Provided Number (UPN) is available and the UPN is transmitted in the Calling Line Identity parameter.

Table 18

Octet number	Contents
1	0001 0000 (10H): Complementary CLI
2	000X XXXX: Parameter length (max. 20)
3	Digit 1
...	...
n + 2	Digit n

Digits (0 to 9, * and #) shall be coded according to CCITT Recommendation T.50 [3]. The digits may be interspersed with characters "space" (2/0), "-" (2/13), "(" (2/8), or ")" (2/9).

5.4.12 Call Type parameter

The purpose of the Call Type parameter is to identify the type of the incoming call and/or the associated service: Normal call, External call, Internal call, Alarm call, CCBS or CCNR, Calling Name, Message Waiting.

Table 19

Octet number	Contents
1	0001 0001 (11H): Call Type
2	0000 0001 (01H): Parameter length (1)
3	0000 0001 (01H): Normal (voice) Call 0000 0010 (02H): CCBS / CCNR 0000 0011 (03H): Calling Name Delivery 0000 0100 (04H): Call Return 0000 0101 (05H): Alarm Call 0000 0110 (06H): Download Function 0000 0111 (07H): Reverse Charging Call 0001 0000 (10H): External Call (VPN) 0001 0001 (11H): Internal Call (VPN) 0101 0000 (50H): Monitoring Call Off 0101 0001 (51H): Monitoring Call On 1000 0001 (81H): Message Waiting Call 1000 0010 (82H) to Reserved for network operator use 1111 1111 (FFH)

5.4.13 First Called Line Identity parameter

In case of forwarded call, the purpose of First Called Line Identity parameter is to identify the first called party.

Table 20

Octet number	Contents
1	0001 0010 (12H): First Called Line Identity
2	000X XXXX: Parameter length (max. 20)
3	Digit 1
...	...
n + 2	Digit n

Digits (0 to 9, * and #) shall be coded according to CCITT Recommendation T.50 [3]. The digits may be interspersed with characters "space" (2/0), "-" (2/13), "(" (2/8), or ")" (2/9).

5.4.14 Network Message System Status parameter

The purpose of Network Message System Status is to specify the number of waiting messages in the network message system.

Table 21

Octet number	Contents
1	0001 0011 (13H): Network Message System Status
2	0000 0001 (01H): Parameter length (1)
3	0000 0000 (00H): No messages 0000 0001 (01H): 1 message or unspecified number of message waiting 0000 0010 (02H) to Number of message waiting in message system 1111 1111 (FFH)

The number of message shall be binary encoded.

5.4.15 Type of Forwarded Call parameter

The purpose of Type of Forwarded Call parameter is to identify the type of call forwarding in case of forwarded calls (e.g. Unavailable or unknown type, On busy, On no reply, Unconditional, Deflected call after alerting, Deflected call immediate, On inability to reach mobile subscriber).

Table 22

Octet number	Contents
1	0001 0101 (15H): Type of Forwarded Call
2	0000 0001 (01H): Parameter length (1)
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 1000 0000 (80H) to Reserved for network operator use 1111 1111 (FFH)

5.4.16 Type of Calling User parameter

The purpose of Type of Calling User parameter is to identify the origin of the call (e.g. Origination unknown or unavailable, Voice Call, Text Call, VPN (Virtual Private Network), Mobile phone, Mobile phone + VPN, Fax Call (Group 2/3), Video Call, E-mail call, Ordinary calling subscriber, Calling subscriber with priority, Data Call, Test Call, Payphone).

Table 23

Octet number	Contents
1	0001 0110 (16H): Type of Calling User
2	0000 0001 (01H): Parameter length (1)
3	0000 0000 (00H): Origination unknown or unavailable 0000 0001 (01H): Voice Call 0000 0010 (02H): Text Call 0000 0011 (03H): VPN (Virtual Private Network) 0000 0100 (04H): Mobile phone 0000 0101 (05H): Mobile phone + VPN 0000 0110 (06H): Fax Call 0000 0111 (07H): Video Call 0000 1000 (08H): E-mail Call 0000 1001 (09H): Operator Call 0000 1010 (0AH): Ordinary calling subscriber 0000 1011 (0BH): Calling subscriber with priority 0000 1100 (0CH): Data Call 0000 1101 (0DH): Test call 0000 1110 (0EH): Telemetric Call 0000 1111 (0FH): Payphone

5.4.17 Redirecting Number parameter

In case of chained forwarded call, the purpose of Redirecting Number parameter is to identify the last redirecting party.

Table 24

Octet number	Contents
1	0001 1010 (1AH): Redirecting Number
2	000X XXXX: Parameter length (max. 20)
3	Digit 1
...	...
n + 2	Digit n

Digits (0 to 9, * and #) shall be coded according to CCITT Recommendation T.50 [3]. The digits may be interspersed with characters "space" (2/0), "-" (2/13), "(" (2/8), or ")" (2/9).

5.4.18 Charge parameter

The purpose of the Charge information is to provide the charged amount information of a call to the user.

Table 25

Octet Number	Content
1	0010 0000 (20H): Charge
2	0000 1110 (0EH): Parameter length (14)
3	Currency: character 1
4	Currency: character 2
5	Currency: character 3
6: bit 1	0: Normal charging 1: Free of Charge
6: bit 2	0: Total (AOC-E) 1: Subtotal (AOC-D)
6: bit 3	0: Normal charging 1: Credit/Debit Card Charging
6: bit 4	0: Charging information available 1: Charging information not available
6: bit 5	0: Currency amount 1: Charged units or, charged units and price per unit
7	Cost (10 digits): Digit 1 (most significant digit) Or Units (5 digits): Digit 1 (most significant digit)
...	...
11	Cost Or Units (5 digits) : Digit 5 (least significant digit)
12	Cost Or Price per unit (5 digits): Digit 1 (most significant digit)
...	...
16	Cost (10 digits) : Digit 10 (least significant digit) Or Price per unit (5 digits): Digit 5 (least significant digit)

Currency code according to:

international monetary 3-letter acronym Characters shall be coded according to CCITT Recommendation T.50 [3].

E.g. " ITL " is Italian Lira, where "I" is the first character.

Or three characters "-" (2/13, 2/13, 2/13), in the case that only the number of units is provided.

One of the octets in the "cost" or "price per unit" fields may be substituted by "," (comma) indicating a decimal comma.

Digits (0 to 9) and "," (comma) shall be coded according to CCITT Recommendation T.50 [3].

If the value for cost, units or price per unit does not use all of the available digits within the parameter, the leading digits shall be filled with the digit "0".

If units are provided without price per units, price per unit digits are replaced by the character "-" (2/13).

If charging information not available, Currency and Cost shall be replaced by the character "-" (2/13).

Examples of the use of this parameter can be found in annex D.

NOTE: Requirements related to Advice of charge at call Set-up (AOC-S) may be introduced in later versions of the present document.

5.4.19 Additional Charge parameter

The purpose of the Additional Charge parameter is to provide the cumulated charging information of all calls which have been made up to the end of the last call (last call/session included).

Table 26

Octet Number	Content
1	0010 0001 (21H): Additional charge
2	0000 1110 (0EH): Parameter length (14)
3	Currency: character 1
4	Currency: character 2
5	Currency: character 3
6: bit 1	0: Normal charging 1: Free of Charge
6: bit 2	0: Total (AOC-E) 1: Subtotal (AOC-D)
6: bit 3	0: Normal charging 1: Credit/Debit Card Charging
6: bit 4	0: Charging information available 1: Charging information not available
6: bit 5	0: Currency amount 1: Charged units or, charged units and price per unit
7	Cost (10 digits): Digit 1 (most significant digit) Or Units (5 digits): Digit 1 (most significant digit)
...	...
11	Cost Or Units (5 digits) : Digit 5 (least significant digit)
12	Cost Or Price per unit (5 digits): Digit 1 (most significant digit)
...	...
16	Cost (10 digits) : Digit 10 (least significant digit) Or Price per unit (5 digits): Digit 5 (least significant digit)

Currency code according to:

international monetary 3-letter acronym Characters shall be coded according to CCITT Recommendation T.50 [3].

E.g. " ITL " is Italian Lira, where "I" is the first character.

Or three characters "-" (2/13, 2/13, 2/13), in the case that only the number of units is provided.

One of the octets in the "cost" or "price per unit" fields may be substituted by "," (comma) indicating a decimal comma.

Digits (0 to 9) and "," (comma) shall be coded according to CCITT Recommendation T.50 [3].

If the value for cost, units or price per unit does not use all of the available digits within the parameter, the leading digits shall be filled with the digit "0".

If units are provided without price per units, price per unit digits are replaced by the character "-" (2/13).

If charging information not available, Currency and Cost shall be replaced by the character "-" (2/13).

NOTE: Requirements related to Advice of charge at call Set-up (AOC-S) may be introduced in later versions of the present document.

5.4.20 Extra Charge parameter

The purpose of the " Extra Charge " parameter is to provide the cumulated charging information of all calls which have not been made directly on an access and have been terminated at the time when the transmission takes place, e.g. call forwarded calls.

Table 27

Octet Number	Content
1	0010 0010 (22H): Extra charge
2	0000 1110 (0EH): Parameter length (14)
3	Currency: character 1
4	Currency: character 2
5	Currency: character 3
6: bit 1	0: Normal charging 1: Free of Charge
6: bit 2	0: Total (AOC-E) 1: Subtotal (AOC-D)
6: bit 3	0: Normal charging 1: Credit/Debit Card Charging
6: bit 4	0: Charging information available 1: Charging information not available
6: bit 5	0: Currency amount 1: Charged units or, charged units and price per unit
7	Cost (10 digits): Digit 1 (most significant digit) Or Units (5 digits): Digit 1 (most significant digit)
...	...
11	Cost Or Units (5 digits): Digit 5 (least significant digit)
12	Cost Or Price per unit (5 digits): Digit 1 (most significant digit)
...	...
16	Cost (10 digits): Digit 10 (least significant digit) Or Price per unit (5 digits): Digit 5 (least significant digit)

Currency code according to:

international monetary 3-letter acronym Characters shall be coded according to CCITT Recommendation T.50 [3].

E.g. " ITL " is Italian Lira, where "I" is the first character.

Or three characters "-" (2/13, 2/13, 2/13), in the case that only the number of units is provided.

One of the octets in the "cost" or "price per unit" fields may be substituted by "," (comma) indicating a decimal comma.

Digits (0 to 9) and "," (comma) shall be coded according to CCITT Recommendation T.50 [3].

If the value for cost, units or price per unit does not use all of the available digits within the parameter, the leading digits shall be filled with the digit "0".

If units are provided without price per units, price per unit digits are replaced by the character "-" (2/13).

If charging information not available, Currency and Cost shall be replaced by the character "-" (2/13).

NOTE: Requirements related to Advice of charge at call Set-up (AOC-S) may be introduced in later versions of the present document.

5.4.21 Duration of the Call parameter

The purpose of the Duration of the Call parameter is to indicate the chargeable duration of the call.

Table 28

Octet number	Content
1	0010 0011 (23H): Duration of the Call
2	0000 0110 (06H): Parameter length (6)
3	Hour's most significant octet
4	Hour's least significant octet
5	Minute's most significant octet
6	Minute's least significant octet
7	Second's most significant octet
8	Second's least significant octet

Hours shall range from 00 to 99. Minutes shall range from 00 to 59. Seconds shall range from 00 to 59.

Each parameter octet shall be coded according to CCITT Recommendation T.50 [3].

5.4.22 Network Provider Identity parameter

The "Network Provider Identity" service (NPI) provides the served user with the possibility of receiving the

Network Provider Identity of the current network provider which the terminal is connected to (access).

Table 29

Octet number	Content
1	0011 0000 (30H): Network Provider Identity
2	000X XXXX (XXH): Parameter length (max. 20)
3	Character 1
...	...
n+2	Character n

Characters shall be coded according to CCITT Recommendation T.50 [3].

5.4.23 Carrier Identity parameter

The purpose of the Carrier Identity parameter is to indicate the current network carrier identity.

Table 30

Octet number	Content
1	0011 0001 (31H): Carrier Identity
2	000X XXXX (XXH): Parameter length (max. 20)
3	Character 1
...	...
n+2	Character n

Characters shall be coded according to CCITT Recommendation T.50 [3].

5.4.24 Selection of Terminal Function parameter

The purpose of the "Selection of Terminal Function" parameter is to provide information to select specific terminal(s) or specific function(s) on the same access.

Table 31

Octet number	Content
1	0100 0000 (40H): Selection of Terminal Function
2	000X XXXX (XXH): Parameter length (2 to 21)
3	0000 0001 (01H): Connection Type (CT) 0000 0010 (02H): Multiple Subscriber Number (MSN) 0000 0011 (03H): Subaddress (SUB)
4	Connection Type code Or MSN (max. 20 digits): Digit 1 Or SUB (max. 20 digits): Digit 1
…	…
n+3	MSN or SUB (max. 20 digits): digit n

Connection Type codes are defined in table 31.

MSN and SUB digits (0 to 9, * and #) shall be coded according to CCITT Recommendation T.50 [3]. The digits may be interspersed with characters "space" (2/0), "-" (2/13), "(" (2/8), or ")" (2/9).

Table 32

Octet Binary-code	Octet Hex-code	Connection Type codes
0000 0000	00H	Connection Type not identified / Default CT
0000 0001	01H	Voice Call
0000 0010	02H	Fax Call
0000 0011	03H	Data Call
0000 0100	04H	Video Call
0000 0101	05H	E-mail Call
0000 0110	06H	Telemetric Call
0000 0111	07H	Text Call

5.4.25 Display information parameter

The purpose of the Display information parameter is to transmit a general text information to the served user.

Table 33

Octet number	Content
1	0101 0000 (0FH): Display information
2	XXXX XXXX (XXH): Parameter length (max. 253)
3: bits 1 to 7	X000 0000: Unknown or other X000 0001: Positive acknowledgement X000 0011: Negative acknowledgement X000 0100: Advertisement X000 0101: Network Provider Information X000 0110: Remote User Provided information X111 0000 to Reserved for network operator use X111 1111
3: bit 8	0: No stored information 1: Stored information
4	Character 1
…	
n+3	Character n

The characters shall be coded according to CCITT Recommendation T.50 [3].

NOTE: The parameter length may be limited when used together with other systems e.g. mobile systems.

5.4.26 Service Information parameter

This parameter indicates the network status "active" or "not active" of the relevant service.

Table 34

Octet number	Contents
1	0101 0101 (55H): Service Information
2	0000 0001 (01H): Parameter length (1)
3	0000 0000: Service not active 0000 0001: Service active 1000 0000 (80H) to Reserved for network operator use 1111 1111 (FFH)

5.4.27 Extension for network operator use parameter

This parameter is used to qualify without ambiguity for the TE the private extension of the standard used by the network operator.

Table 35

Octet number	Contents
1	1110 000 (E0H): Extension for network operator use
2	0000 1010 (0AH): Parameter length (10)
3	First digit of Country code
4	Second digit of Country code or space (20H) if no second digit
5	Third digit of Country code or space (20H) if no third digit
6 to 9	Network Operator code
10 to 12	Version (operator coding)

Parameter octets shall be coded according to CCITT Recommendation T.50 [3]. Unused octets of Network Operator code and Version code shall be coded as "space" (2/0).

The Country code shall be coded in accordance with CCITT Recommendation Q.11 [2].

The Network Operator code is defined by an agreement between the different network operators of each country.

The Version is defined by the network operator.

Annex A (normative): PSTN CLIP service parameter list

This annex describes how the protocol shall support the PSTN CLIP service as specified in ETS 300 648 [1]. As a service provider option, additional information can be provided to the served user by the optional parameters.

The LE shall use the Call Setup message in data transmission associated with ringing. The message shall contain the parameters as specified in table A.1.

Table A.1

Parameter name	Status
Date and Time	Optional
Calling Line Identity Or Reason for absence of Calling Line Identity	Mandatory
Called Line Identity	Optional
Calling Party Name Or Reason for absence of Calling Party Name	Optional
Complementary Calling Line Identity	Optional
Call type	Optional
First Called Line Identity (in case of forwarded call)	Optional
Type of Forwarded call (in case of forwarded call)	Optional
Type of Calling User	Optional
Redirecting Number (in case of forwarded call)	Optional
Network Provider Identity	Optional
Selection of Terminal Function	Optional
Display Information	Optional
Extension for network operator use	Optional (note)
Network operator parameter	*Optional*
NOTE: Mandatory when a reserved value for network operator is used in Message type, Parameter type, Parameter data value.	

Annex B (informative): Parameter list per service

A short service description for the services in the table below, can be found in TR 101 292 [4].

			CLIP/CLIR	CNIP/CNIR	AOC-D,E (note 2)	SMS	CCBS/CCNR (note 3)	MWI (note 1)	MSN, SUB,CT	CALL RETURN	ALARM CALL	USER PROCEDURE NOTIFICATION	MONITORING SERVICE
DATA TRANSMISSION													
ON-HOOK STATE			A	A	A	A	A	A	A	-	A	A	A
OFF-HOOK STATE			A	A	A	A	-	A	A	A	A	A	A
MESSAGE TYPE													
CALL SETUP MESSAGE (80H)			A	A	-	-	A	-	A	A	A	-	A
MESSAGE WAITING INDICATOR (82H)			-	-	-	-	-	A	C	-	-	-	-
ADVICE OF CHARGE (86H)			-	-	A	-	-	-	C	-	-	-	-
SHORT MESSAGE SERVICE (89H)			-	-	-	A	-	-	C	-	-	A	-
PARAMETER TYPE													
DATE AND TIME (01H)			O	O	O	O	O	O	O	O	O	O	O
CALLING LINE IDENTITY (02H)			M/	C/	O/	O/	-	O/	C/	M/	-	-	C/
CALLED LINE IDENTITY (03H)			O	C	O	-	O	-	C	-	-	-	O
REASON FOR ABSENCE OF CALLING LINE IDENTITY (04H)			M/	C/	O/	O/	-	O/	C/	M/	-	-	C/
	4FH	Unavailable	M/	C/	O/	O/	-	O/	C/	M/	-	-	C/
	50H	Private	M/	C/	O/	O/	-	O/	C/	M/	-	-	C/
CALLING PARTY NAME (07H)			C/	M/	-	O/	-	O/	C/	O/	-	-	C/
REASON FOR ABSENCE OF CALLING PARTY NAME (08H)			C/	M/	-	O/	-	O/	C/	O/	-	-	C/
	4FH	Unavailable	C/	M/	-	O/	-	O/	C/	O/	-	-	C/
	50H	Private	C/	M/	-	O/	-	O/	C/	O/	-	-	C/
VISUAL INDICATOR (0BH)			-	-	-	-	-	M	C	-	-	-	-
	00H	Indicator off	-	-	-	-	-	M/	C/	-	-	-	-
	FFH	Indicator on	-	-	-	-	-	M/	C/	-	-	-	-
MESSAGE IDENTIFICATION (0DH)		(0 ... 65535)	-	-	-	-	-	O	C	-	-	-	-
ORIGINATING IDENTITY (0EH)			-	-	-	-	-	O	C	-	-	-	-
COMPLEMENTARY DATE AND TIME (0FH)			-	-	-	-	-	O	-	-	-	-	-
COMPLEMENTARY CALLING LINE IDENTITY (10H)			O	C	O	O	-	O	C	O	-	-	O
CALLTYPE (11H)			O	O	-	-	M	-	C	M	M	-	M
	01H	Normal (voice) call	O/	O/	-	-	-	-	C/	-	-	-	-
	02H	CCBS or CCNR (ringback)	-	-	-	-	M	-	C/	-	-	-	-
	03H	Calling name delivery	-	O/	-	-	-	-	C/	-	-	-	-
	04H	Call Return	-	-	-	-	-	-	C/	M	-	-	-
	05H	Alarm call	-	-	-	-	-	-	C/	-	M	-	-
	06H	Download function	O/	O/	-	-	-	-	C/	-	-	-	-
	07H	Reverse charging Call	O/	O/	-	-	-	-	C/	-	-	-	-
	10H	External call (VPN)	O/	O/	-	-	-	-	C/	-	-	-	-

			CLIP/CLIR	CNIP/CNIR	AOC-D,E (note 2)	SMS	CCBS/CCNR (note 3)	MWI (note 1)	MSN, SUB,CT	CALL RETURN	ALARM CALL	USER PROCEDURE NOTIFICATION	MONITORING SERVICE
	11H	Internal call (VPN)	O/	O/	-	-	-	-	C/	-	-	-	-
	50H	Monitoring call Off	-	-	-	-	-	-	C/	-	-	-	M/
	51H	Monitoring call On	-	-	-	-	-	-	C/	-	-	-	M/
	81H	Message waiting	-	-	-	-	-	-	C/	-	-	-	-
FIRST CALLED LINE IDENTITY (12H)			O	C	-	-	-	-	C	O	-	-	O
NETWORK MESSAGE SYSTEM STATUS (13H)			-	-	-	-	-	O	C	-	-	-	-
	00H	No messages	-	-	-	-	-	O/	C/	-	-	-	-
	01H	One or unspecified number of messages	-	-	-	-	-	O/	C/	-	-	-	-
	02H-FFH	Number of messages	-	-	-	-	-	O/	C/	-	-	-	-
TYPE OF FORWARDED CALL (15H)			O	C	-	-	-	-	C	O	-	O	O
	00H	Unavailable or unknown type	O/	C/	-	-	-	-	C/	O/	-	O/	O/
	01H	On busy	O/	C/	-	-	-	-	C/	O/	-	O/	O/
	02H	On no reply	O/	C/	-	-	-	-	C/	O/	-	O/	O/
	03H	Unconditional	O/	C/	-	-	-	-	C/	O/	-	O/	O/
	04H	Deflected call after alerting	O/	C/	-	-	-	-	C/	O/	-	O/	O/
	05H	Deflected call immediate	O/	C/	-	-	-	-	C/	O/	-	O/	O/
	06H	On inability to reach mobile subscriber	O/	C/	-	-	-	-	C/	O/	-	O/	O/
TYPE OF CALLING USER (16H)			O	O	-	O	-	O	C	O	-	-	O
	00H	Origin unknown or unavailable	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	01H	Voice call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	02H	Text call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	03H	VPN	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	04H	Mobile phone	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	05H	Mobile phone + VPN	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	06H	Fax call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	07H	Video call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	08H	E-mail call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	09H	Operator call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	0AH	Ordinary calling subscriber	O/	O/	-	O/	-	O/	C/	O/	-	-	O/

			CLIP/CLIR	CNIP/CNIR	AOC-D,E (note 2)	SMS	CCBS/CCNR (note 3)	MWI (note 1)	MSN, SUB,CT	CALL RETURN	ALARM CALL	USER PROCEDURE NOTIFICATION	MONITORING SERVICE
	0BH	Calling subscriber with priority	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	0CH	Data call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	0DH	Test call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	0EH	Telemetric call	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
	0FH	Pay phone	O/	O/	-	O/	-	O/	C/	O/	-	-	O/
REDIRECTING NUMBER (1AH)			O	C	-	-	-	-	C	O	-	-	O
CHARGE (20H)			-	-	M	-	-	-	C	-	-	-	-
ADDITIONAL CHARGE (21H)			-	-	O	-	-	-	C	-	-	-	-
EXTRA CHARGE(22H)			-	-	O	-	-	-	C	-	-	-	-
DURATION OF THE CALL (23H)			-	-	O	-	-	-	C	-	-	-	-
NETWORK PROVIDER IDENTITY (30H)			O	O	O	O	O	O	O	O	O	O	O
CARRIER IDENTITY (31H)			-	-	O	-	O	-	-	-	-	-	-
SELECTION OF TERMINAL FUNCTION(40H)			C	C	C	C	C	C	M	C	C	C	C
	01H	Connection type	C/	C/	C	C/	-	-	M/	C/	-	-	C/
	02H	MSN	C/	C/	C	C/	C	C	M/	C/	C	C	C/
	03H	SUB	C/	C/	-	C/	-	-	M/	C/	-	-	C/
DISPLAY INFORMATION (50H)			O	O	O	M	O	O	O	O	O	O	O
SERVICE INFORMATION (55H)			-	-	-	O	-	-	-	-	-	M	-
	00H	Service not active	-	-	-	O/	-	-	-	-	-	M/	-
	01H	Service active	-	-	-	O/	-	-	-	-	-	M/	-
EXTENSION FOR NETWORK OPERATOR USE (E0H)			O	O	O	O	O	O	O	O	O	O	O

REMARKS

A: Applicable

C: When different compatible services are invoked at the same time, their relevant information should be transmitted in a unique message.

M: Mandatory

-: Not applicable

O: Optional

/: Either of (or is it one of)

NOTE 1: The LE should use the Message Waiting Indicator message type in data transmission not associated with ringing.

The same information can be transmitted to the TE using the Call Setup message in data transmission associated with ringing. In this context, the mandatory parameter is "Call Type" (parameter type: 11H) coded as "Message waiting call" (81H).
This message (Call Setup) can be completed by optional parameters.

NOTE 2: The parameter "Calling line ID" shall be used in case of reverse charging.

NOTE 3: As a network provider option the called line identity information might also additionally be sent in the "Calling Line Identity" parameter, to ensure the compatibility with some existing terminals.

Annex C (informative): International reference alphabet - Basic code table

Table C.1: 7-bit basic code table

				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
b_4	b_3	b_2	b_1		0	1	2	3	4	5	6	7
0	0	0	0	0			SP	0	③	P	④	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	②	k	②
1	1	0	0	12			,	<	L	②	l	②
1	1	0	1	13			-	=	M	②	m	②
1	1	1	0	14			.	>	N	②	n	②
1	1	1	1	15			/	?	O	_	o	DEL

NOTE: b_8, the most significant bit, is always 0.

②: These codes can be used for national characters.

③: This code should be used for "@" within an email-address.

④: This code should be used for the Euro-Sign "€".

Annex D (informative): Examples for charge parameter use

D.1 Example: Currency amount (23,45 FRF)

Octet number	Octet Binary code	Octet Hex-code	Content
1	0010 0000	20H	Charge
2	0000 1110	0EH	Parameter length (14)
3	0100 0110	46H	Currency: Character 1 "F"
4	0101 0010	52H	Currency: Character 2 "R"
5	0100 0110	46H	Currency: Character 3 "F"
6	XXX0 0000	00H	bit 1= 0: Normal charging bit 2 = 0: Total (AOC-E) bit 3 = 0: Normal charging bit 4 = 0: Charging information available bit 5 = 0: Currency amount
7	0011 0000	30H	Cost : Digit 1 "0" (most significant digit)
8	0011 0000	30H	Cost: Digit 2 "0"
9	0011 0000	30H	Cost: Digit 3 "0"
10	0011 0000	30H	Cost: Digit 4 "0"
11	0011 0000	30H	Cost: Digit 5 "0"
12	0011 0010	32H	Cost: Digit 6 "2"
13	0011 0011	33H	Cost: Digit 7 "3"
14	0010 1100	2CH	Cost: Digit 8 ","
15	0011 0100	34H	Cost: Digit 9 "4"
16	0011 0101	35H	Cost: Digit 10 "5" (least significant digit)

D.2 Example: only units (23) without price per unit

Octet number	Octet Binary code	Octet Hex-code	Content
1	0010 0000	20H	Charge
2	0000 1110	0EH	Parameter length (14)
3	0010 1101	2DH	Currency: Character 1 "-"
4	0010 1101	2DH	Currency: Character 2 "-"
5	0010 1101	2DH	Currency: Character 3 "-"
6	XXX1 0000	10H	bit 1= 0: Normal charging bit 2 = 0: Total (AOC-E) bit 3 = 0: Normal charging bit 4 = 0: Charging information available bit 5 = 1: Charged units or, charged units and price per unit
7	0011 0000	30H	Units: Digit 1 "0" (most significant digit)
8	0011 0000	30H	Units: Digit 2 "0"
9	0011 0000	30H	Units: Digit 3 "0"
10	0011 0000	30H	Units: Digit 4 "2"
11	0011 0010	32H	Units: Digit 5 "3" (least significant digit)
12	0010 1101	2DH	Price per units: Character 1 "-"
13	0010 1101	2DH	Price per units: Character 2 "-"
14	0010 1101	2DH	Price per units: Character 3 "-"
15	0010 1101	2DH	Price per units: Character 4 "-"
16	0010 1101	2DH	Price per units: Character 5 "-"

D.3 Example: units (78) with price per unit (0,12 DEM)

Octet number	Octet Binary code	Octet Hex-code	Content
1	0010 0000	20H	Charge
2	0000 1110	0EH	Parameter length (14)
3	0100 0100	44H	Currency: Character 1 "D"
4	0100 0101	45H	Currency: Character 2 "E"
5	0100 1101	4DH	Currency: Character 3 "M"
6	XXX1 0000	10H	bit 1= 0: Normal charging bit 2 = 0: Total (AOC-E) bit 3 = 0: Normal charging bit 4 = 0: Charging information available bit 5 = 1: Charged units or, charged units and price per unit
7	0011 0000	30H	Units: Digit 1 "0" (most significant digit)
8	0011 0000	30H	Units: Digit 2 "0"
9	0011 0000	30H	Units: Digit 3 "0"
10	0011 0111	37H	Units: Digit 4 "7"
11	0011 1000	38H	Units: Digit 5 "8" (least significant digit)
12	0011 0000	30H	Price per units: Digit 1 "0" (most significant digit)
13	0011 0000	30H	Price per units: Digit 2 "0"
14	0010 1100	2CH	Price per units: Digit 3 ","
15	0011 0001	31H	Price per units: Digit 4 "1"
16	0011 0010	32H	Price per units: Digit 5 "2" (least significant digit)

Bibliography

The following material, though not specifically referenced in the body of the present document (or not publicly available), gives supporting information.

- Bellcore GR-30-Core (1994): "LSSGR: Voiceband Data Transmission Interface". Section 6.6.

History

Document history			
V1.2.1	December 1999	One-step Approval Procedure	OAP 200017: 1999-12-29 to 2000-04-28