Short Message Service Centre
EMI - UCP Interface 4.6

Specification

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Preface

Purpose

This manual specifies the interface used between the SMSC System and other computer systems and applications. The interface is based on the ERMES Universal Computer Protocol (UCP) with SMSC-specific extensions.

Throughout this document, the interface is called 'EMI': External Machine Interface.

The interface that is described in this document has been implemented in an SMSC API built by LogicaCMG. Hereby, application programmers are able to build applications to communicate with a LogicaCMG SMSC in order to send and receive Short Messages to/from mobile stations.

Audience

All people involved in the design and implementation of applications on external computer systems that have to interact with the SMSC.

Organisation

This document is structured as follows:

- Chapter 1 contains the introduction to the EMI. It describes the position of the EMI between the SMSC components and the external machines.

- Chapter 2 shows the structure of EMI messages and provides examples of valid exchanges of operations between the SMSC and the applications.

- Chapter 3 defines the EMI operations, and describes briefly the expected actions from the SMSC and the Application upon reception of the operations.

- Chapter 4 shows the syntax of EMI operations.

- Chapter 5 shows the syntax of the 50-series of EMI operations.

- Chapter 6 shows the syntax of the 60-series of EMI operations.

- Chapter 7 shows the syntax of the legacy EMI operations.

- Chapter 8 summarises the error codes for the EMI operations.

- Chapter 9 lists the error messages and reason codes for Notifications.

- Chapter 10 lists the two GSM 7-bit alphabet tables and the GSM 7-bit alphabet and Unicode character mappings.

- Chapter 11 provides a typical protocol sequence example.

The External Machine Interface specification describes the features that can be used in the EMI operations. However, many features are subject to provisioning by the SMSC operator, i.e., did the operator grant you the rights to use these features in the EMI operations?

Typographic conventions

In this document, the typographic conventions listed in

Table P-1 are used.

Table P-1: Typographic conventions

Typeface or Symbol	Meaning/Used for	Example
Courier	Refers to a keyboard key, system command, label, button, filename, window, or other computer component or output.	The directory data contains… Click the Close button to…
\<courier\>	Serves as a placeholder for variable text that the user will replace as appropriate to its context.	Use the file name \<entity\>.cfg for...
[ ]	Refers the user to external documentation listed in the References section.	[3GPP 23.040]
italic	Emphasises a new word or term of significance.	apply a *style* to the...
-	Bridges two keystrokes that should be pressed simultaneously.	If Ctrl-C does not work, use Ctrl-Alt-Del.
☐	Denotes a "note", a piece of text alongside the normal text requiring extra attention.	☐ Note that the system is usually...

☐ This document contains the general specification of the external machine interface of the LogicaCMG's SMSC. Since the available functions depend on the specific SMSC implementation of the Mobile Telecommunication Operator, please contact your local operator for the available implemented SMSC functions and features.

1   Introduction

For submission and reception of Short Messages, the SMSC can interface with (among others):

- GSM/GPRS/UMTS/TDMA/CDMA Mobile Telephones (PLMN),

- Value Added Services applications,

- Voice Messaging systems,

- Unified Communications systems.

Throughout this document, the External Machine will be referred to as 'SMT'. This can of course be any application system.

In order to allow any service provider to develop dedicated applications, an interface was developed to access the SMSC functions. This manual specifies that interface.

1.1   Position of interface

Figure 1-1: EMI External View
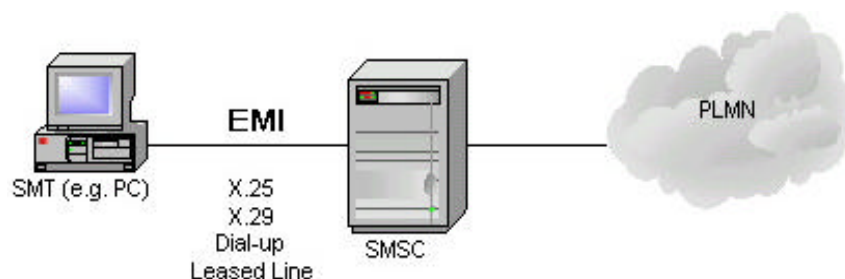
When viewed from the SMT side, the EMI provides access to the SMSC functions:

- Submission of Short Messages

- Reception of Short Messages

- Reception of Notifications related to submitted Short Messages

- Operate on submitted Short Messages: query, delete and modify.

The SMSC can be viewed as a black box: Short Messages are directed to the GSM mobile telephone of the recipient. The SMSC and the PLMN only function as relay mechanisms for those Messages. The only visible action of the SMSC apart from this is the provision of Notifications: upon request, the SMSC will notify the originator of the SM regarding the status of the SM.

The protocol operations are 7-bit text based, in human readable format. EMI can use the following lower level reliable and unreliable protocols as a carrier:

- TCP/IP v4

- X.25 (X.121 numbering plan)

- X.29 (X.121 numbering plan)

- ISDN (E.164 numbering plan)

- PSTN (E.164 numbering plan)

The set-up of the connection between the SMSC platform and the SMT depends on the carrier used. Once the connection is established, the EMI operations can be used. An SMT may establish multiple connections for fail over purposes or increased throughput. The SMSC operator may apply restrictions to the number of connections. The SMSC operator may require the SMT to authorize itself by starting with a session management operation with identification and password. An SMT may submit multiple messages without waiting for response to each message (windowing). The SMSC operator applies restrictions to the allowed window size.

Each side can send asynchronous operations, e.g., independent of each other. As an instance, the SMSC can deliver a Mobile Originated Message between receiving an operation from the SMT and sending the result operation to that response.

An SMSC operator may apply an inactivity timeout on the message transfer. The SMSC releases the connection after the timeout.

Figure 1-2: Protocol flow example
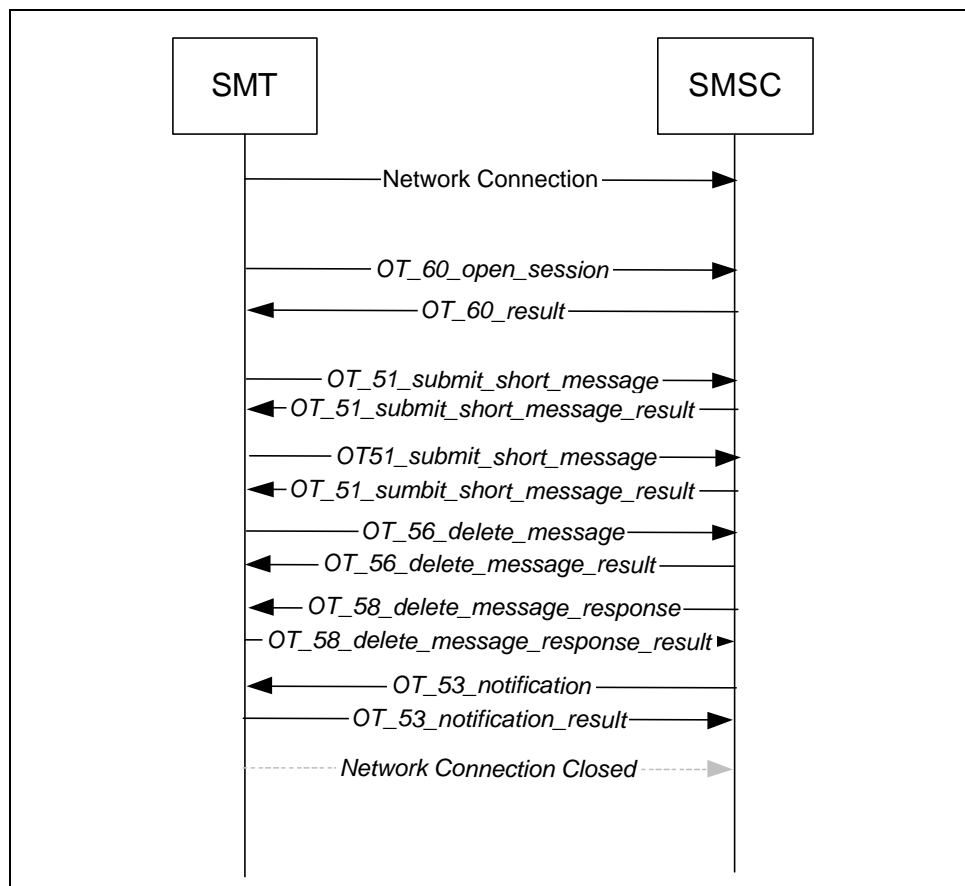
The SMT can be authenticated by the SMSC in the following ways:

- Based on the network provided address (Calling Line Identification)

- Based on SMT provided address and password registered on the SMSC

In this example, the SMT logs into the SMSC, using the operation type 60, subtype Open Session for authentication.

1.2 Interface history

The SMSC External Machine Interface (EMI) is based on an extended subset of the UCP protocol defined for the ERMES paging system in ETS 300 133-3. When referring to 'UCP' in the context of the SMSC, usually the EMI, the extended subset of the ERMES UCP is meant.

In the SMSC, the UCP protocol was chosen as the basis for the EMI because:

1. the first operators that used the SMSC required the UCP protocol to interact with external machines.

2. it allows service providers to use a single mechanism to interface with both ERMES based paging systems and the SMSC.

3. no re-invention of 'yet another' protocol had to take place.

In order to provide access to the more extensive set of SMS operations, it was necessary to extend the UCP definition with some additional, SMSC specific operations, such as 'SMS message transfer operation' and 'SMT alert operation'.

All new applications should only use the SMT alert operation, UCP5x and UCP6x operations. All other UCP operations are only referenced for existing applications and compatibility with previous SMSC releases.

2   Structure of EMI Operations

In the ERMES/UCP-based EMI protocol, the operation structure is as follows:

```
stx <header> / <data> / <checksum> etx
```

o stx = 02(hex)

o etx = 03(hex)

Please note that in the examples "stx", "etx" and "/", each represent only one character.

As a separator between header and data, between data and checksum, as well as between parameters, a "/" (2F(hex)) is used.

In parameters that contain a list, the items are separated by a "," (2C(hex)). Numeric characters (0..F) are encoded as in IRA. Alphanumeric characters are encoded as two numeric IRA characters; first the higher 3-bits (0..7), and then the lower 4-bits (0..F).

The <**header**> consists of the following four mandatory fields:

Table 2-1: Fields Operation Header

Parameter	Type	Description
TRN	2 num. char.	Transaction reference number, right justified with leading zero.
		Values 00-99
LEN	5 num. char.	Total number of IRA characters contained between stx and etx, right justified with leading zeros.
O/R	Char "O" or "R"	"O" indicates operation, "R" indicates result
OT	2 num. char.	Operation Type (see list in Chapter 3).

Errors in the operation <header> are not recognised by the SMSC.

The <**data**> fields depend on the Operation Type. For each Operation Type they are listed in the next chapters.

The <**checksum**> is derived by the addition of all bytes of the header, data field separators and data fields (i.e., all characters after the stx-character, up to and including the last "/" before the checksum field). The eight Least Significant Bits (LSB) of the result is then represented as two printable characters. The character containing four Most Significant Bits (MSB) (of those eight LSB) shall be transmitted first. For example, if the checksum is 3A(hex), the representation shall be the characters "3" (33(hex)) and "A" (41(hex)).

2.1 Character sets

EMI provides text support via two character sets: GSM 7-bit alphabet [3GPP 23.038] and Unicode (16-bit UCS2) [UCS2]. GSM 7-bit alphabet is specific for GSM mobile stations and

can be used for western-European languages. The GSM 7-bit alphabet largely overlaps with US-ASCII [ASCII]. One important difference, although there are more, is the value of the sign @. In US-ASCII, the character value is 40(hex); in GSM 7-bit alphabet, it is 00(hex). An SMSC operator might decide to provide an alternative character set for a specific language.

The Unicode character set allows texts in languages like Chinese, Thai and Hebrew, but occupies 2 bytes 16-bits) per character.

The GSM 7-bit alphabet tables are listed in 10 GSM 7-bit alphabet tables.

A character mapping of GSM 7-bit and Unicode 16-bit is listed in 3) GSM 7-bit – Unicode mapping.

In addition to text character sets, EMI supports the transfer of the 8-bit binary data.

2.2 Examples

Below, you will find examples of the operations and responses:

Table 2-2: Character set examples

Description	UCP string
The SMT sends a message to the SMSC with text "hello" in the GSM 7-bit alphabet. Note that "hello" in ASCII has the same encoding.	stx49/00078/O/51/0031612345678/55555///////////////3//68656C6C6F////////////0Detx
The SMSC sends a positive acknowledgement to indicate the message has been accepted (and stored). In the acknowledgement, the 'system message' parameter is used to indicate the recipient address 0031612345678 and timestamp 281102085030.	stx49/00046/R/51/A//0031612345678:281102085030/DFetx
The next example is the "hello" text in Unicode UCS2 together with a notification request.	stx99/00098/O/51/0031612345678/55555//1//7///////////4/80/00680065006C006C006F//////////020108///F0etx
Again, the SMSC sends a positive acknowledgement.	stx99/00046/R/51/A//0031612345678:281102084420/E6etx
The first delivery attempt is unsuccessful. The message is buffered, and the SMSC sends a buffered notification to the SMT.	stx00/00095/O/53/55555/0612345678////////////281102084420/1/107/281102084421/3//20////////////12etx
The SMT sends a positive acknowledgement back.	stx00/00038/R/53/A//55555:281102084442/46etx

Other examples are given in the description of the specific EMI operations. Please Note that the "stx" and "etx" in these examples are skipped.

3 EMI Operations

EMI operations can be initiated either from the SMT or from the SMSC. Each command will lead to an action on the other side, which will respond with a positive or negative acknowledgement with the same TRN value. Each side maintains its own TRN values.

3.1 SMT initiated operations

The following SMT initiated operations are available:

Table 3-1: SMT Initiated Operations

Command ID	Command Name	Purpose
31	SMT alert operation	Alert the SMSC to start delivering buffered messages immediately. This allows you to retrieve messages submitted to you without waiting for the scheduled next delivery attempt.
32	(Reserved)	
33	(Reserved)	
38	(Reserved)	
40	(Reserved)	
41	(Reserved)	
51	Submit_short_message	Submit a new message to someone.
54	Modify_message	Modify the message parameters of a buffered message.
55	Inquiry_message	Verify if a message is still in the SMSC.
56	Delete_message	Delete a buffered message if it is still in the SMSC.
60	Session management	Authenticate yourself after making the connection to the SMSC.
61	List management	Manage your own mobile originated and mobile terminated black lists or white lists.

The 'SMT alert operation' can be used by the application to alert the SMSC to send messages and notifications to the application. It can only be used when the application uses a connection that supports Calling Line Identification, such as X.25.

3.2 SMSC initiated operations

SMSC initiated operations (used to deliver Notifications or Mobile Originated Short Messages) are:

Table 3-2: SMSC Initiated Operations

Command ID	Command Name	Purpose
34	(Reserved)	
36	(Reserved)	
42	(Reserved)	
43	(Reserved)	
52	Deliver_short_message	The SMSC delivers a message that someone has sent to you.
53	Deliver_notification	Informs you of the delivery status of a message • Buffered: first delivery attempt failed, message scheduled for further attempts. • Delivered: the recipient has received the message. • Not delivered: message could not be delivered; No more attempts are being made.
57	Response_inquiry_message	Informs you of the outcome of the inquiry to a buffered message
58	Response_delete_message	Informs you of the outcome of the delete request for a buffered message

3.3 Legacy SMT initiated operations

All new applications should only use the SMT alert operation, UCP5x and UCP6x operations. All other UCP operations are only referenced for existing applications and compatibility with previous SMSC releases.

The following SMT initiated operations are available:

Table 3-3: Legacy SMT Initiated Operations

Command ID	Command Name
01	Call input operation
02	Multiple address call input operation
03	Call input with supplementary services operation
30	SMS message transfer operation

The definitions of operations '01', '02' and '03' are identical to the corresponding operations defined in [ETSI 03.00]

The 'Call input operation' is the normal means of submitting a Short Message. When the SMSC receives this command, it must send the message to the recipient address that is specified in the command.

The 'Multiple address call input operation' is used to address a number of recipients in one operation. The command contains a list of recipient addresses. The SMSC will send the same message to all addresses in this list.

The 'Call input with supplementary services operation' is used when a message is to be scheduled for deferred delivery.

The 'SMS message transfer operation' is used to submit a message when SMSC specific services are required, such as a notification request, a deferred delivery, or validity period.

3.4 Legacy SMSC initiated operations

SMSC initiated operations (used to deliver Notifications or Mobile Originated Short Messages) are:

Table 3-4: Legacy SMSC Initiated Operations

Command ID	Command Name
01	Call input operation

The SMSC uses the 'Call input operation' to transfer Notifications and Mobile Originated Short Messages to the Short Message Terminal (SMT). The initiative to do so lies either with the SMSC (Notifications on messages submitted in the current session) or with the SMT (the SMT has to issue an SMT alert command).

3.5 Flow control

The SMSC can support two types of flow control. The first type of flow control is a 'stop-and-wait' protocol, i.e., during the handling of operations, no other operations shall be sent before the response is received. A command sent before the reception of the response will be discarded.

The second type of flow control that can be supported by the SMSC is 'windowing' for increased throughput. In this case, a maximum of n operations can be sent before a response is received. The transaction number of the command (field TRN) will be used to determine if there is a command in the current 'window'.

The SMSC will discard a command if its transaction number is outside the current window (message n+1 in a window of n). The SMSC will give transaction numbers to the operations it sends as much as possible in a cyclic manner.

If the SMSC receives an invalid response on a command, the transaction number of that command can only be used again after the delivery operation has been cancelled due to a delivery time-out.

Windowing is only supported in combination with UCP5x series operations, and the windowing functionality has to be provisioned by the SMSC operator.

4 EMI Operations Syntax

This chapter shows the syntax of the data fields of the EMI operations. For the syntax of the complete messages, please refer to Chapter 2 Structure of EMI Operations. For each command also the format of the positive and negative responses is given, including the possible error codes. For convenience, all error codes are summarised in Chapter 8 Error Codes Overview. The order in which the operations are listed is:

1. General operations, used for normal SM transfer.

2. SMSC specific extensions, used to address SMS functions not foreseen in the UCP definition.

In the column marked 'Presence', "M" indicates that the field is Mandatory, "O" indicates that it is Optional, "C" indicates Conditional and "-" indicates Not Applicable.

4.1 Address syntax

Most addresses used in the EMI-messages are formatted according to E.164 numbering plan. The following syntax rules are valid:

- In case the national prefix is used in the network, the following syntax is seen as valid addresses:

```
<trunk-prefix><trunk-code><telephone-nr>

<international-prefix><country-code><trunk-code><telephone-nr>
```

- In case the national prefix is not used in the network, the following syntax is seen as valid addresses (in these situations, a valid telephone number will be recognised by its length):

```
<international-prefix><country-code><telephone-nr>

<telephone-nr>
```

For TCP/IP addresses, every byte expressed in decimal form should be left zero so that they all have a length of three characters. The TCP/IP port number shall be concatenated to the IP address. All dots (".") in the address shall be omitted.

Example:

IP address 192.87.25.9 with port number 5000 shall be filled in as 1920870250095000.

5 50-Series of EMI Operations

This chapter introduces the 50-series of operations. The following table defines these operations:

Table 5-1: 50-Series of Operations

EMI Operation	Name	Initiated by
51	Submit_short_message	SMT
52	Deliver_short_message	SMSC
53	Deliver_notification	SMSC
54	Modify_message	SMT
55	Inquiry_message	SMT
56	Delete_message	SMT
57	Response_inquiry_message	SMSC
58	Response_delete_message	SMSC

These messages have been introduced in order to provide more facilities to the SMSC users. If one of these operations is utilised during a session, it is assumed that the other (output) operations are supported as well. The SMSC initiated operations will always be those of the 50-series. Only in the cases mentioned in section 4.2, the SMSC will use the UCP01 operation.

5.1 Abstract Data Types

For a higher maintainability, a generic Abstract Data Type (ADT) is introduced for all operations described in this chapter. This means that all 50-series of EMI strings, including responses, shall contain all fields listed. In exception to this, depending on the value of 'MT', only one of the fields NMsg, AMsg or NB + TMsg shall be included. Fields not appropriate shall be left empty.

The following is a description of this generic ADT (where 'Num. string' indicates 'string of numeric char.'):

Table 5-2: Abstract Data Types 50-Series

Member	Length	Type	Meaning
AdC	16	Num. String	Address code recipient for the SM OadC 16 Num. String Address code originator
	22	Char string	If the OTOA field indicates alphanumeric OAdC. A 22-character string corresponds with a max. 11 character alphanumeric string.

Member	Length	Type	Meaning
AC	16	Num. string	Authentication code originator (min 4 char. max 16 char)
NRq	1	Num. char.	Notification Request
			0 = NAdC not used
			1 = NAdC used
NAdC	16	Num. string	Notification Address
NT	1	Num. char.	Notification Type[1]:
			Buffered message notification (BN),
			Delivery Notification (DN),
			Non-delivery notification (ND),
			0 default value, 1 = DN, 2 = ND, 3 = DN+ND, 4 = BN, 5 = BN+DN, 6 = BN+ND, 7 = all.
NPID	4	4 num. char.	Notification PID value:
			0100 Mobile Station
			0122 Fax Group 3
			0131 X.400
			0138 Menu over PSTN
			0139 PC appl. over PSTN (E.164)
			0339 PC appl. over X.25 (X.121)
			0439 PC appl. over ISDN (E.164)
			0539 PC appl. over TCP/IP
LRq	1	1 num. char.	Last Resort Address request:
			0 = LRAd not used
			1 = LRAd used
LRAd	16	Num. string	Last Resort Address

---

[1]) Compared to the GSM 03.39 specification the following differences can be noted:
    EMI implementation : As mentioned above;
    GSM Specification: 1=BN, 2=DN, 3=ND, 4=BN+DN, 5=BN+DN, 6=DN+ND, 7=all.

Member	Length	Type	Meaning
LPID	4	4 num. char.	LRAd PID value:
			0100 Mobile Station
			0122 Fax Group 3
			0131 X.400
			0138 Menu over PSTN
			0139 PC appl. over PSTN
			0339 PC appl. over X.25 (X121)
			0439 PC appl. over ISDN (E.164)
			0539 PC appl. over TCP/IP
DD	1	1 num. char	Deferred Delivery requested:
			0 = DDT not used
			1 = DDT used
DDT	10	10 num. char.	Deferred delivery time in DDMMYYHHmm
VP	10	10 num. char.	Validity period in DDMMYYHHmm
RPID	4	Num. string	Replace PID. Values according to TP-PID of [3GPP 23.040][2]: 0000-0255. Special values:
			0064 (Type 0, user not alerted)
			0065 … 0071 (Replace Type 1-7)
			0095 (Return Call Message)
			0125 (ME Data download)
			0126 (ME De-personalization)
			0127 (SIM Data Download)
SCTS	12	Num. string	Service Centre Time Stamp in DDMMYYHHmmss.
			For a Short Message this is the time stamp of the Short Message itself. For a Notification, this is the time stamp of the corresponding Short Message.
Dst	1	1 num. char.	Delivery status:
			0 = delivered
			1 = buffered (see Rsn)
			2 = not delivered (see Rsn)
Rsn	3	3 num. char.	Reason code, value '000'...'255'. Code can be found in an SMSC configuration file witch can be changed by the operator. (See appendix A)
DSCTS	12	Num. string	Delivery time stamp in DDMMYYHHmmss. Indicates the actual time of delivery of the Short Message.

---

[2] The SMSC operator may apply limitations.

Member	Length	Type	Meaning
MT	1	1 num. char.	Message Type. Associated parameters depend on the value of MT.
MT=2:			Numeric message.
NMsg	640	Num. string	
MT=3:			
AMsg	640	Char. string	Alphanumeric message encoded into IRA characters.
MT=4:			
NB	4	Num. char.	No. of bits in Transparent Data (TD) message.
TMsg	140[3]	Char. string	TD message encoded into IRA characters.
MMS	1	1 num. char.	More Messages to Send (to the same SME)
PR	1	1 char.	Priority Requested
DCs	1	1 num. char.	Deprecated. Data Coding scheme:
			0 = default alphabet
			1 = user defined data ('8 bit')
MCLs	1	1 num. char.	Message Class:
			0 = message class 0
			1 = message class 1
			2 = message class 2
			3 = message class 3
RPI	1	1 num. char.	Reply Path:
			1 = request
			2 = response
CPg	1	Num. string	(Reserved for Code Page)
RPLy	1	1 num. char.	(Reserved for Reply type)
OTOA	4	4 num. char.	Originator Type Of Address:
			1139 The OadC is set to NPI telephone and TON international.
			5039 The OAdC contains an alphanumeric address (see OAdC and below).
			Leave OTOA empty for a numeric address in the OAdC.
HPLMN	16	Num. string	Home PLMN Address. E.164 number of the originating MSC.

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[3] The length is 140 octets when the SMSC is used in a GSM environment and 160 octets when used in a TDMA/CDMA environment.

Member	Length	Type	Meaning
XSer	400	Num. string	Extra Services
			With the XSer field, one or more additional services can be specified. These services consist of IRA encoded data constructed in the following common format: TTLLDD…
			TT: represents two HEX characters defining the type of service. For a description of available services refer to section "Description Of XSer Extra Services"
			LL: represents two HEX characters defining the number of octets present in the data field DD. (Note that the number of *HEX characters* in the data DD is twice the number of *octets*)
			DD…: represents a stream of HEX characters defining the service specific data itself.
			If more than one additional service is to be specified in one message, this service information is concatenated without any separators, i.e.,
			$TT_1LL_1DD_1…DD_1TT_2LL_2DD_2..DD_2$
			The above construction is designed such that in the future additional service types can be added to the XSer field.
RES4	x	Num. string	(Reserved for future use)
RES5	x	Num. string	(Reserved for future use)

x = not specified yet

A generic ADT for the EMI response is defined as follows:

For a positive response:

Table 5-3: Generic ADT for EMI Positive Response

Member	Type
ACK	Positive acknowledgement
MVP	Modified Validity Period
SM	System Message

For a negative response:

Table 5-4: Generic ADT for EMI Negative Response

Member	Type
NAcK	Negative acknowledgement
EC	Error code
SM	System Message

5.1.1 How an application should pass an alphanumeric OadC

5.1.1.1   How to encode the alphanumeric OAdC

This paragraph describes how an alphanumeric OAdC should be sent. This wi ll be done using an example.

Suppose that the alphanumeric address is: ALPHA@NUM

In [3GPP 23.038] chapter "Default alphabet", the 7-bit codes can be derived from the table.

These codes are:

A	=	100 0001
L	=	100 1100
P	=	101 0000
H	=	100 1000
A	=	100 0001
@	=	000 0000
N	=	100 1110
U	=	101 0101
M	=	100 1101

The application packs the 7-bit characters in octets as defined in [3GPP 23.038] chapter "SMS Point-to-Point Packing". The result is:

b7	B6	b5	b4	b3	b2	b1	b0	Result
0	**1**	**0**	**0**	**0**	**0**	**0**	**1**	41
0	**0**	1	0	0	1	1	0	26
0	0	0	**1**	**0**	**1**	**0**	**0**	14
0	**0**	**0**	**1**	1	0	0	1	19
0	0	0	0	0	**1**	**0**	**0**	04
0	**0**	**1**	**1**	**1**	**0**	0	0	38
1	0	1	0	1	0	1	**1**	AB
0	**1**	**0**	**0**	**1**	**1**	**0**	**1**	4D

This results in the following hexadecimal values:

0x41 0x26 0x14 0x19 0x04 0x38 0xAB 0x4D

The application should add the number of useful semi-octets within the alphanumeric address in front of these values, according to [3GPP 23.040]. The length should be added in a byte (octet). In case of ALPHA@NUM, the number of useful semi-octets in the 7-bit encoded representation is 16 decimal (0x10 hexadecimal). This results in the following hexadecimal values:

0x10 0x41 0x26 0x14 0x19 0x04 0x38 0xAB 0x4D

Finally, this string should be converted to an ASCII string that can be used in the UCP message. Each nibble (4 bits) should be stored as ASCII character. The resulting ASCII string is:

10412614190438AB4D

This is the OAdC as it should be stored in a UCP message. The OTOA should be set to '5039' in the UCP message

Restrictions of the used IRA characters in an alphanumeric OAdC

There are no restrictions. All characters from the IRA alphabet can be used.

5.1.2 Description Of XSer Extra Services

The XSer field allows the specification of one or more additional services, all in the format TTLLDD…DD, where TT field specifies the type of service, LL indicates the length of data and DD indicates zero or more data elements. The following subsections specify the supported service types.

It is possible to combine various Services in the XSer field. The order of the various Services in the XSer field is not important. However, each Type of Service should not occur more than once since each repeated occurrence would overwrite the previously set values.

5.1.2.1   XSer Type of service 00, Not Used

This service type is reserved and should not be used.

5.1.2.2   XSer Type of service 01, GSM UDH information

With this service, type *GSM User Data Header information* can be specified. The data field DD of this service type contains the octets of the GSM User Data Header as specified in [3GPP 23.040]. (UDHL, IEIa, IEIDLa, IEDa, IEIb, …, IEIn, IEDLn, IEDn). Every UDH octet is encoded in two IRA hex characters, as usual in UCP. An example is given below.

The length of the *GSM UDH information,* related to the length of the Msg field content, is restricted to the maximum length of the GSM TP-UD field: 140 octets c.q. 160 septets. Depending on the MT field this is checked as follows:

- If MT = 2 or 3 then: The length of the UDH field (in octets), multiplied by 8/7, rounded up to the nearest integer value, plus the length of the NMsg/AMsg field (in octets) must not exceed 160 (septets).

- If MT = 4 then: The length of the UDH field (in octets) plus the length of the TMsg field (in octets) must not exceed 140 (octets).

There must be only one occurrence of *Type of service 01, GSM UDH information* in XSer.

Example encoding of XSer Type of service 01, GSM UDH information:

The GSM UDH information field consisting of the following two UDH information elements is to be encoded:

1. Concatenated Short Messages, Concatenated Short Message reference number = 64, Maximum number of Short Messages in the concatenated Short Message = 4, Sequence number of the current Short Message = 2

2. Application Port Addressing 8 bit address, destination port = 240, originator port = 250

TTLLDD.. encoding in IRA characters: 010A0900034004020402F0FA

This same TTLLDD... encoding annotated:

```
01 = TT, specifies XSer Type of service 01, GSM UDH information

0A = LL, specifies that DD part contains 10 octets

09 = DD, UDHL, Length of user data header = 9 octets

00 = DD, IEIa, Information-Element-Identifier a, Concatenated short
     messages

03 = DD, IEIDLa, Length of information element a = 3 octets

40 = DD, IEDa, Concatenated short message reference number = 64

04 = DD, IEDa, Max number of short messages in the concatenated
     message = 4

02 = DD, IEDa, Sequence number of the current short message = 2

04 = DD, IEIb, Information-Element-Identifier b, Application Port
     Addressing 8 bit

02 = DD, IEIDLb, Length of information element b = 2 octets

F0 = DD, IEDb, destination port = 240

FA = DD, IEDb, originator port = 250
```

5.1.2.3   XSer Type of service 02, GSM DCS information

The type of service always has a total length of 6 numeric characters. Therefore, the sequence TTLLDD is set to:

TT = 02

LL=01

DD=00..FF.

The meaning of the DCS values is explained in [3GPP 23.038].

Use the GSM DCS information field value 08 to send text in the Unicode character set [UCS2]. The MT field must be set to the value 4.

Use the GSM DCS information field to send 8-bit data coded Short Messages. The MT field must be set to the value 4. If the GSM DCS information field is not specified, MT=4 indicates an 8-bit coded Short Message and the MCLs (Message Class) must be specified.

Use the GSM DCS information field to send "Message Waiting Indication" updates to the mobile station.

Use the GSM DCS information field to send "Message Class Meaning". If the MCLs field is specified too, the GSM DCS information field overrules the MCLs field.

The use of the GSM DCS information field in the XSER field is limited to the UCP51, UCP52, UCP53 and UCP54 messages.

Example encoding of XSer Type of service 02, GSM DCS information:

020108, meaning that the DCS value 08 (0000 1000 binary) is used.

According to the [3GPP 23.038] specification, this means Unicode (UCS2).

5.1.2.4 XSer Types of Service 03-0B, CDMA/TDMA Information Exchange

This section introduces 9 Types of Service that can be defined in the Extra Services (Xser) field. These services offer support for the information exchange to TDMA and CDMA mobile stations.

The XSER Types of Services are only applicable for UCP51 and UCP52 operations. Other operations do not support this extension.

The next table shows which information elements can be accessed or retrieved, using the UCP protocol operations. The first column is the Type of Service in the TTLLDD sequence (some examples will follow). The second column describes the information element.

Table 5-5: Information Elements

Type of Service (hex)	Information Element	Mobile Network Technology
03	Message Type	CDMA, TDMA
04	Message Reference	CDMA, TDMA
05	Privacy Indicator	CDMA, TDMA
06	Urgency Indicator	CDMA, TDMA
07	Acknowledgement Request	CDMA, TDMA
08	Message Updating	TDMA
09	Call Back Number	CDMA, TDMA
0A	Response Code	CDMA, TDMA
0B	Teleservice ID	CDMA, TDMA

This section continues with a detailed description of these Types of Services. This section ends with an example showing the XSer field when some services are used simultaneously.

Type of Service 03: Message Type

This Service indicates the type of a message. It is only present in a delivery when the message involves an acknowledgement. It has exactly one data element (octet), which can have the following values:

Table 5-6: Message Type

Value (hex)	Meaning
00	Short Message *(Default)*
01	Delivery Acknowledgement message type (read receipt)
02	Manual Acknowledgement message type
03-FF	*Reserved, do not use*

The default value 00 may only be present for messages submitted via UCP. It shall not be set when delivering a message. If this Type of Service is absent from the XSer field, the default value indicating a normal Short Message is assumed.

An example of the Service 03 in the XSer field is the sequence **030102** (TTLLDD), which means a *Manual Acknowledgement* message type.

Type of Service 04: Message Reference

The Message Reference is an identifier for a Short Message. The end user can use it as a handle to refer to an earlier submitted message. The data element is 2-octets long and represents a 16-bit integer number (for TDMA only the lower 13-bits may be used). The first data element in the sequence contains the most significant bits. If this Service is absent, the default value 0 is assumed.

Table 5-7: Message Reference

Value (hex)	Meaning
0000 - 1FFF	Message Reference
2000 - FFFF	*Reserved, do not use*

For example, the sequence **0402020A** (TTLLDD) contains 522 as a Short Message identifier.

Type of Service 05: Privacy indicator

This Type of Service indicates the privacy level of the Short Message. The size of the data element is 1-octet, which can have the following values:

Table 5-8: Privacy Indicator

Value (hex)	Meaning
00	Not Restricted *(Default)*
01	Restricted
02	Confidential
03	Secret
04-FF	*Reserved, do not use*

 If the Privacy Indicator is not specified in the submitted message, the default value *Not Restricted* is assumed. The next example shows the XSer sequence (TTLLDD) indicating a Privacy Level of *Secret*: **050103**.

Type of Service 06: Urgency Indicator

This Type of Service indicates the priority of the Short Message to the end user. The size of this data element is 1-octet, which can have the following values:

Table 5-9: Urgency Indicator

Value (hex)	Meaning
00	Bulk
01	Normal *(Default)*
02	Urgent
03	Very Urgent
04-FF	*Reserved, do not use*

When the Urgency Indicator has a value of 02 or 03, the SMSC shall attempt to deliver the message with priority. This can also be realized by setting the UCP field *Priority Requested*. However, both ways are independent and do not affect each other.

An example of the Service 06 is the sequence **060102** (TTLLDD), which means: Urgency Indicator set to *Urgent*.

Type of Service 07: Acknowledgement Request

This service indicates whether the sender of the Short Message requests an Acknowledgement. This Type of Service is absent in a delivery when no acknowledgement is requested. The size of the data element is 1-octet, which can have the following values:

Table 5-10: Acknowledgement Request

Value (hex)	Meaning
00	No Acknowledgement requested *(Default)*
01	Delivery Acknowledgement requested (read receipt)
02	Manual Acknowledgement requested
03	Both delivery and Manual Acknowledgement requested
04-FF	*Reserved, do not use*

An example of a valid XSer entry is **070101** (TTLLDD), which means that the field Acknowledgement Request is set to request a *Delivery Acknowledgement*.

Type of Service 08: Message Updating

This Type of Service requests to replace a previously submitted message. It is only present when an update is requested. By default, a message is assumed a new message. The size of the data element is 1-octet, which can have the following values:

Table 5-11: Message Updating

Value (hex)	Meaning
00	New *(Default)*

01	Replace in SMSC and SME
02-FF	*Reserved, do not use*

For example, **080101** (TTLLDD) is a valid XSer entry with the meaning: Message Updating set, replace the corresponding message in both the SMSC and the SME, if applicable.

Type of Service 09: Call Back Number

This Service associates a Call Back Number information element with the Short Message. A Call Back Number information element consists of the call back number itself, Type of Number, Numbering Plan Identification, Presentation Indicator and Alpha Tag. See next table.

Table 5-12: Call Back Number

Description	Abbreviation	Mandatory (M) or Optional (O)	Comment
Call Back Number	CBN	M	
Call Back Type Of Number	CBN_TON	O	If not defined, TON is set to 'Unknown' as default.
Call Back Numbering Plan Identification	CBN_NPI	O	If not defined, NPI is set to 'ISDN/Telephony Numbering Plan' as default.
Call Back Number Presentation Indicator	CBNPI	O	If not defined zero is taken as default.
Call Back Number Alpha Tag	CBNAT	O	For future use.

The Call Back Number Type of Service data part, contains a (TTLLDD..DD) on itself (the TTLLD's are nested). The next table presents the nested tag codes, which should be used within the Call Back Number Type of Service.

Table 5-13: Call Back Number Nested Tag Codes

Abbreviation	Nested Tag Code	Length
CBN	01	1 to 16 octets.
CBN_TON	02	Optional, when defined always 1-octet of length.
CBN_NPI	03	Optional, when defined always 1-octet of length.
CBNPI	04	Optional, when defined always 1-octet of length.
CBNAT	05	Optional, length between 0 and 64 characters, IRA encoded.

For each of the optional parameters, the default is taken when not defined. The Call Back Number Type of Service can be used to associate multiple[4] Call Back Numbers information elements with the Short Message. To do this, define multiple 09 tags in the XSER field: for each Call Back Number information element, one tag. See the examples at the end of this section.

Each of the elements CBN, CBN_TON, CBN_NPI, CBNPI and CBNAT will now be described in details. The CBN consists of 1 to 16 digits IRA encoded. The CBN_TON and CBN_NPI elements are according to the TDMA specifications TIA/EIA-136-123-A.

The Call Back Number Presentation Indicator (CBNPI) controls the presentation and screening of the Call Back Number at the mobile station. The CBNPI is a bit field with the size of 1-octet. The bit field is arranged $b_7..b_0$, where b_7 means most significant bit. Bits b7..b4 are reserved and should always be set to zero. Bit 3 and 2 are the Provision bits. Bit 1 and 0 are the Presentation bits. The next tables show the different settings for the Provision and Presentation bits.

Table 5-14: Provision Bits

Provision bits ($b_3..b_2$)	Meaning
00	User provided, not screened
01	User provided, verified and passed
10	User provided, verified and failed
11	Network provided

Table 5-15: Presentation Bits

Presentation bits ($b_1..b_0$)	Meaning
00	Presentation Allowed
01	Presentation Restricted
10	Number not available
11	*Reserved, do not use.*

When submitting a Short Message, the value of the screening part should be set to 00 in order to prevent rejection of the message. The default value for the Presentation Indicator is 00, *i.e.*, the presentation is set to *Presentation Allowed* and the screening is set to *User provided, not screened*.

The CBNAT[5] is a string with a maximum length of 64 characters.

---

[4]   At this moment the SMSC accepts multiple definitions of Call Back Number information elements. However, only the first definition is really processed, others are ignored.
[5] At this moment the CBNAT string is accepted by the SMSC but <u>not</u> associated with the message. Instead an empty string is associated.

Consider the following example of the use of Type of Service 09 with a single Call Back Number:

Call back number 3456, default CBN_TON and CBN_NPI, CBNPI set to zero and CBNAT set to "Hello":

> 09100104333435360401000050B48656C6C6F

Consider the following example of the use of Type of service 09 with multiple Call Back Numbers:

First Call Back Number 3456, default CBN_TON and CBN_NPI, CBNPI set to zero and CBNAT set to "Hello World". Second Call Back Number 7777, default CBN_TON and CBN_NPI, CBNPI set to 01 and CBNAT not defined:

> 09100104333435360401000050B48656C6C6F090901043737373704 0101

Type of Service 0A: Response Code

The user may optionally set the Response Code in the Manual Acknowledgement Message. The meaning of the Response Code is specific for the Message Centre. The length of the data element is 1-octet.

Table 5-16: Response Code

Value (hex)	Description
00 – 0F	Response Code
10 – FF	*Reserved, do not use*

An example of a valid XSer entry is **0A010F** (TTLLDD), which means: Response Code, code set to 0F (hex).

Type of Service 0B: Teleservice Identifier

This Type of Service enables the user to select a specific teleservice for the message. The size of the Teleservice Identifier field is 1-octet and the value of this field should be according to the table below:

Table 5-17: Teleservice Identifier

Value (hex)	Description
00	Cellular Messaging Tele-service *(Default)*
01 – FF	*Reserved, do not use*

At present, the only valid occurrence of the Teleservice Identifier is the sequence **0B0100**.

Example: using multiple Types of Service together in XSer

An example of combining various Services in the XSer field is the following sequence: **03010206010204020A.** This sequence can be decomposed in three parts, namely **030102**, **060102** and **04020A**. These three parts are the individual examples shown before for the Services Message Type (03), Urgency Indicator (06) and Message Reference

(04). The explanations of the three parts can be found in the descriptions of the corresponding services.

5.1.2.5   XSer Type of service 0C: Billing Identifier

This type of service enables the SMT to send additional billing information to the SMSC [EMI-UCP-BILLID]. The Billing Identifier is only allowed in UCP51 and UCP54 messages sent by registered Large Accounts. All other UCP messages containing the Billing Identifier will be rejected.

The Billing Identifier data element is an alphanumeric field with a variable length of at least 0 and at most 20 characters. These characters need to be part of the Visible String character set as defined in *ITU-T*. Each character takes two hexadecimal positions. For information about the Billing Identifier Format see 11Appendix A.

5.1.2.6   XSer Type of service 0D: Single Shot indicator

This type of service indicates whether a Short Message is treated as Single Shot or not. Only Single Shot indications in UCP51 and UCP52 messages will be supported. The size of the data element is 1-octet, which can have the following values:

Table 5-18: Single Shot Identifier

Value (hex)	Description
00	non-Single Shot Short Message (*Default*)
01	Single Shot Short Message
02-FF	*Reserved, do not use*

5.1.2.7   XSer type of service 0E Originator TON

This Type of Service enables the user to provide the type of number for the OAdC. The size of the Originator TON field is 1-octet and the value of this field should be according to the table below:

Table 5-19: Originator / Recipient TON

Value (hex)	Description
00	TON Unknown
01	International number
02	National number
03	Network specific number
04	Short number
05	Alphanumeric number
06	Abbreviated number
07 -FF	*Reserved, do not use*

5.1.2.8　XSer type of service 0F Originator NPI

This Type of Service enables the user to provide the NPI for the AdC. The size of the Originator NPI field is 1-octet and the value of this field should be according to the table below:

Table 5-20: Originator / Recipient NPI

Value (hex)	Description
00	Unknown
01	Telephone numbering plan
03	Data numbering plan X25, X29
04	Telex numbering plan - ISDN
05	Private numbering plan - TCP/IP
06 -FF	*Reserved, do not use*

5.1.2.9　XSer type of service 10 Recipient TON

This Type of Service enables the user to provide the type of number for the AdC. The size of the Recipient TON field is 1-octet and the value of this field should be according to Table 5-19: Originator / Recipient TON:

5.1.2.10　XSer type of service 11 Recipient NPI

This Type of Service enables the user to provide the NPI for the AdC. The size of the Recipient NPI field is 1-octet and the value of this field should be according to Table 5-20: Originator / Recipient NPI

5.1.2.11　XSer Types of service 12 – FF, Reserved

These types are reserved for future use and should not be used.

5.2　Standard string

The advantage of using the generic ADT for all new EMI operations is, that one standard string can be used for all operations. The string is build according to the specifications in [ETSI 03.00]　as follows:

```
stx <header> / <data> / <checksum> etx
```

o stx = 02(hex)

o etx = 03(hex)

The string header is build up in the same way as is done in UCP.

The data field shall always contain **ALL fields** listed in the 5x series generic ADT. These fields are separated by "/". If a member of the ADT is not used in a specific message type, its place in the data string is empty, but the field separators will be present ("//").

For example, the data block for INQM (OAdC and AdC fields only) will look like:

../55/O/012345/0324///////////......

This format provides a high degree of flexibility as well as upwards compatibility to future EMI specifications.

This does also apply for the responses. For example, the positive response message contains the MVP field. This field is only used for the SUBS message positive response; in all other cases this field is left empty.

In the columns marked 'Presence' of the sections to follow, "M" indicates that the field is Mandatory, "O" indicates that the parameter is Optional and "-" indicates that the parameter will be empty.

5.3   Submit Short Message operation -51

This operation is used to submit a Short Message to the SMSC. The operation can be used for Short Messages with an alphanumeric or a binary message text field. In the latter case, the MT parameter shall be set to "4".

Table 5-21: Submit Short Message Operation

Member	Presence	Meaning
AdC	M	Address code recipient for the SM
OAdC	M	Address code originator
AC	O	Authentication code originator
NRq	O	Notification Request
NAdC	O	Notification Address
NT	O	Notification Type
NPID	O	Notification PID value
LRq	O	Last Resort Address request
LRAd	O	Last Resort Address
LPID	O	LRAD PID value
DD	O	Deferred Delivery requested
DDT	O	Deferred delivery time in DDMMYYHHmm
VP	O	Validity period in DDMMYYHHmm
RPID	O	Replace PID value
SCTS	-	Service Centre Time Stamp in DDMMYYHHmmss.
Dst	-	Delivery status
Rsn	-	Reason code
DSCTS	-	Delivery time stamp in DDMMYYHHmmss.
MT	M	Message Type.

Member	Presence	Meaning
MT=2:		
NB	-	No. of bits in Transparent Data (TD) message.
NMsg	O	Numeric message.
MT=3:		
NB	-	No. of bits in Transparent Data (TD) message.
AMsg	O	Alphanumeric message encoded into IRA characters.
MT=4:		
NB	C	No. of bits in Transparent Data (TD) message. This field is M (Mandatory) if the TMsg field is used.
TMsg	O	TD message encoded into IRA characters.
MMS	O	More Messages to Send (to the same SME)
PR	O	Priority Requested
DCs	-	Deprecated
MCLs	O	Message Class. Shall be supplied when MT=4 and Xser "GSM DCS information" is not supplied.
RPI	O	Reply Path
CPg	-	(reserved for Code Page)
RPLy	-	(reserved for Reply type)
OTOA	O	Originator Type Of Address
HPLMN	-	Home PLMN Address. E.164 number of the originating MSC.
XSer	O	Extra Services
RES4	-	
RES5	-	

- If the AC field is used, it should contain at least 4 numeric characters in every message, which are not all equal to zero, otherwise it shall be rejected.

- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters and NMsg is 160 digits.

- If NRq is used, and NAdC and NPID are both used, then this address will be used as notification address.

- If NRq is used, and NAdC and NPID, or both are left empty, then the notification is sent to the originator in the current session. If in this case :

  × the session is ended,

  × the originator is not known to the SMSC to have more than one address,

  × the originator is not a mobile user submitting messages via a UCP application (option 'Mobile Subscriber Access via Fixed Network')

  × and the notification has not yet been delivered,

  then the notification is deleted by the SMSC.

- If LRq is used, and LRAd and LPID are both used, then this address (user supplied) will be used as Last Resort address.

- If LRq is used, and LRAd, LPID, or both are left empty, then the Last Resort address is the current session. If in this case:

  × the session is ended,

  × the originator is not known to the SMSC to have more than one address,

  × and the Short Message has not yet been delivered,

then the Short Message is deleted by the SMSC.

- If LRq is empty, the contents of LRAd and LPID are ignored.

- If DD is used, then DDT is mandatory.

- The priority message field PR can only be used if the originator is subscribed to this service.

- If RPID value 0127 (SIM Data Download) is used, MT must be 4 and either MCLs must be 2 or Xser "GSM DCS information" must be 0xF6 otherwise the message is rejected. RPID value 0127 (SIM Data Download) is only supported for registered Large Accounts. Last resort addressing and Reply path functionality is not applicable to this type of message. The contents of LRq and RPI are ignored.

- If the MCLs field is also specified, the GSM DCS information field in the XSER field overrules the MCLs field.

- If the originator of the UCP51 message is not registered in the SMSC as being an LA and the Billing Identifier in the XSER field is used, then the UCP51 operation will be rejected with error code 04 "Operation not allowed".

Examples:

- Alphanumeric message 'Message 51' with validity period set and with notification request to a PC application over TCP/IP.

18/00113/O/51/012345/09876//1/1920870340125000/4/0539//////3012961212//////3//4D6573
73616765203531/////////////CD

- TD message with deferred delivery set and notification request within the session for all types of notification

39/00099/O/51/0657467/078769//1//7//1/0545765/0122/1/0808971800////////4/32/F5AA34DE//
//1/////////65

5.3.1 Submit Short Message operation (positive result)

The following table shows the parameters in the positive result data field:

Table 5-22: Parameter Positive Result Data Field Submit Short Message Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
MVP	String of char	O	Modified validity period
SM	String of char.	O	System message

The SM parameter contains the following three fields:

Table 5-23: Short Message Parameter Field Submit Short Message Operation

SM Parameter	Type	Description
AdC	String of num. char.	Address code recipient, maximum length is 16 digits.
SEP	char ":"	Separator
SCTS	String of 12 num. char.	Service Centre time-stamp DDMMYYhhmmss

Example:

- 00/00039/R/51/A//012234:090996101010/68

5.3.2 Submit Short Message operation (negative result)

The following table shows the parameters in the negative result data field:

Table 5-24: Parameter Negative Result Data Field Submit Short Message Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 00/00022/R/51/N/31//07

5.4 Delivery Short Message operation -52

This operation (DELS) is used to deliver a Short Message. The operation is initiated by the SMSC and answered by the SMT.

Table 5-25: Delivery Short Message Operation

Member	Presence	Meaning
AdC	M	Address code recipient for the SM
OAdC	M	Address code originator
AC	-	Authentication code originator
NRq	-	Notification Request
NAdC	-	Notification Address
NT	-	Notification Type
NPID	-	Notification PID value

Member	Presence	Meaning
LRq	-	Last Resort Address request
LRAd	-	Last Resort Address
LPID	-	LRAD PID value
DD	-	Deferred Delivery requested
DDT	-	Deferred delivery time in DDMMYYHHmm
VP	-	Validity period in DDMMYYHHmm
RPID	O	Replace PID value
SCTS	M	Service Centre Time Stamp in DDMMYYHHmmss.
Dst	-	Delivery status
Rsn	-	Reason code
DSCTS	-	Delivery time stamp in DDMMYYHHmmss.
MT	M	Message Type.
MT=2:		
NB	-	No. of bits in Transparent Data (TD) message.
NMsg	O	Numeric message.
MT=3:		
NB	-	No. of bits in Transparent Data (TD) message.
AMsg	O	Alphanumeric message encoded into IRA characters.
MT=4:		
NB	C	No. of bits in Transparent Data (TD) message. This field is M (Mandatory) if the TMsg field is used.
TMsg	O	TD message encoded into IRA characters.
MMS	O	More Messages to Send (to the same SME)
PR	-	(reserved for Priority Requested)
DCs	O	Deprecated. Applications must ignore this field and retrieve message-coding information from Xser "GSM DCS information".
MCLs	O	Message Class
RPI	O	Reply Path
CPg	-	(Reserved for Code Page)
RPLy	-	(Reserved for Reply type)
OTOA	-	Originator Type Of Address
HPLMN	O	Home PLMN Address. E.164 number of the originating MSC.
XSer	O	Extra Services.
RES4	-	
RES5	-	

- If the recipient of the UCP52 operation is registered in the SMSC as being an LA, the MSC ISDN address of the mobile originator is stored in the HPLMN field when the option HOMEPLMN_IN_UCP52 is active.

- If the recipient of the UCP52 operation is registered in the SMSC as being an LA, and the originator of the Short Message has made the message anonymous (Hide CLI), then the OAdC field contains the used SMSC address.

- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters and NMsg is 160 digits.

- Recipients of UCP52 operations with a UDH specified in the XSer field must be registered in the SMSC as LA's.

- If the MCLs field is also specified, the GSM DCS information field in the XSER overrules the MCLs field.

- If the Billing Identifier in the XSER field is used in a UCP52 operation, the Short Message will be rejected with error code 02 "Syntax error".

Example:

- Alphanumeric message 'Call you back later.' received from originator 07686745

00/00120/O/52/076523578/07686745////////////120396111055////3//43616C6C20796F752062
61636B206C617465722E///0//////////A3

5.4.1 Delivery Short Message operation (positive result)

The following table shows the parameters in the positive result data field:

Table 5-26: Parameter Positive Result Data Field Delivery Short Message Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
MVP	String of char	-	Modified validity period
SM	String of char.	O	System message

Example:

- 00/00039/R/52/A//076567:010196010101/6C

5.4.2 Delivery Short Message operation (negative result)

The following table shows the parameters in the negative result data field:

Table 5-27: Parameter Negative Result Data Field Delivery Short Message Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 00/00022/R/52/N/01//05

5.5 Delivery notification operation -53

This operation (DELN) is used to indicate the (changed) status of a previously submitted Short Message to the SMSC. The operation is initiated by the SMSC.

Table 5-28: Delivery Notification Operation

Member	Presence	Meaning
AdC	M	Address code recipient for the SM
OAdC	M	Address code originator
AC	-	Authentication code originator
NRq	-	Notification Request
NAdC	-	Notification Address
NT	-	Notification Type
NPID	-	Notification PID value
LRq	-	Last Resort Address request
LRAd	-	Last Resort Address
LPID	-	LRAD PID value
DD	-	Deferred Delivery requested
DDT	-	Deferred delivery time in DDMMYYHHmm
VP	-	Validity period in DDMMYYHHmm
RPID	O	Replace PID value. Present when the original SM's delivery acknowledgement contains a PID value.
SCTS	M	Service Centre Time Stamp in DDMMYYHHmmss. This is the time stamp of the corresponding Short Message.
Dst	M	Delivery status
Rsn	M	Reason code
DSCTS	M	Delivery time stamp in DDMMYYHHmmss. Indicates the time of (non-) delivery of the corresponding Short Message, or the time of creation of this notification.
MT	M	Message Type.
MT=2:		
NB	-	No. of bits in Transparent Data (TD) message.
NMsg	-	Numeric message.
MT=3:		
NB	-	No. of bits in Transparent Data (TD) message
AMsg	O	Alphanumeric message encoded into IRA characters.

Member	Presence	Meaning
MT=4:		
NB	C	No. of bits in Transparent Data (TD) message This field is M (Mandatory) if the TMsg field is used.
TMsg	O	TD message encoded into IRA characters.
MMS	O	More Messages to Send (to the same SME)
PR	-	(reserved for Priority Requested)
DCs	-	Deprecated
MCLs	-	Message Class
RPI	-	Reply Path
CPg	-	(reserved for Code Page)
RPLy	-	(reserved for Reply type)
OTOA	-	Originator Type of Address
HPLMN	O	Home PLMN Address. E.164 number of the originating MSC.
XSer	O	Extra Services
RES4	-	
RES5	-	

- If the recipient of the UCP53 operation is registered in the SMSC as being an LA, and the originator of the Short Message has made the message anonymous (Hide CLI), then the OAdC field contains the used SMSC address.

- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters and NMsg is 160 digits.

Example:

- Notification 'Message for 3155555, with identification 960109161057 has been buffered' received

00/00234/O/53/1299998/3155555/////////////090196161057/1/108/090196161105/3//4D65737
361676520666F722033313535353535352C2077697468206964656E74696669636174696F6
E20393630313039313631303537206861732062656E206275666665726564/////////////1F

5.5.1 Delivery Notification operation (positive result)

The following table shows the parameters in the positive result data field:

Table 5-29: Parameter Positive Result Data Field Delivery Notification Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
MVP	String of char	-	Modified validity period
SM	String of char.	O	System message

Example:

- 00/00032/R/53/A//020296020202/F2

5.5.2 Delivery Notification operation (negative result)

The following table shows the parameters in the negative result data field:

Table 5-30: Parameter Negative Result Data Field Delivery Notification Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 00/00022/R/53/N/02//07

5.6 Modify Short Message operation - 54

The operation requires option 014 on the SMSC.

This operation is used to modify a previously submitted Short Message, which is still buffered in the SMSC. The originally submitted has to be a UCP51 operation. The AdC field in combination with the SCTS field identifies the message to be modified. Extra security is provided by an optional check on the OAdC and the AC field.

The message that is buffered in the SMSC will be identified by the modify operation as the message to be modified, in the following cases.

1. Calling Line Identification (CLI) available: AdC, OAdC and SCTS should all match. If the AC field was used in the original submitted message, this must match as well. If the CLI address differs from the OAdC field, then the CLI address must match as well.

2. No Calling Line Identification available: AdC, OAdC, AC and SCTS of the original message and the modify operation should all match and all be filled in.

Furthermore, if the original message was submitted via a port on the SMSC that is associated with a Virtual SMSC (VSMSC), then the modify operation has to be sent via the same VSMSC. If the message is not found in the SMSC, a negative acknowledge is returned.

The above implies that the recipient address, originator address, authentication code and timestamp of a previously submitted message cannot be changed.

All other fields can be changed. If a field is left empty in the modify operation, it will leave the related field in the original submitted Short Message unchanged. Below the effect is described in more detail.

1. Notifications.

    × If Nrq is empty, no changes are made. The contents of NAdC, NPID and NT are ignored.

    × If Nrq is "0", the notification request is cancelled. The contents of NAdC, NPID and NT are ignored.

- × If Nrq is "1", then NAdC and NPID must be both either left empty or both used, otherwise a negative acknowledge is returned.

- × If Nrq is "1" and NAdC and NPID are left empty, then the notification is sent to the originator in the current session, if in this case:

  - × the session is ended,

  - × the originator is not known to the SMSC to have more than one address,

  - × the originator is not a mobile user submitting messages via a UCP application (option 'Mobile Subscriber Access via Fixed Network')

  - × and the notification has not been delivered

  then the notification is deleted by the SMSC.

- × NT can only be used if NRq is set to "1", otherwise the contents of this field is ignored.

2. Last resort

- × If LRq is "1", then a Last Resort Address is requested. LRAd and LPID are mandatory, otherwise a negative acknowledge is returned.

- × If LRq is empty, no changes are made. LRAd and LPID must be empty otherwise a negative acknowledge is returned.

- × If LRq is "0", the Last Resort Address request is cancelled. The contents of LRAd and LPID are ignored.

3. Deferred delivery time

- × DDT can only be set if the original message to be modified is already scheduled for deferred delivery, otherwise the contents of this field are ignored.

4. Validity period

- × VP should be larger than the current time (time when the UCP54 is received by the SMSC) and smaller than the maximum validity period of the SMSC, otherwise a negative acknowledge is returned.

- × VP should be larger than the deferred delivery time (if used), otherwise a negative acknowledge is returned.

5. Replace PID

- × If a RPID value (other than 0127 (SIM Data Download)) is used that is already in use by a buffered message for the same recipient, a negative acknowledge is returned.

- × If RPID contains an invalid value, then a negative acknowledge is returned.

- × If RPID value 0127 (SIM Data Download) is used: see section "Submit Short Message operation -51".

6. Message type

- × If MT is set to "4" (binary message), then the fields NB and TMsg should be filled in. Either the field MCLs should be supplied or the Xser "GSM DCS information" should be supplied. Otherwise, a negative acknowledge is returned.

7. Reply path

- × The field RPI can only be set to "1" (reply path request) or left empty, otherwise a negative acknowledge is returned. Note that a reply request cannot be cancelled.

8. Billing Identifier

- × If the Billing Identifier tag is not present in the Xser field, no changes are made to the Billing Identifier.

    × If the Billing Identifier tag is present, but the length of the data part is zero, then the Billing Identifier is cleared (all bytes put to zero).

    × If the Billing Identifier tag is present and the length of the data part is not zero, then the value of the Billing Identifier is changed.

Table 5-31: Modify Short Message Operation

Member	Presence	Meaning
AdC	M	Address code recipient for the SM to be modified
OadC	M	Address code originator of the SM to be modified
AC	O	Authentication code originator of the SM to be modified
NRq	O	Notification Request
NadC	O	Notification Address Code
NT	O	Notification Type
NPID	O	Notification PID value
LRq	O	Last Resort request
LRAd	O	Last Resort Address
LPID	O	LRAD PID value
DD	-	Deferred Delivery requested
DDT	O	Deferred delivery time in DDMMYYHHmm
VP	O	Validity period in DDMMYYHHmm
RPID	O	Replace PID value
SCTS	M	Service Centre Time Stamp that identifies the message in the SMSC that is to be modified, in DDMMYYHHmmss.
Dst	-	Delivery status
Rsn	-	Reason code
DSCTS	-	Delivery time stamp in DDMMYYHHmmss.
MT	O	Message Type.
MT=2:		
NB	-	No. of bits in Transparent Data (TD) message.
NMsg	O	Numeric message.
MT=3:		
NB	-	No. of bits in Transparent Data (TD) message.
AMsg	O	Alphanumeric message encoded into IRA characters.
MT=4:		
NB	M	No. of bits in Transparent Data (TD) message.
TMsg	O	TD message encoded into IRA characters.
MMS	-	More Messages to Send (to the same SME)
PR	-	(Reserved for Priority Requested)

Member	Presence	Meaning
DCs	-	Deprecated
MCLs	O	Message Class. See section "Submit Short Message operation -51".
RPI	O	reply Path
CPg	-	(reserved for Code Page)
RPLy	-	(reserved for Reply type)
OTOA	O	Originator Type Of Address
HPLMN	O	Home PLMN Address. E.164 number of the originating MSC.
XSer	O	Extra Services
RES4	-	
RES5	-	

- When the AC field is used, it should contain at least 4 numeric characters in every message, which are not all equal to zero, otherwise it shall be rejected.

- If a message is to be modified that was conditionally or unconditionally forwarded, a negative acknowledge is returned.

- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters and NMsg is 160 digits.

- A UCP 54 operation that requires modification of the message contents of a buffered message that contains a UDH is rejected by the SMSC.

- UCS2 as well as GSM Message Waiting Indications can be supplied in the GSM DCS information field in the UCP XSer field. Hereby, UCS2 messages can also be modified.

- If the GSM DCS information field is specified in the UCP XSer field, the UCP MCIs field is over-ruled and does not have to be supplied.

- If the stored message contains message content, the UCP54 message must have the same alphabet and compression or new message content must be supplied else the operation is rejected.

- GSM Message Waiting Indications can be modified only if no MT and NMsg, Amsg or TMsg is supplied and the alphabet and compression is the same as of the stored message.

- If the originator of the UCP51 message is not registered in the SMSC as being a Large Account (LA), and the Billing Identifier in the XSER field is used, then the UCP54 operation will be rejected with error code 04 "Operation not allowed".

Examples:

- Previously submitted message to recipient 012345 with timestamp 010197120501 is modified with a new (mobile) last resort address 0654321.

00/00087/O/54/012345/0111111//////1/0654321/0100/////010197120501////3///////////////4C

5.6.1 Modify Short Message operation (positive result)

The following table shows the parameters in the positive result data field:

Table 5-32: Parameter Positive Result Data Field Modify Short Message Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
MVP	String of char	O	Modified validity period
SM	String of char.	O	System message

The SM parameter contains the following three fields:

Table 5-33: Short Message Parameter Field Modify Short Message Operation

SM Parameter	Type	Description
AdC	String of num. char.	Address code recipient, maximum length is 16 digits.
SEP	char ":"	Separator
SCTS	String of 12 num. char.	Service Centre time-stamp DDMMYYhhmmss

Example:

- 00/00039/R/54/A//012345:020197120005/65

5.6.2 Modify Short Message Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 5-34: Parameter Negative Result Data Field Modify Short Message Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 00/00022/R/54/N/04//0A

5.7 Inquiry message operation -55

This operation is initiated by the SMT towards the SMSC to inquire about the status of a buffered message. As a result, the SMSC can initiate a Response Inquiry message operation.

Table 5-35: Inquiry Message Operation

Member	Presence	Meaning
AdC	M	Address code recipient for the SM
OAdC	M	Address code originator
AC	O	Authentication code originator
NRq	-	Notification Request
NAdC	-	Notification Address
NT	-	Notification Type
NPID	-	Notification PID value
LRq	-	Last Resort Address request
LRAd	-	Last Resort Address
LPID	-	LRAD PID value
DD	-	Deferred Delivery requested
DDT	-	Deferred delivery time in DDMMYYHHmm
VP	-	Validity period in DDMMYYHHmm
RPID	-	Replace PID value
SCTS	-	Service Centre Time Stamp in DDMMYYHHmmss.
Dst	-	Delivery status
Rsn	-	Reason code
DSCTS	-	Delivery time stamp in DDMMYYHHmmss.
MT	-	Message Type.
MT=2:		
NB	-	No. of bits in Transparent Data (TD) message.
NMsg	-	Numeric message.
MT=3:		
NB	-	No. of bits in Transparent Data (TD) message.
AMsg	-	Alphanumeric message encoded into IRA characters.
MT=4:		
NB	-	No. of bits in Transparent Data (TD) message.
TMsg	-	TD message encoded into IRA characters.
MMS	-	More Messages to Send (to the same SME)
PR	-	(Reserved for Priority Requested)
DCs	-	Deprecated
MCLs	-	Message Class
RPI	-	Reply Path
CPg	-	(Reserved for Code Page)

Member	Presence	Meaning
RPLy	-	(Reserved for Reply type)
OTOA	O	Originator Type Of Address
HPLMN	O	Home PLMN Address. E.164 number of the originating MSC.
XSer	-	
RES4	-	
RES5	-	

- When the AC field is used, it should contain at least 4 numeric characters in every message, which are not all equal to zero, otherwise it shall be rejected.

- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters and NMsg is 160 digits.

Example:

- Inquiry message on recipient 0786483 from originator 0786875676

65/00066/O/55/0786483/0786875676////////////////////////////7B

5.7.1 Inquiry Message Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 5-36: Parameter Positive Result Data Field Inquiry Message Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
MVP	String of char	-	Modified validity period
SM	String of char.	O	System message

Example:

- 00/00032/R/55/A//030395030303/F8

5.7.2 Inquiry Message Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 5-37: Parameter Negative Result Data Field Inquiry Message Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 09/00022/R/55/N/02//12

5.8 Response Inquiry Message Operation -57

This operation is initiated by the SMSC in response to an Inquiry message operation. If necessary, the SMSC will start a dial-back session.

Table 5-38: Response Inquiry Message Operation

Member	Presence	Meaning
AdC	M	Address code recipient for this operation
OAdC	-	Address code originator
AC	-	Authentication code originator
NRq	-	Notification Request
NAdC	-	Notification Address
NT	-	Notification Type
NPID	-	Notification PID value
LRq	-	Last Resort Address request
LRAd	-	Last Resort Address
LPID	-	LRAD PID value
DD	-	Deferred Delivery requested
DDT	-	Deferred delivery time in DDMMYYHHmm
VP	-	Validity period in DDMMYYHHmm
RPID	-	Replace PID value
SCTS	-	Service Centre Time Stamp in DDMMYYHHmmss.
Dst	-	Delivery status
Rsn	-	Reason code
DSCTS	-	Delivery time stamp in DDMMYYHHmmss.
MT	M	Message Type.
MT=2:		
NB	-	No. of bits in Transparent Data (TD) message.
NMsg	-	Numeric message.
MT=3:		
NB	-	No. of bits in Transparent Data (TD) message.
AMsg	O	Alphanumeric message encoded into IRA characters. It Contains the recipient address and the time stamps (format YYMMDDhhmmss) of the buffered Short Message(s), separated by spaces. Format: [TEXT1] <AdC> [TEXT2] {TIMESTAMP}
MT=4:		
NB	-	No. of bits in Transparent Data (TD) message.

Member	Presence	Meaning
TMsg	-	TD message encoded into IRA characters.
MMS	-	More Messages to Send (to the same SME)
PR	-	(Reserved for Priority Requested)
DCs	-	Deprecated
MCLs	-	Message Class
RPI	-	Reply Path
CPg	-	(Reserved for Code Page)
RPLy	-	(Reserved for Reply type)
OTOA	-	Originator Type Of Address
HPLMN	O	Home PLMN Address. E.164 number of the originating MSC.
XSer	-	
RES4	-	
RES5	-	

- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters and NMsg is 160 digits.

Example:

- There are no messages for 0666666 waiting to be send

17/00098/O/57/55555///////////////////3//44657374696E6174696F6E3A203036363636363620/1/
///////////37

5.8.1 Response Inquiry Message Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 5-39: Parameter Positive Result Data Field Response Inquiry Message Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
MVP	String of char	-	Modified validity period
SM	String of char.	O	System message

Example:

- 00/00020/R/57/A///9A

5.8.2 Response Inquiry Message Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 5-40: Parameter Negative Result Data Field Response Inquiry Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 47/00022/R/57/N/02//16

5.9 Delete Message Operation -56

This operation is initiated by the SMT to delete one or more buffered Short Messages.

Table 5-41: Delete Message Operation

Member	Presence	Meaning
AdC	M	Address code recipient for the SM
OAdC	M	Address code originator
AC	O	Authentication code originator
NRq	-	Notification Request
NAdC	-	Notification Address
NT	-	Notification Type
NPID	-	Notification PID value
LRq	-	Last Resort Address request
LRAd	-	Last Resort Address
LPID	-	LRAD PID value
DD	-	Deferred Delivery requested
DDT	-	Deferred delivery time in DDMMYYHHmm
VP	-	Validity period in DDMMYYHHmm
RPID	-	Replace PID value
SCTS	-	Service Centre Time Stamp in DDMMYYHHmmss.
Dst	-	Delivery status
Rsn	-	Reason code
DSCTS	-	Delivery time stamp in DDMMYYHHmmss.
MT	M	Message Type.
MT=2:		
NB	-	No. of bits in Transparent Data (TD) message.

Member	Presence	Meaning
NMsg	-	Numeric message.
MT=3:		
NB	-	No. of bits in Transparent Data (TD) message.
AMsg	O	Alphanumeric message encoded into IRA characters. Contains the time stamps (format YYMMDDhhmmss) of the buffered Short Message(s), separated by spaces. Format: TIMESTAMP {TIMESTAMP}
MT=4:		
NB	-	No. of bits in Transparent Data (TD) message.
TMsg	-	TD message encoded into IRA characters.
MMS	-	More Messages to Send (to the same SME)
PR	-	(Reserved for Priority Requested)
DCs	-	Deprecated
MCLs	-	Message Class
RPI	-	Reply Path
CPg	-	(Reserved for Code Page)
RPLy	-	(Reserved for Reply type)
OTOA	O	Originator Type Of Address
HPLMN	O	Home PLMN Address. E.164 number of the originating MSC.
XSer	-	
RES4	-	
RES5	-	

- When the AC field is used, it should contain at least 4 numeric characters in every message that are not all equal to zero, otherwise it shall be rejected.

- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters and NMsg is 160 digits.

Example:

- Delete messages with timestamps '960901113944 960808122222' for recipient 0546546 from originator 08456556

12/00115/O/56/0546546/08456556//////////////3//39363039303131313339343420393630383 038313232323232////////////2A

5.9.1 Delete Message Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 5-42: Parameter Positive Result Data Field Delete Message Operation

Parameter	Type	Presence	Description

ACK	Char "A"	M	Positive acknowledgement	
MVP	String of char	-	Modified validity period	
SM	String of char.	O	System message	

Example:

• 10/00032/R/56/A//040497161604/07

5.9.2 Delete Message Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 5-43: Parameter Negative Result Data Field Delete Message Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

• 00/00022/R/56/N/01//09

5.10 Response Delete Message Operation -58

This operation is initiated by the SMSC to indicate which Short Messages have been deleted successfully.

Table 5-44: Response Delete Message Operation

Member	Presence	Meaning
AdC	M	Address code recipient for this operation
OAdC	-	Address code originator
AC	-	Authentication code originator
NRq	-	Notification Request
NAdC	-	Notification Address
NT	-	Notification Type
NPID	-	Notification PID value
LRq	-	Last Resort Address request
LRAd	-	Last Resort Address
LPID	-	LRAD PID value
DD	-	Deferred Delivery requested
DDT	-	Deferred delivery time in DDMMYYHHmm

Member	Presence	Meaning
VP	-	Validity period in DDMMYYHHmm
RPID	-	Replace PID value
SCTS	-	Service Centre Time Stamp in DDMMYYHHmmss.
Dst	-	Delivery status
Rsn	-	Reason code
DSCTS	-	Delivery time stamp in DDMMYYHHmmss.
MT	M	Message Type.
MT=2:		
NB	-	No. of bits in Transparent Data (TD) message.
NMsg	-	Numeric message.
MT=3:		
NB	-	No. of bits in Transparent Data (TD) message.
AMsg	O	Alphanumeric message encoded into IRA characters. Contains the recipient address and the time stamps (format YYMMDDhhmmss) of the deleted Short Message(s), separated by spaces. Format: [TEXT3] <AdC> [TEXT4] {TIMESTAMP} [TEXT5]
MT=4:		
NB	-	No. of bits in Transparent Data (TD) message.
TMsg	-	TD message encoded into IRA characters.
MMS	O	More Messages to Send (to the same SME)
PR	-	(Reserved for Priority Requested)
DCs	-	Deprecated
MCLs	-	Message Class
RPI	-	Reply Path
CPg	-	(Reserved for Code Page)
RPLy	-	(Reserved for Reply type)
OTOA	-	Originator Type Of Address
HPLMN	O	Home PLMN Address. E.164 number of the originating MSC.
XSer	-	
RES4	-	
RES5	-	

- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters and NMsg is 160 digits.

Example:

- Message for 0666666 with timestamp 960110091043 has been deleted

22/00188/O/58/55555/////////////////3//44657374696E6174696F6E20303636363636206964656E74696669636174696F6E3A20393630313130303931303433320686173206265656E2064656C657465642E2F1/////////////FF

5.10.1 Response Delete Message Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 5-45: Parameter Positive Result Data Field Response Delete Message Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
MVP	String of char	-	Modified validity period
SM	String of char.	O	System message

Example:

- 00/00029/R/58/A//064564565/7D

5.10.2 Response Delete Message Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 5-46: Parameter Negative Result Data Field Response Inquiry Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 00/00027/R/58/N/02/07567/1A

6 60-Series of EMI Operations

This chapter introduces the 60-series of operations. The 60-series are used in combination with registered SMTs. The following table defines these operations:

Table 6-1: 60-Series of EMI Messages

EMI Operation	Name	Initiated by
60	Session Management	SMT
61	List Management	SMT

6.1 Abstract Data Types

For a higher maintainability, a generic Abstract Data Type (ADT) is introduced for all operations described in this chapter. This means that all 60-series of EMI strings, including responses, shall contain all fields listed, fields not appropriate shall be left empty.

The following table is a description of this generic ADT (where 'Num. string' indicates 'string of numeric char.'):

Table 6-2: Abstract Data Types 60-Series

Member	Length	Type	Meaning
OAdC	16	Num. String	Address code originator
OTON	1	Num. Char.	Originator Type of Number
ONPI	1	Num. Char.	Originator Numbering Plan Id
STYP	1	Num. Char.	Subtype of operation
PWD	16	Char. String	Current password encoded into IRA characters
NPWD	16	Char. String	New password encoded into IRA characters
VERS	4	Num. String	Version number
LAdC	16	Num. String	Address for VSMSC list operation
LTON	1	Char. String	Type of Number list address
LNPI	1	Char. String	Numbering Plan Id list address
OPID	2	Num. String	Originator Protocol Identifier
RES1	x	Num. String	(Reserved for future use)

A generic ADT for the EMI response is defined as follows:

For a positive response:

Table 6-3: Generic ADT for EMI Positive Response

Member	Type
ACK	Positive acknowledgement
SM	System Message

For a negative response:

Table 6-4: Generic ADT for EMI Negative Response

Member	Type
NAcK	Negative acknowledgement
EC	Error code
SM	System Message

6.2 Standard String

The advantage of using the generic ADT for all new EMI operations is, that one standard string can be used for all operations. The string is build according to the specifications in [ETSI 03.00] as follows:

```
stx <header> / <data> / <checksum> etx
```

o stx = 02(hex)

o etx = 03(hex)

The string header is build up in the same way as is done in UCP.

The data field shall always contain **ALL fields** listed in the 6x series generic ADT. These fields are separated by "/". If a member of the ADT is not used in a specific message type, its place in the data string is empty, but the field separators will be present ("//").

This format provides a high degree of flexibility as well as upwards compatibility to future EMI specifications.

In the columns marked 'Presence' of the sections to follow, "M" indicates that the field is Mandatory, "O" indicates that the parameter is Optional and "-" indicates that the parameter shall be empty.

6.3 Session Management Operation -60

This operation provides the facility to open a session, and to modify the submit and provisioning passwords.

Table 6-5: Session Management Operation

Member	Presence	Meaning
OAdC	M	Any valid X.121, E.164, TCP/IP or abbreviated address, excluding prefixes

OTON	O	Originator Type of Number:	
		1 = International number (starts with the country code)	
		2 = National number (default value if omitted)	
		6 = Abbreviated number (registered LA identification)	
ONPI	O	Originator Numbering Plan Id:	
		1 = E.164 address (default value if omitted)	
		3 = X121 address	
		5 = SMSC specific: Private (TCP/IP address/abbreviated number)	
STYP	M	Subtype of operation:	
		1 = open session	
		2 = reserved	
		3 = change password	
		4 = open provisioning session	
		5 = reserved	
		6 = change provisioning password	
PWD	M	Current password encoded into IRA characters	
NPWD	O	New password encoded into IRA characters	
VERS	M	Version number '0100'	
LAdC	-	Address for VSMSC list operation	
LTON	-	Type of Number list address	
LNPI	-	Numbering Plan Id list address	
OPID	O	Originator Protocol Identifier:	
		00 = Mobile station	
		39 = PC application	
RES1	-		

- If ISDN is used as access method to the SMSC, then the ONPI field should remain empty.

- In case STYP=4 or STYP=6 (provisioning), the physical address from which the connection is set up (CLI-address) is **not checked**. That is, the connection may be set up from any address.

- The session setup is refused by the SMSC when:

  × the physical address is to be screened **and** STYP=1 or STYP=3 **and** the CLI-address (connect address) is not registered in the SMSC,

  × the OAdC contains an address or abbreviated Short Number that is not a registered LA,

  × the supplied password does not match.

Example:

- 02/00059/O/60/07656765/2/1/1/50617373776F7264//0100//////61

6.3.1 Session Management Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 6-6: Parameter Positive Result Data Field Session Management Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
SM	String of char.	O	System message

Example:

- 00/00019/R/60/A//6D

6.3.2 Session Management Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 6-7: Parameter Negative Result Data Field Session Management Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 00/00022/R/60/N/01//04

6.4 Provisioning Actions Operation -61

With this operation, items can be verified, added or removed from the mobile originated and mobile terminated lists.

Table 6-8: Provisioning Actions Operation

Member	Presence	Meaning
OAdC	M	Any valid X.121, E164, TCP/IP or abbreviated address, excluding prefixes
OTON	O	Originator Type of Number:
		1 = International number (starts with the country code)
		2 = National number (default value if omitted)
		6 = Abbreviated number (Short Number alias)

Member	Presence	Meaning
ONPI	O	Originator Numbering Plan Id:
		1 = E.164 address (default value if omitted)
		3 = X121 address
		5 = SMSC specific: Private (TCP/IP address/abbreviated number address)
STYP	M	Subtype of operation:
		1 = add item to mo-list
		2 = remove item from mo-list
		3 = verify item mo-list
		4 = add item to mt-list
		5 = remove item from mt-list
		6 = verify item mt-list
PWD	-	Current password encoded into IRA characters
NPWD	-	New password encoded into IRA characters
VERS	M	Version number '0100'
LAdC	M	Address to be 'filled in', 'removed from' or 'checked in' a VSMSC list, containing a valid X.121, E.164 or TCP/IP address excluding prefixes
LTON	O	Type of Number list address:
		1 = International number (starts with the country code)
		2 = National number (default value if omitted)
LNPI	O	Numbering Plan Id list address:
		1 = E.164 address (default value if omitted)
		3 = X121 address
		5 = TCP/IP address
RES1	-	
RES2	-	

Example:

- 00/00058/O/61/04568768///2///0100/1920870340094000//5///06

6.4.1 Provisioning Actions Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 6-9: Parameter Positive Result Data Field Provisioning Actions Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement

SM	String of char.	O	System message

Example:

- 00/00019/R/61/A//6E

6.4.2 Provisioning Actions Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 6-10: Parameter Negative Result Data Field Provisioning Actions Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

Example:

- 00/00022/R/61/N/02//06 SMT Alert Operation

6.5 SMT Alert Operation -31

This operation can be used by an SMT to alert the SC to start delivering pending messages. The following table shows the parameters in the operation data field:

Table 6-11: Parameter Operation Data Field SMT Alert Operation

Parameter	Type	Presence	Description
AdC	String of num. char.	M	Address code for the SMT, maximum length is 16 digits.
PID	4 num. char.	M	SMT PID value: 0100 Mobile Station 0122 Fax Group 3 0131 X.400 0138 Menu over PSTN 0139 PC appl. via PSTN 0339 PC appl. via X.25 0439 PC appl. via ISDN 0539 PC appl. via TCP/IP 0639…..PC appl. via abbreviated number

PID value 0639 can only be used to alert for the own (originator) address and if the abbreviated number is the OAdC of the corresponding 60 operation 'open session'.

Example:

- Alert requested on PSTN number 0234765439845

02/00035/O/31/0234765439845/0139/A0

6.5.1 SMT Alert Ooperation (positive result)

The following table shows the parameters in the positive result data field:

Table 6-12: Parameter Positive Result Data Field SMT Alert Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
SM	String of char.	O	System message

If used, the positive SMT Alert Operation result text SM parameter will contain the number of messages waiting in the SC destined for the subscriber the alert was generated for. The number consists of four digits and contains leading zeros. When the number of messages waiting in the SC is more than 9,999, then 9999 will be returned as the number of messages waiting. In case the alert address is a Multiple Address LA, the number of messages waiting is always returned as '0000', independent of the actual number of waiting messages.

Example:

- 04/00024/R/31/A/0003/5D

6.5.2 SMT Alert Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 6-13: Parameter Negative Result Data Field SMT Alert Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

The following error codes can be returned in the operation negative result:

01	Checksum error
02	Syntax error
04	Operation not allowed (at this point in time)
05	Call barring active
06	AdC invalid
07	Authentication failure
08	Legitimisation code for all calls, failure
24	Message too long
26	Message type not valid for the pager type

Example:

7   00/00022/R/31/N/06//07

7   Legacy Operations Syntax

7.1 Call Input Operation -01

This operation can be used by the SMT to submit a message to the SMSC. This operation is also used by the SMSC to deliver Short Messages and Notifications to an SMT user in the following cases:

- The SMSC operator provides the UCP behaviour of previous SMSC releases, i.e., the UCP01 operation is used to deliver a Mobile Originated Short Message (MO-SM), when the MO-SM functionality does not require the UCP50 series operations, or the UCP01 is used to deliver a notification to the SMT because of an SMT initiated UCP30 operation.

- The SMSC operator provides the default UCP behaviour of the current SMSC release. I.e., a UCP01 is used for a MO-SM or notification for a UCP30 operation, when a UCP50 series operation is negatively acknowledged by the application with Error Code 03 (Operation not supported on system) and the functionality of the UCP01 operation is sufficient to do the requested operation.

The following table shows the parameters in the operation data field:

Table 7-1: Parameters Operation Data Field Call Input Operation

Parameter	Type	Presence	Description
AdC	String of num. char.	M	Address code recipient, maximum length is 16 digits.
OAdC	String of num. char	O	Address code originator, maximum length is 16 digits.
AC	String of char.	O	Authentication code originator.
MT	1 num. char.	M	Message type. Associated parameters depend on the value of the message type.
MT=2: NMsg	String of num. char.	O	Numeric message, maximum length is 160 digits.
MT=3: AMsg	String of char.	O	Alphanumeric message encoded into IRA characters, maximum length is representing 640 characters.

- The AC parameter is discarded if present.

- If the option 'Long Message' is not enabled on the SMSC, the maximum length of AMsg represents 160 characters.

Examples:

- Alphanumeric message 'Short Message'

00/00070/O/01/01234567890/09876543210//3/53686F7274204D657373616765/D9

- Numeric message '716436383334'

00/00041/O/01/0888444///2/716436383334/C5

7.1.1 Call Input Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 7-2: Parameter Positive Result Data Field Call Input Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
SM	String of char.	O	System message

The SM parameter contains the following three fields:

Table 7-3: Short Message Parameter Field Call Input Operation

SM Parameter	Type	Description
AdC	String of num. char.	Address code recipient, maximum length is 16 digits.
SEP	char ":"	Separator
SCTS	String of 12 num. char.	Service Centre time-stamp DDMMYYhhmmss

When the SMSC initiates this operation, the contents of the SM parameter will be discarded.

Example:

- 06/00043/R/01/A/01234567890:090196103258/4E

7.1.2 Call Input Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 7-4: Parameter Negative Result Data Field Call Input Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

The following error codes can be returned in the operation negative result:

01	Checksum error
02	Syntax error
03	Operation not supported by system
04	Operation not allowed (at this point in time)

05	Call barring active
06	AdC invalid
07	Authentication failure
08	Legitimisation code for all calls, failure
24	Message too long
23	Message type not supported by system
26	Message type not valid for the pager type

Example:

- 12/00022/R/01/N/02//03

7.2 Multiple address call input operation -02

This message can be used by the SMT to submit a message to the SMSC. With this operation, a list of recipients of the message may be specified, thus reducing the traffic between the SMSC and the SMT.

The following table shows the parameters in the operation data field:

Table 7-5: Parameters Operation Data Field Multiple Address Call Input Operation

Parameter	Type	Presence	Description
NPL	String of num. char	M	Number of parameters in the following RAd:s list
RAd:s	String of num. char.	M	List of parameters: Each parameter consists of AdC Address code recipient; maximum length is 16 digits with optional legitimisation code for all calls.
OAdC	String of num. char.	O	Address code originator, maximum length is 16 digits.
AC	String of char	O	Authentication code originator.
MT	1 numeric char.	M	Message type. Associated parameters depend on the value of the message type.
MT=2:			
NMsg	String of num. char.	O	Numeric message, maximum length is 160 digits.
MT=3:			
AMsg	String of char.	O	Alphanumeric message encoded into IRA characters, maximum length is representing 640 characters.

- Currently, the SMSC does not support the Multiple Call Input Operation for LA's in combination with throughput regulation.

- The SMSC does not support the Multiple Call Input Operation for Multiple Address LA's.

- The NPL parameter must range from 1 to 20, thus limiting the length of the RAd:s list to 20. An IW also contains the DEST_MAX parameter. The NPL must also have a value less than or equal to this parameter.

- The RAd:s is a list of NPL RAd fields. A RAd field contains an address and optionally a legitimisation code. If the legitimisation code is present, it is separated from the address by a comma ",". If the legitimisation code is not present, the comma may be omitted. If present, the legitimisation code is discarded by the IW.

- If the option 'Long Message' is not enabled on the SMSC, the maximum length of AMsg represents 160 characters.

- The AC parameter is discarded if present.

Examples:

- Alphanumeric message 'SMSC' to 3 subscribers

05/00059/ O/02/3/01111/02222/03333/0123456789//3/534D5343/52

- Numeric message '563444' to 5 subscribers

17/00069/O/02/5/01111/02222/03333/04444/05555/0123456789//2/563444/44

7.2.1 Multiple Address Call Input Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 7-6: Parameter Positive Result Data Field Multiple Address Call Input Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
SM	String of char.	O	System message

The SM field contains the following three fields:

Table 7-7: Short Message Parameter Field Multiple Address Call Input Operation

SM Parameter	Type	Description
AdC	String of num. char.	Address code recipient, maximum length is 16 digits.
SEP	char ":"	Separator
SCTS	String of 12 num. char.	Service Centre time-stamp DDMMYYhhmmss

Since the operation allows a maximum of 20 addresses to be provided, the positive result may also contain a maximum of 20 address:time-stamp combinations.

In case of invalid and valid addresses, the invalid ones can be recognised by the absence of the timestamp field. If all addresses are invalid, a negative result is returned.

Example

- 82/00059/R/02/A/0654321:090196113940,065432:090196113940/86

7.2.2 Multiple Address Call Input Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 7-8: Parameter Negative Result Data Field Multiple Address Call Input Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

The following error codes can be returned in the operation negative result:

01	Checksum error
02	Syntax error
04	Operation not allowed (at this point in time)
05	Call barring active
06	AdC invalid
07	Authentication failure
08	Legitimisation code for all calls, failure
23	Message type not supported by system
24	Message too long
26	Message type not valid for the pager type

Example:

- 47/00022/R/02/N/01//0B

7.3 Call Input with supplementary Services Operation -03

This operation can be used by the SMT to submit a Short Message to the SMSC. The following table shows the parameters in the operation data field:

Table 7-9: Parameter Operation Data Field Call Input with Services Operation

Parameter	Type	Presence	Description
RAd	String of num. char.	M	AdC Address code recipient, maximum length is 16 digits, combined with optional legitimisation code for all calls.
OAdC	String of num. char.	O	Address code originator, maximum length is 16 digits.
AC	String of char.	O	Authentication code originator.
NPL	String of num. char.	M	Number of parameters in the following GA:s list. Must be "0".
GA:s	String of char.	O	List of additional GA:s requested by the calling party. Not present because NPL = 0.
RP	Char "1"	O	Repetition requested. Must be left empty.
PR	Char "1" or char "3"	O	Priority request 1 or 3. Must be left empty.
LPR	String of num. char.	O	Legitimisation code for priority requested. Must be left empty.

Parameter	Type	Presence	Description
UR	Char "1"	O	Urgent message indicator request. Must be left empty.
LUR	String of num. char.	O	Legitimisation code for urgent message. Must be left empty.
RC	Char "1"	O	Reverse charging request. Must be left empty.
LRC	String of num. char.	O	Legitimisation code for reverse charging. Must be left empty.
DD	Char "1"	O	Deferred delivery request.
DDT	10 num. char.	O	Deferred delivery time DDMMYYHHmm.
MT	1 numeric char.	M	Message type. Associated parameters depend on the value of the message type.
MT=2:			
NMsg	String of num. char.	O	Numeric message, maximum length is 160 digits.
MT=3:			
AMsg	String of char.	O	Alphanumeric message encoded into IRA characters, maximum length is representing 640 characters.

- The RAd field contains an address and optionally a legitimisation code. If the legitimisation code is present, it is separated from the address by a comma ",". If the legitimisation code is not present, the comma may be omitted. If present, the legitimisation code is discarded by the IW.

- The NPL must be equal to zero. If the NPL contains anything else than zero, a negative response with "GA not valid" (09) must be sent to the message sender. Since NPL must be equal to zero, the GA:s list may not be used.

- The RP parameter may not be set. If the RP parameter is set, a negative response with "Repetition not allowed" (10) must be sent to the message sender.

- The PR parameter may not be set. If the PR parameter is set, a negative response with "Priority call not allowed" (12) must be sent to the message sender.

- The LPR parameter may not be set. If the LPR parameter is set, a negative response with "Priority call not allowed" (12) must be sent to the message sender.

- The UR parameter may not be set. If the UR parameter is set, a negative response with "Urgent message not allowed" (14) must be sent to the message sender.

- The LUR parameter may not be set. If the LUR parameter is set, a negative response with "Urgent message not allowed" (14) must be sent to the message sender.

- The RC parameter may not be set. If the RC parameter is set, a negative response with "Reverse charging not allowed" (16) must be sent to the message sender.

- The LRC parameter may not be set. If the LRC parameter is set, a negative response with "Reverse charging not allowed" (16) must be sent to the message sender.

- If the option 'Long Message' is not enabled on the SMSC, the maximum length of AMsg represents 160 characters.

- The AC parameter is discarded if present.

Examples:

- Alphanumeric message 'CMG'

15/00058/O/03/01234568/0756663/2435/0//////////3/434D47/1B

- Numeric message '89123334' with deferred delivery

22/00067/O/03/01234568/0756663//0/////////1/0602961500/2/89123334/CF

7.3.1 Call Input with Supplementary Services Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 7-10: Parameter Positive Result Data Field Call Input with Services Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
SM	String of char.	O	System message

The SM parameter contains the following three fields:

Table 7-11: Short Message Parameter Field Call Input with Services Operation

SM Parameter	Type	Description
AdC	String of num. char.	Address code recipient, maximum length is 16 digits.
SEP	char ":"	Separator
SCTS	String of 12 num. char.	Service Centre time-stamp DDMMYYhhmmss

Example:

- 01/00038/R/03/A/066666:090296103355/4F

7.3.2 Call Input with Supplementary Services Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 7-12: Parameter Negative Result Data Field Call Input with Services Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

The following error codes can be returned in the operation negative result:

01   Checksum error

02	Syntax error
03	Operation not supported by system
04	Operation not allowed (at this point in time)
05	Call barring active
06	AdC invalid
07	Authentication failure
08	Legitimisation code for all calls, failure
09	GA not valid
10	Repetition not allowed
11	Legitimisation code for repetition, failure
12	Priority call not allowed
13	Legitimisation code for priority call, failure
14	Urgent message not allowed
15	Legitimisation code for urgent message, failure
16	Reverse charging not allowed
17	Legitimisation code for reverse charging, failure
18	Deferred delivery not allowed
21	Standard text not valid
22	Time period not valid
23	Message type not supported by system
24	Message too long
26	Message type not valid for the pager type

Example:

01/00022/R/03/N/22//05

7.4 MS Message Transfer Operation -30

This operation can be used by the SMT to submit a message to the SMSC. With this operation, Short Message specific services can be requested. The following table shows the parameters in the operation data field:

Table 7-13: Parameter Operation Data Field MS Message Transfer Operation

Parameter	Type	Presence	Description
AdC	String of num. char.	M	Address code recipient, maximum length is 16 digits.
OAdC	String of num. char.	O	Address code originator, maximum length is 16 digits.
AC	String of char.	O	Authentication code originator.
NRq	Char "1"	O	Notification requested.
NAd	String of num. char.	O	Notification address.

Parameter	Type	Presence	Description
NPID	4 num. char.	O	Notification PID value:
			0100 Mobile Station
			0122 Fax Group 3
			0131 X.400
			0138 Menu over PSTN
			0139 PC appl. over PSTN
			0339 PC appl. over X.25
			0439 PC appl. over ISDN
			0539 PC appl. over TCP/IP
DD	Char "1"	O	Deferred delivery request.
DDT	10 num. char.	O	Deferred delivery time DDMMYYHHmm.
VP	10 num. char.	O	Validity period DDMMYYHHmm.
AMsg	String of char.	O	Alphanumeric message encoded into IRA characters, maximum length representing 640 characters.

- The AC parameter is discarded if present.
- If NRq is used, then NAd and NPID must be either both empty or both used.
- If NRq is used and NAdC and NPID are left empty, then the notification is sent to the originator in the current session. If, in this case :
  - × the session is ended,
  - × the originator is not known to the SMSC to have more than one address,
  - × the notification has not yet been delivered then the notification is deleted by the SMSC.
- If the option 'Long Message' is not supported on the SMSC, the maximum length of AMsg represents 160 characters.

Examples:

- Alphanumeric message 'EMI specification' with notification requested to a PC application over PSTN

56/00089/O/30/0123456/0568243//1/0296877842/0139////454D4920737065636966696361617
4696F6E/D4

- Alphanumeric message 'Message OK' with deferred delivery and validity period set

44/00077/O/30/0673845336//////1/1003961344/1203961200/4D657373616765204F4B/27

7.4.1 MS Message Transfer Operation (positive result)

The following table shows the parameters in the positive result data field:

Table 7-14: Parameter Positive Result Data Field MS Message Transfer Operation

Parameter	Type	Presence	Description
ACK	Char "A"	M	Positive acknowledgement
MVP	10 num. char.	O	Modified validity period
SM	String of char.	O	System message

The SM parameter contains the following three fields:

Table 7-15: Short Message Parameter Field MS Message Transfer

SM Parameter	Type	Description
AdC	String of num. char.	Address code recipient, maximum length is 16 digits.
SEP	char ":"	Separator
SCTS	String of 12 num. char.	Service Centre time-stamp DDMMYYhhmmss

Example:

• 10/00039/R/30/A//067345:070295121212/6F

7.4.2 MS Message Transfer Operation (negative result)

The following table shows the parameters in the negative result data field:

Table 7-16: Parameter Negative Result Data Field MS Message Transfer Operation

Parameter	Type	Presence	Description
NACK	Char "N"	M	Negative acknowledgement
EC	2 num. char.	M	Error code
SM	String of char.	O	System message

The following error codes can be returned in the operation negative result:

01	Checksum error
02	Syntax error
04	Operation not allowed (at this point in time)
05	Call barring active
06	AdC invalid
07	Authentication failure
08	Legitimisation code for all calls, failure
22	Time period not valid

| 24 | Message too long |
| 26 | Message type not valid for the pager type |

Example:

- 11/00022/R/30/N/24//08

8 Error Codes Overview

Error codes, which can be returned in the operations negative result, are listed in [ETSI 03.00], paragraph 9.2.6. For all operations defined in the ERMES recommendation, which are not implemented in the SMSC, EMI returns with error code 03 ("Operation not supported by system").

8.1 Error Codes

Table 8-1: Error Codes

Error Code	Message
01	Checksum error
02	Syntax error
03	Operation not supported by system
04	Operation not allowed
05	Call barring active
06	AdC invalid
07	Authentication failure
08	Legitimisation code for all calls, failure
09	GA not valid
10	Repetition not allowed
11	Legitimisation code for repetition, failure
12	Priority call not allowed
13	Legitimisation code for priority call, failure
14	Urgent message not allowed
15	Legitimisation code for urgent message, failure
16	Reverse charging not allowed
17	Legitimisation code for rev. charging, failure
18	Deferred delivery not allowed
19	New AC not valid
20	New legitimisation code not valid
21	Standard text not valid
22	Time period not valid
23	Message type not supported by system

Error Code	Message
24	Message too long
25	Requested standard text not valid
26	Message type not valid for the pager type
27	Message not found in SMSC
30	Subscriber hang-up
31	Fax group not supported
32	Fax message type not supported
33	Address already in list (60 series)
34	Address not in list (60 series)
35	List full, cannot add address to list (60 series)
36	RPID already in use
37	Delivery in progress
38	Message forwarded

The following table summarises some special occurrences of error codes:

Table 8-2: Special Occurrences of Error Codes

Error Code	Meaning
02	Error in the NPID parameter (SMS Message transfer) or in the PID parameter (SMT Alert).
04	Any internal error (e.g., no resources), often of temporary nature. If the RAd:s (number of addresses) parameter contained more addresses than the specified maximum, the System Message parameter will contain "too many addresses".
05	One of the addresses is on the blacklist.
07	Authentication failure (PWD parameter in 60-series)
19	New AC not valid (NPWD parameter in 60-series)

9 Error Messages and Reason Codes in Notifications

Table B-1: Error Messages and Reason Codes in Notifications

Reason Code	Meaning
000	Unknown subscriber
001	Service temporary not available
002	Service temporary not available
003	Service temporary not available
004	Service temporary not available
005	Service temporary not available
006	Service temporary not available
007	Service temporary not available
008	Service temporary not available
009	Illegal error code
010	Network time-out
100	Facility not supported
101	Unknown subscriber
102	Facility not provided
103	Call barred
104	Operation barred
105	SC congestion
106	Facility not supported
107	Absent subscriber
108	Delivery fail
109	Sc congestion
110	Protocol error
111	MS not equipped
112	Unknown SC
113	SC congestion
114	Illegal MS
115	MS not a subscriber

Reason Code	Meaning
116	Error in MS
117	SMS lower layer not provisioned
118	System fail
119	PLMN system failure
120	HLR system failure
121	VLR system failure
122	Previous VLR system failure
123	Controlling MSC system failure
124	VMSC system failure
125	EIR system failure
126	System failure
127	Unexpected data value
200	Error in address service centre
201	Invalid absolute Validity Period
202	Short Message exceeds maximum
203	Unable to Unpack GSM message
204	Unable to convert to IRA ALPHABET
205	Invalid validity period format
206	Invalid destination address
207	Duplicate message submit
208	Invalid message type indicator

10   GSM 7-bit alphabet tables

The GSM 7-bit alphabet consists of 2 tables listed below: a default table and an extended table.

Table 10-1: 7-bit Default Alphabet Table

				b7	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1
B4	b3	b2	B1		0	1	2	3	4	5	6	7
0	0	0	0	0	@	?	SP	0	¡	P	¿	p
0	0	0	1	1	£	DC1	!	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	è	?	¤	4	D	T	d	t
0	1	0	1	5	é	?	%	5	E	U	e	u
0	1	1	0	6	ù	?	&	6	F	V	f	v
0	1	1	1	7	ì	?	'	7	G	W	g	w
1	0	0	0	8	ò	?	(	8	H	X	h	x
1	0	0	1	9	Ç	θ	)	9	I	Y	i	y
1	0	1	0	10	LF	?	*	:	J	Z	j	z
1	0	1	1	11	Ø	1)	+	;	K	Ä	k	ä
1	1	0	0	12	ø	Æ	,	<	L	Ö	l	ö
1	1	0	1	13	CR	Æ	–	=	M	Ñ	m	ñ
1	1	1	0	14	Å	ß	.	>	N	Ü	n	ü
1	1	1	1	15	å	É	/	?	O	§	o	à

1) This code is an escape to an extension of the 7-bit default alphabet table. A receiving entity, which does not understand the meaning of this escape mechanism, shall display it as a space character.

Table 10-2: 7-bit Default Alphabet Extension Table

B4	b3	b2	B1	b7=0 b6=0 b5=0 / 0	b7=0 b6=0 b5=1 / 1	b7=0 b6=1 b5=0 / 2	b7=0 b6=1 b5=1 / 3	b7=1 b6=0 b5=0 / 4	b7=1 b6=0 b5=1 / 5	b7=1 b6=1 b5=0 / 6	b7=1 b6=1 b5=1 / 7
0	0	0	0	0					|			
0	0	0	1	1								
0	0	1	0	2								
0	0	1	1	3								
0	1	0	0	4		^						
0	1	0	1	5							2)	
0	1	1	0	6								
0	1	1	1	7								
1	0	0	0	8			{					
1	0	0	1	9			}					
1	0	1	0	10	3)							
1	0	1	1	11		1)						
1	1	0	0	12				[				
1	1	0	1	13				~				
1	1	1	0	14				]				
1	1	1	1	15			\					

In the event that an MS receives a code where a symbol is not represented in the above table, the MS shall display the character shown in the main default 7-bit alphabet table.

1) This code value is reserved for the extension to another extension table. On receipt of this code, a receiving entity shall display a space until another extension table is defined.

2) This code represents the EURO currency symbol. The code value is that used for the character "e". Therefore, a receiving entity, which is incapable of displaying the EURO currency symbol, will display the character "e" instead.

3) This code is defined as a Page Break character. Any mobile which does not understand the 7-bit default alphabet table extension mechanism will treat this character as Line Feed.

Table 10-3: GSM 7-bit to Unicode Mapping

GSM 7-bit alphabet character code (sequence)	Unicode 16-bit character code	Character name
0x00	0x0040	COMMERCIAL AT
0x01	0x00A3	POUND SIGN
0x02	0x0024	DOLLAR SIGN
0x03	0x00A5	YEN SIGN
0x04	0x00E8	LATIN SMALL LETTER E WITH GRAVE
0x05	0x00E9	LATIN SMALL LETTER E WITH ACUTE
0x06	0x00F9	LATIN SMALL LETTER U WITH GRAVE
0x07	0x00EC	LATIN SMALL LETTER I WITH GRAVE
0x08	0x00F2	LATIN SMALL LETTER O WITH GRAVE
0x09	0x00C7	LATIN CAPITAL LETTER C WITH CEDILLA
0x0A	0x000A	LINE FEED
0x0B	0x00D8	LATIN CAPITAL LETTER O WITH STROKE
0x0C	0x00F8	LATIN SMALL LETTER O WITH STROKE
0x0D	0x000D	CARRIAGE RETURN
0x0E	0x00C5	LATIN CAPITAL LETTER A WITH RING ABOVE
0x0F	0x00E5	LATIN SMALL LETTER A WITH RING ABOVE
0x10	0x0394	GREEK CAPITAL LETTER DELTA
0x11	0x005F	LOW LINE
0x12	0x03A6	GREEK CAPITAL LETTER PHI
0x13	0x0393	GREEK CAPITAL LETTER GAMMA
0x14	0x039B	GREEK CAPITAL LETTER LAMDA
0x15	0x03A9	GREEK CAPITAL LETTER OMEGA
0x16	0x03A0	GREEK CAPITAL LETTER PI
0x17	0x03A8	GREEK CAPITAL LETTER PSI
0x18	0x03A3	GREEK CAPITAL LETTER SIGMA
0x19	0x0398	GREEK CAPITAL LETTER THETA
0x1A	0x039E	GREEK CAPITAL LETTER XI
0x1B	0x00A0	ESCAPE TO EXTENSION TABLE or displayed as non breaking space
0x1B0A	0x000C	FORM FEED
0x1B14	0x005E	CIRCUMFLEX ACCENT
0x1B28	0x007B	LEFT CURLY BRACKET
0x1B29	0x007D	RIGHT CURLY BRACKET
0x1B2F	0x005C	REVERSE SOLIDUS
0x1B3C	0x005B	LEFT SQUARE BRACKET
0x1B3D	0x007E	TILDE
0x1B3E	0x005D	RIGHT SQUARE BRACKET
0x1B40	0x007C	VERTICAL LINE
0x1B65	0x20AC	EURO SIGN
0x1C	0x00C6	LATIN CAPITAL LETTER AE
0x1D	0x00E6	LATIN SMALL LETTER AE
0x1E	0x00DF	LATIN SMALL LETTER SHARP S
0x1F	0x00C9	LATIN CAPITAL LETTER E WITH ACUTE
0x20	0x0020	SPACE
0x21	0x0021	EXCLAMATION MARK
0x22	0x0022	QUOTATION MARK
0x23	0x0023	NUMBER SIGN
0x24	0x00A4	CURRENCY SIGN
0x25	0x0025	PERCENT SIGN
0x26	0x0026	AMPERSAND
0x27	0x0027	APOSTROPHE
0x28	0x0028	LEFT PARENTHESIS
0x29	0x0029	RIGHT PARENTHESIS
0x2A	0x002A	ASTERISK
0x2B	0x002B	PLUS SIGN

GSM 7-bit alphabet character code (sequence)	Unicode 16-bit character code	Character name
0x2C	0x002C	COMMA
0x2D	0x002D	HYPHEN-MINUS
0x2E	0x002E	FULL STOP
0x2F	0x002F	SOLIDUS
0x30	0x0030	DIGIT ZERO
0x31	0x0031	DIGIT ONE
0x32	0x0032	DIGIT TWO
0x33	0x0033	DIGIT THREE
0x34	0x0034	DIGIT FOUR
0x35	0x0035	DIGIT FIVE
0x36	0x0036	DIGIT SIX
0x37	0x0037	DIGIT SEVEN
0x38	0x0038	DIGIT EIGHT
0x39	0x0039	DIGIT NINE
0x3A	0x003A	COLON
0x3B	0x003B	SEMICOLON
0x3C	0x003C	LESS-THAN SIGN
0x3D	0x003D	EQUALS SIGN
0x3E	0x003E	GREATER-THAN SIGN
0x3F	0x003F	QUESTION MARK
0x40	0x00A1	INVERTED EXCLAMATION MARK
0x41	0x0041	LATIN CAPITAL LETTER A
0x42	0x0042	LATIN CAPITAL LETTER B
0x43	0x0043	LATIN CAPITAL LETTER C
0x44	0x0044	LATIN CAPITAL LETTER D
0x45	0x0045	LATIN CAPITAL LETTER E
0x46	0x0046	LATIN CAPITAL LETTER F
0x47	0x0047	LATIN CAPITAL LETTER G
0x48	0x0048	LATIN CAPITAL LETTER H
0x49	0x0049	LATIN CAPITAL LETTER I
0x4A	0x004A	LATIN CAPITAL LETTER J
0x4B	0x004B	LATIN CAPITAL LETTER K
0x4C	0x004C	LATIN CAPITAL LETTER L
0x4D	0x004D	LATIN CAPITAL LETTER M
0x4E	0x004E	LATIN CAPITAL LETTER N
0x4F	0x004F	LATIN CAPITAL LETTER O
0x50	0x0050	LATIN CAPITAL LETTER P
0x51	0x0051	LATIN CAPITAL LETTER Q
0x52	0x0052	LATIN CAPITAL LETTER R
0x53	0x0053	LATIN CAPITAL LETTER S
0x54	0x0054	LATIN CAPITAL LETTER T
0x55	0x0055	LATIN CAPITAL LETTER U
0x56	0x0056	LATIN CAPITAL LETTER V
0x57	0x0057	LATIN CAPITAL LETTER W
0x58	0x0058	LATIN CAPITAL LETTER X
0x59	0x0059	LATIN CAPITAL LETTER Y
0x5A	0x005A	LATIN CAPITAL LETTER Z
0x5B	0x00C4	LATIN CAPITAL LETTER A WITH DIAERESIS
0x5C	0x00D6	LATIN CAPITAL LETTER O WITH DIAERESIS
0x5D	0x00D1	LATIN CAPITAL LETTER N WITH TILDE
0x5E	0x00DC	LATIN CAPITAL LETTER U WITH DIAERESIS
0x5F	0x00A7	SECTION SIGN
0x60	0x00BF	INVERTED QUESTION MARK
0x61	0x0061	LATIN SMALL LETTER A
0x62	0x0062	LATIN SMALL LETTER B
0x63	0x0063	LATIN SMALL LETTER C
0x64	0x0064	LATIN SMALL LETTER D
0x65	0x0065	LATIN SMALL LETTER E
0x66	0x0066	LATIN SMALL LETTER F
0x67	0x0067	LATIN SMALL LETTER G

GSM 7-bit alphabet character code (sequence)	Unicode 16-bit character code	Character name
0x68	0x0068	LATIN SMALL LETTER H
0x69	0x0069	LATIN SMALL LETTER I
0x6A	0x006A	LATIN SMALL LETTER J
0x6B	0x006B	LATIN SMALL LETTER K
0x6C	0x006C	LATIN SMALL LETTER L
0x6D	0x006D	LATIN SMALL LETTER M
0x6E	0x006E	LATIN SMALL LETTER N
0x6F	0x006F	LATIN SMALL LETTER O
0x70	0x0070	LATIN SMALL LETTER P
0x71	0x0071	LATIN SMALL LETTER Q
0x72	0x0072	LATIN SMALL LETTER R
0x73	0x0073	LATIN SMALL LETTER S
0x74	0x0074	LATIN SMALL LETTER T
0x75	0x0075	LATIN SMALL LETTER U
0x76	0x0076	LATIN SMALL LETTER V
0x77	0x0077	LATIN SMALL LETTER W
0x78	0x0078	LATIN SMALL LETTER X
0x79	0x0079	LATIN SMALL LETTER Y
0x7A	0x007A	LATIN SMALL LETTER Z
0x7B	0x00E4	LATIN SMALL LETTER A WITH DIAERESIS
0x7C	0x00F6	LATIN SMALL LETTER O WITH DIAERESIS
0x7D	0x00F1	LATIN SMALL LETTER N WITH TILDE
0x7E	0x00FC	LATIN SMALL LETTER U WITH DIAERESIS
0x7F	0x00E0	LATIN SMALL LETTER A WITH GRAVE

11 Protocol Sequence Example

Here is an example of a protocol sequence with various operation types:

1. SMT opens a session with the SMSC

2. SMT sends a message to mobile station, which is turned off

3. SMT inquires the SMSC for buffered message

4. SMT deletes the buffered message

5. SMT attempts to delete the deleted message again

In the example, the SMT uses "55555" as the originator address and the international number "0031612345678" for the mobile station address.

Table 11-1: Protocol Sequence Example

Description	UCP string
SMT opens session with address 55555 and password pieter12	00/00056/O/60/55555/6/5/1/7069657465723132//0100//////A
SMSC accepts session	00/00019/R/60/A//6D
SMT submits SMS with originator address 55555 to mobile station 0031612345678	00/00077/O/51/0031612345678/55555////4//////////////3//74657374 //////////////97
SMSC sends positive acknowledgement with message identification: 0031612345678:271102171649	00/00046/R/51/A//0031612345678:271102171649/DD
SMT sends inquire operation with originator address 55555 for recipient 0031612345678	00/00067/O/55/0031612345678/55555//////////////////////////88
SMSC sends positive acknowledgement	00/00020/R/55/A///98
SMSC sends inquire response to SMT with text: Destination: 0612345678 identification: 021127171649	00/00159/O/57/55555///////////////////3//44657374696E6174696F6 E3A2030363132333435363738206964656E746966696361746 96F6E3A2030323131323731373731363439///////////////E3
SMT sends positive acknowledgement to SMSC	00/00038/R/57/A//55555:271102171738/4E
SMT send delete operation with originator address 55555 for recipient 0031612345678 with in the text the timestamp 021127171649.	00/00092/O/56/0031612345678/55555///////////////////3//303231313 237313731363439////////////87
SMSC sends positive acknowledgement to SMT	00/00020/R/56/A///99
SMSC send delete response to SMT with text: Destination 0612345678 identification: 021127171649 has been deleted.	01/00193/O/58/55555///////////////////3//44657374696E6174696F6 E203036313233343536373820696465E74696669636174696 F6E3A2030323131323731373731363439206865173206265656E2 064656C657465642E////////////FD
SMT sends positive response to SMSC	01/00038/R/58/A//55555:271102171824/4C

SMT sends again the delete operation with originator address 55555 for recipient 0031612345678 with in the text the timestamp 021127140558.	00/00092/O/56/0031612345678/55555/////////////////3//303231313 237313731363439/////////////8
SMSC sends positive acknowledgement to SMT	00/00020/R/56/A///99
SMSC sends delete response to SMT with text: Destination 0612345678 identification: has been deleted. The omission of the timestamp indicates that the message is not stored in the SMSC.	02/00167/O/58/55555/////////////////3//44657374696E6174696F6 E2030363132333435363738206964656E74696669636174696 F6E3A20686173206265656E2064656C657465642E/////////////D 0
SMT sends positive response to SMSC	02/00044/R/58/A//55555:271102171857/71

Appendix A. Billing Identifier Format

Format of the Billing Identifier

The Billing Identifier field is defined as a variable string of visible characters with an SMSC restricted maximum length of 20 characters. An SMSC provides this string towards the billing system for rating and charging.

In this limited space, a number of information elements are needed to provide effective charging details to the billing system. The majority of the information is financial, hence contains digits. Specifying numeric values in hexadecimal format makes the most efficient use of available space.

Furthermore, to provide applications with only the minimum amount of information to be provided, a flexible mechanism is available to select only the relevant information elements and leave out the unwanted information elements.

In addition, several formats are predefined to support the charging needs of most applications.

Currency information is not provided in ISO 4217 Currency Abbreviation format, but left to the operator as this saves space and most operators only support a single currency or temporarily support two currencies in a transition period.

The following are the information elements that compose the Billing Identifier field.

C.C. - Command Code

C.D.I. - Currency Decimal Indicator

C.V. - Currency Value

B.M. - Bit-Mask

C.I. - Currency Indicator

S.N. - Sequence Number

S.T. - Service Type

S.C. - Service Class

A.B.A.L. - Alternate Billing Address Length

A.B.A. - Alternate Billing Address

A.S.L. - Alphanumeric String Length

A.S. - Alphanumeric String

C.C. - Command Code

Description	Unique Identifier to Identify the format of the DD element

Length	2
Type	Hex
Range	00 to 0F Standardised values 10 to 1F Vendor specific 20 to FF Reserved Values outside the 00 to FF range indicate billing identifier strings that are vendor specific.
Example	01 indicates Billing format 1 (decimal). 0A indicates Billing format 10 (decimal).

C.D.I. - Currency Decimal Indicator

Description	Specifies the position of the decimal point in the Currency Value field.
Length	1
Type	Numeric
Range	0 to 5. Numbering starts from the right.
Example	If Currency Value = 543 (decimal) and Currency Decimal Indicator = 2, then the amount is 5.43.

C.V. - Currency Value

Description	This field contains the amount to be billed from the subscriber as follows: Currency value * 10 ^ - Currency Decimal Indicator This representation avoids unwanted rounding off.
Length	4
Type	Hex
Range	0000 to FFFF
Example	If Currency Value = 50 (decimal) and Currency Decimal Indicator = 2, then the amount is 0.50.

B.M. - Bit-Mask

Description	This field is a toggle Bitmask that indicates on a bit level functionality to be enabled or disabled.
Length	2
Type	Hex, (to de decoded into Binary). The Lowest Significant Bit (LSB) start with number 0. Bits are numbered increasing from right to left.
Range	00 to FF (00000000 to 11111111) Bit 0 with value 0 indicates Subscriber A Number billed. Bit 0 with value 1 indicates Subscriber B Number billed. Bit 1 with value 0 indicates Currency Indicator field disabled. Bit 1 with value 1 indicates Currency Indicator field enabled. Bit 2 with value 0 indicates Sequence Number field disabled.

	Bit 2 with value 1 indicates Sequence Number field enabled.
	Bit 3 with value 0 indicates Service Type field disabled.
	Bit 3 with value 1 indicates Service Type field enabled.
	Bit 4 with value 0 indicates Service Class field disabled.
	Bit 4 with value 1 indicates Service Class field enabled.
	Bit 5 with value 0 indicates Alternate Billing Address fields are disabled.
	Bit 5 with value 1 indicates Alternate Billing Address fields are enabled. Bit 0 is thereby overruled.
	Bits 6 and 7 (Reserved with default value 0). The sender must set them to 0; the receiver must ignore them.
	Note: Where Bit 1, 2, 3, 4 or 5 are disabled the relevant field must not be included in the DD field.
Example	0A (hex)
	00001010 (binary)
	Indicates
	Subscriber A-Number billed
	Currency Indicator field enabled
	Sequence Number field disabled
	Service Type field enabled
	Service Class field disabled
	Alternate Billing Address field disabled

C.I. - Currency Indicator

Description	This field contains the currency to be billed from the subscriber.
Length	1
Type	Hex
Range	0 to F
Example	0 indicates currency 0 in the (prepaid) billing system to be used.
	5 indicates currency 5 in the (prepaid) billing system to be used.

S.N. - Sequence Number

Description	This field contains a sequence value used by the (prepaid) billing system to detect duplicate transactions within a short time interval from the same sender. After every unique message submission, the sender should increment the sequence number by 1.
Length	4
Type	Hex
Range	0000 to FFFF
Example	0089
	Note: if the maximum value is reached (FFFF), the value 0000 should be next used.

S.T. - Service Type

Description	This field defines the type of service the subscriber is being billed for.
Length	2
Type	Hex
Range	00 to FF (hex).
Example	"05" indicates that the message sent to the subscriber was service type 5. Definition of these service types is at the discretion of the operator.

S.C. - Service Class

Description	This field defines the class of service the subscriber is being billed for.
Length	2
Type	Hex
Range	00 to FF (hex).
Example	"3F" indicates the message sent to the subscriber was service class 3F. Definition of these service classes is at the discretion of the operator.

A.B.A.L. - Alternate Billing Address Length

Description	This field defines the length of an Alternate Billing Address.
Length	1
Type	Hex
Range	0 to F
Example	"5" indicates that the Alternate billing address is 5 digits in length

A.B.A. - Alternate Billing Address

Description	This field is the billing address to be used for the charged party instead of the subscriber address. This allows charging a numeric address if the application uses an alphanumeric string as originator address, which most billing entities are unable to process.
Length	Variable based on Alternate Billing Address Length
Type	Numeric
Range	Any digit
Example	5000

A.S.L. - Alphanumeric String Length

Description	This field defines the number of characters in the Alphanumeric String being passed to the (prepaid) billing system.
Length	1 character
Type	Hex
Range	0 to F
Example	"5" indicates 5 characters in length.

A.S. - Alphanumeric String

Description	This field is the Alphanumeric String being passed to the (prepaid) billing system.
Length	Variable based on Alphanumeric String Length
Type	Alphanumeric
Range	Any visible IRA character. Character codes 20 to 7E (hex)
Example	"Ring tone / U2"

Defined Billing Formats

Command Code 01

Format:

Note: Fields between [ ] are mandatory and may not be modified

Field Name	[Value] / Range	Size Characters	Mandatory / Optional	Description
C.C.	[01]	2	M	Command Code
C.D.I.	0-5	1	M	Currency Decimal Indicator
C.V.	0000-FFFF	4	M	Currency Value
B.M.	00-FF	2	M	Bit-Mask
C.I.	0-F	1	O	Currency Indicator
S.N.	0000-FFFF	4	O	Sequence Number
S.T.	00-FF	2	O	Service Type
S.C.	00-FF	2	O	Service Class
A.B.A.L.	0-F	1	O	Alternate Billing Address Length
A.B.A.	Any digit	Variable (Max 10 characters)	O	Alternate Billing Address
A.S.L.	0-F	1	M	Alphanumeric String Length
A.S.	Any char	Variable (Max 10 characters)	O	Alphanumeric String

Example 1:

If the (prepaid) billing system receives the following string "01212340A1023CNN", it should be interpreted as follows:

C.C.	C.D.I.	C.V.	B.M.	C.I.	S.N.	S.T.	S.C.	A.B.A.L.	A.B.A.	A.S.L.	A.S.
01	2	1234	0A	1	-	02	-	-	-	3	CNN

The above example can be decoded to mean:

Command code	01
Currency Decimal Indicator	2
Currency Value	1234 (Hex) = 4660 (Dec)
Adjusted Currency Value due to C.D.I.	**46.60**
Bit-Mask	0A

- Subscriber A-Number billed
- Currency Indicator field enabled
- Sequence Number field disabled
- Service Type field enabled
- Service Class field disabled
- Alternate Billing Address disabled

Currency Indicator	1
Service Type	02
Alphanumeric String Length	3
Alphanumeric String	CNN

Example 2:

If the (prepaid) billing system receives the following string "01212342A1025500000", it should be interpreted as follows:

C.C.	C.D.I.	C.V.	B.M.	C.I.	S.N.	S.T.	S.C.	A.B.A.L.	A.B.A.	A.S.L.	A.S.
01	2	1234	2A	1	-	02	-	5	50000	0	-

The above example can be decoded to mean:

Command code	01
Currency Decimal Indicator	2
Currency Value	1234 (Hex) = 4660 (Dec)
Adjusted Currency Value due to C.D.I.	**46.60**
Bit-Mask	2A

- Subscriber A-Number billed
- Currency Indicator field enabled
- Sequence Number field disabled
- Service Type field enabled
- Service Class field disabled
- Alternate Billing Address enabled

Currency Indicator	1

Service Type	02
Alternate Billing Address Length	5
Alternate Billing Address	50000
Alphanumeric String Length	0
Alphanumeric String	""

Command Code 02

Format:

Note: Fields between [ ] are mandatory and may not be modified

Field Name	[Value] / Range	Size Characters	Mandatory / Optional	Description
C.C.	[02]	2	M	Command Code
C.D.I.	0-5	1	M	Currency Decimal Indicator
C.V.	0000-FFFF	4	M	Currency Value
A.S.L.	0-F	1	M	Alphanumeric String Length
A.S.	Any char	Variable (Max 15 characters)	O	Alphanumeric String

Example:

If the (prepaid) billing system receives the following string "02312347Message", it should be interpreted as follows:

C.C.	C.D.I.	C.V.	A.S.L.	A.S.
02	3	1234	7	Message

The above example can be decoded to mean:

Command code	02
Currency Decimal Indicator	3
Currency Value	1234 (Hex) = 4660 (Dec)
Adjusted Currency Value due to C.D.I.	**4.660**
Alphanumeric String Length	7
Alphanumeric String	Message

Appendix B. Changes with respect to previous versions

Changes with respect to EMI Specification 2.4

- New UCP 54 (Modify Short Message) operation.

- The field PR in the UCP51 is no longer reserved. In the UCP51 the field is optional and can be used to request priority.

- Multiple Address LA support: sliding window and session management operations.

- In the UCP60 (Session management), the field RES1 has been renamed to OPID. This is an optional field in the UCP60. The OPID is used for GSM subscriber via fixed access.

- A (Multiple Address) LA can now use its Short Number in a UCP60 to login. The Short Number should be passed in the OAdC, OTON should be set to 6 (abbreviated) and ONPI to 5 (SC specific: Private).

- The remark "AC parameter is discarded if present" in the description of UCP51 has been removed.

- The UCP02 (Multiple address call input) is currently not supported for LA's in combination with throughput regulation. A remark has been added in the description of UCP02.

- When the AC field (Authentication code originator) is used, the AC shall contain at least 4 numeric characters in every message that are not equal to all zeros, otherwise it will be rejected. A remark has been added in the description of the following UCP operations: 30, 51, 55 and 56.

- In the description of UCP56 (Delete message) the field MMS was listed as an optional parameter. However this field has no meaning in the UCP56 operation. Therefore, the description now states that this field should be left empty.

- In paragraph '4.1 Address syntax' the following line has been removed:

- <+><country-code><telephone_nr> (This format may only be used on Mobile Stations.)

Changes with respect to EMI Specification 3.1.0

- The RES3 (reserved field) is now used for extra services (XSer field) in UCP 51 and 52 operations. This patch allows the UCP application to specify a User Data Header. The functionality is an add-on (patch) to the SMSC 3.1 Release.

Changes with respect to EMI Specification 3.1.1

- Clarification on the format of the XSer field and the format of the XSer service type "GSM UDH information".

Changes with respect to EMI Specification 3.1.2

- The XSer service type "GSM DCS information" is introduced. Its aim is to give more control to the user applications to send and receive GSM DCS values. It provides

support for "7-bit alphabet", "8-bit data", "UCS2 alphabet", "Message Waiting Indications" and "Message Class Meaning".

- The UCP 50 series field "DCs" has been deprecated.

- Applications are advised to use the XSer service type "GSM DCS information" as a replacement for the UCP 50 series field MCLs.

- The 50 series RPID field range has been corrected to include 0000…0071.

- Added an example of encoding an alphanumeric address.

- The TMsg field in the UCP51 and UCP52 messages is changed from M (Mandatory) to O (Optional).

- Statement that the address fields are encoded according to E.164.

Changes with respect to EMI Specification 3.1.4

- The XSer service types 03 - 0B have been introduced in order to support the functionality of TDMA within the UCP51 and UCP52 messages.

- The length of the TMsg field in the UCP51 and UCP52 messages for MT=4 has been extended from 140 to 160 octets to support 160 byte binary data for TDMA.

- The number-of-messages-waiting field in the response of a SMT alert message (UCP31) has been specified as always being '0000' for a Multiple Address LA.

- The "GSM DCS information" field can be specified in the modified message (UCP54) XSer field.

Changes with respect to EMI Specification 3.5

- The XSer service type 0C has been introduced to support the Billing Identifier in UCP51 and UCP54 messages.

- The XSer service type 0D has been introduced to support Single Shot indication.

- Support for the EURO sign / GSM default alphabet extension table.

Changes with respect to EMI Specification 4.0

- The MT=4, Tmsg, RPID and Xser fields has been added in the UCP53 message to support transfer of data returned by the mobile station.

- The Oadc field has been removed from the UCP57 operation. This correction aligns the operation with UCP58.

- Valid values of RPID field have been extended to align with [3GPP 23.040] and operator configurable permissions and restrictions.

Changes with respect to EMI Specification 4.6 Document version 4.7

- Added to the Xser fields: Originator and Recipient TON and NPI.

Abbreviations

CDMA	Code Division Multiple Access
CLI	Calling Line Identifier
DCS	Data Coding Scheme
EMI	External Machine Interface
ERMES	European Radio Messaging System
ETS	European Technical Standard
FAX	Facsimile
GPRS	General Packet Radio Service
GSM	Global System for Mobile communication
IA5	International Alphabet 5
IRA	International Reference Alphabet [ITU T.50] (formerly IA5)
LA	Large account. An SMT registered on the SMSC.
MS	Mobile Station
O&M	Operations and Maintenance
PC	Personal Computer
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
SM	Short Message
SME	Short Message Entity
SMS	Short Message Service
SMSC	Short Message Service Centre
SMT	Short Message Terminal
TDMA	Time Division Multiple Access
UCP	Universal Computer Protocol
UDH	User Data Header
UMTS	Universal Mobile Telecommunications System
VMS	Voice Mail System

References

[ETSI 03.00]	ETSI ETS 300 133-3 Paging Systems (PS); European Radio Messaging System (ERMES) Part 3: Network aspects; Section 9: I5 interface.
[3GPP 23.038]	3GPP TS 23.038 Alphabets and language-specific information.
[3GPP 23.040]	3GPP TS 23.040 Technical realisation of the Short Message Service (SMS) [GSM]
[ITU-T]	X.680: ITU-T Recommendation X.680 Information Technology - Abstract Syntax Notation One (ASN.1): Specification of Basic Notation.
[TIA/EIA-136-710c]	TIA/EIA-136-710c, Short Message Service - Cellular Messaging Teleservice [TDMA].
[TIA/EIA-637-B]	TIA/EIA-637-B, Short Message Service for Spread Spectrum Systems [CDMA].
[EMI-UCP-BILLID]	EMI-UCP Billing Identifier Format Specification, version 1.22, May 2004

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