

**Agenda Item:** 5.2.3

**Source:** T2

**Title:** "Messaging" Change Requests

**Document for:** Approval

Spec	CR	Rev	Rel	Subject	Cat	Vers-Curr	Vers-New	T2 Tdoc	Workitem
03.40	A090		R97	Correction on SMS Information Element Data Length	F	6.1.0	6.2.0	T2-011247	TEI
03.40	A091		R98	Correction on SMS Information Element Data Length	A	7.4.0	7.5.0	T2-011248	TEI
23.038	008		Rel-4	Deletion of GSM 01.04 reference	F	4.3.0	4.4.0	T2-011108	TEI4
23.040	034		Rel-5	Correction of Data Format Delivery Request	F	5.1.0	5.2.0	T2-011004	TEI5
23.040	035		Rel-5	Information Element Classification	F	5.1.0	5.2.0	T2-011254	TEI5
23.040	036		Rel-5	Clarification of LZSS compression for "EXTENDED OBJECTS" in EMS	F	5.1.0	5.2.0	T2-011151	MESS5-EMS
23.040	037		Rel-5	Extended Object Positioning	F	5.1.0	5.2.0	T2-011158	TEI5
23.040	038		R99	Correction on SMS Information Element Data Length	A	3.6.0	3.7.0	T2-011249	TEI
23.040	039		Rel-4	Correction on SMS Information Element Data Length	A	4.4.0	4.5.0	T2-011250	TEI4
23.040	040		Rel-5	Correction on SMS Information Element Data Length	A	5.1.0	5.2.0	T2-011251	TEI5
23.041	008		Rel-4	Clarification on the use of Message IDs in multi-technology networks	F	4.1.0	4.2.0	T2-011024	TEI4
23.140	018		Rel-4	Reference to TS 29.061 specification on RADIUS usage	F	4.4.0	4.5.0	T2-011019	MMS
23.140	019		Rel-5	Reference to TS 29.061 specification on RADIUS usage	A	5.0.0	5.1.0	T2-011020	MESS5-MMS
23.140	020		Rel-5	Clarification of the reply-charging service behaviour description	F	5.0.0	5.1.0	T2-011043	MESS5-MMS
23.140	021		Rel-4	Correction of MM Status Code	F	4.4.0	4.5.0	T2-011111	MMS
23.140	022		Rel-4	Clarification of Forwarding in MM1 message retrieval	F	4.4.0	4.5.0	T2-011112	MMS
23.140	023		Rel-5	Clarification of Forwarding in MM1 message retrieval	A	5.0.0	5.1.0	T2-011113	MESS5-MMS
23.140	024		Rel-4	Removing inconsistency of mandated functionality	F	4.4.0	4.5.0	T2-011115	MMS
23.140	025		Rel-5	Removing inconsistency of mandated functionality	A	5.0.0	5.1.0	T2-011116	MESS5-MMS
23.140	026		Rel-5	Correction of MM Status Code	A	5.0.0	5.1.0	T2-011119	MESS5-MMS
23.140	027		Rel-4	Correction on MM1 and MM4 abstract messages	F	4.4.0	4.5.0	T2-011120	MMS
23.140	028		Rel-5	Correction on MM1 and MM4 abstract messages	A	5.0.0	5.1.0	T2-011127	MESS5-MMS
23.140	029		Rel-4	clarification of status codes in MM4_read_reply_report.REQ	F	4.4.0	4.5.0	T2-011200	MMS
23.140	030		Rel-5	clarification of status codes in MM4_read_reply_report.REQ	A	5.0.0	5.1.0	T2-011201	MESS5-MMS

23.140	031		Rel-5	Configuration of MMS-capable Ues	B	5.0.0	5.1.0	T2-011211	MESS5-MMS
23.140	032		Rel-5	MMS address hiding	F	5.0.0	5.1.0	T2-011233	MESS5-MMS
23.140	033		Rel-5	reply-charging clarifications	F	5.0.0	5.1.0	T2-011234	MESS5-MMS

## CHANGE REQUEST

⌘ **03.40 CR A90** ⌘ rev **-** ⌘ Current version: **6.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction on SMS Information Element Data Length		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ SMS	<b>Date:</b>	⌘ 28 Nov. 01
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R97
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ There is an inconsistency regarding the valid length range of an information element data.
<b>Summary of change:</b>	⌘ This CR clarifies that an information element data length can be 0.
<b>Consequences if not approved:</b>	⌘ Specifications will remain inconsistent.

<b>Clauses affected:</b>	⌘ Section 9.2.3.24	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘
<b>Other comments:</b>	⌘	

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 9.2.3.24 TP-User Data (TP-UD)

The TP-User-Data field contains up to 140 octets of user data.

The TP-User-Data field may comprise just the short message itself or a Header in addition to the short message depending upon the setting of TP-UDHI.

Where the TP-UDHI value is set to 0 the TP-User-Data field comprises the short message only, where the user data can be 7 bit (default alphabet) data, 8 bit data, or 16 bit (UCS2) data.

Where the TP-UDHI value is set to 1 the first octets of the TP-User-Data field contains a Header in the following order starting at the first octet of the TP-User-Data field.

Irrespective of whether any part of the User Data Header is ignored or discarded, the MS shall always store the entire TPDU exactly as received.

FIELD	LENGTH
Length of User Data Header	1 octet
Information-Element-Identifier "A"	1 octet
Length of Information-Element "A"	1 octet
Information-Element "A" Data	<u>0+</u> to "n" octets
Information-Element-Identifier "B"	1 octet
Length of Information-Element "B"	1 octet
Information-Element "B" Data	<u>0+</u> to "n" octets
Information-Element-Identifier " <u>#X</u> "	1 octet
Length of Information-Element " <u>#X</u> "	1 octet
Information-Element " <u>#X</u> " Data	<u>0+</u> to "n" octets

...

## CHANGE REQUEST

⌘ **03.40 CR A091** ⌘ rev **-** ⌘ Current version: **7.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction on SMS Information Element Data Length				
<b>Source:</b>	⌘ T2				
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 28 Nov. 01		
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ R98		
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:		
	<b>F</b> (correction)		2	(GSM Phase 2)	
	<b>A</b> (corresponds to a correction in an earlier release)		R96	(Release 1996)	
	<b>B</b> (addition of feature),		R97	(Release 1997)	
	<b>C</b> (functional modification of feature)		R98	(Release 1998)	
	<b>D</b> (editorial modification)		R99	(Release 1999)	
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		REL-4	(Release 4)	
			REL-5	(Release 5)	

<b>Reason for change:</b>	⌘ There is an inconsistency regarding the valid length range of an information element data.
<b>Summary of change:</b>	⌘ This CR clarifies that an information element data length can be 0.
<b>Consequences if not approved:</b>	⌘ Specifications will remain inconsistent.

<b>Clauses affected:</b>	⌘ Section 9.2.3.24	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘
	<input type="checkbox"/> Test specifications	
	<input type="checkbox"/> O&M Specifications	
<b>Other comments:</b>	⌘	

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 9.2.3.24 TP-User Data (TP-UD)

The length of the TP-User-Data field is defined in the PDU's of the SM-TL ( see subclause 9.2.2 ).

The TP-User-Data field may comprise just the short message itself or a Header in addition to the short message depending upon the setting of TP-UDHI.

Where the TP-UDHI value is set to 0 the TP-User-Data field comprises the short message only, where the user data can be 7 bit (default alphabet) data, 8 bit data, or 16 bit (UCS2) data.

Where the TP-UDHI value is set to 1 the first octets of the TP-User-Data field contains a Header in the following order starting at the first octet of the TP-User-Data field.

Irrespective of whether any part of the User Data Header is ignored or discarded, the MS shall always store the entire TPDU exactly as received.

FIELD	LENGTH
Length of User Data Header	1 octet
Information-Element-Identifier "A"	1 octet
Length of Information-Element "A"	1 octet
Information-Element "A" Data	<u>0+</u> to "n" octets
Information-Element-Identifier "B"	1 octet
Length of Information-Element "B"	1 octet
Information-Element "B" Data	<u>0+</u> to "n" octets
Information-Element-Identifier " <u>#X</u> "	1 octet
Length of Information-Element " <u>#X</u> "	1 octet
Information-Element " <u>#X</u> " Data	<u>0+</u> to "n" octets

...

CR-Form-v4

## CHANGE REQUEST

⌘ **23.038 CR 008** ⌘ ev ⌘ Current version: **4.3.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘	Deletion of GSM 01.04 reference	
<b>Source:</b>	⌘	T2	
<b>Work item code:</b>	⌘	TEI4	<b>Date:</b> ⌘ 23/11/2001
<b>Category:</b>	⌘	<b>F</b>	<b>Release:</b> ⌘ REL-4
		Use <u>one</u> of the following categories:	Use <u>one</u> of the following releases:
		<b>F</b> (correction)	2 (GSM Phase 2)
		<b>A</b> (corresponds to a correction in an earlier release)	R96 (Release 1996)
		<b>B</b> (addition of feature),	R97 (Release 1997)
		<b>C</b> (functional modification of feature)	R98 (Release 1998)
		<b>D</b> (editorial modification)	R99 (Release 1999)
		Detailed explanations of the above categories can be found in 3GPP TR 21.900.	REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘	The specification contains a reference to a specification that does not exist in this release.
<b>Summary of change:</b>	⌘	Deletion of GSM 01.04 reference because the content of GSM 01.04 has been incorporated into 3GPP TR 21.905.
<b>Consequences if not approved:</b>	⌘	Non-valid reference would remain and make it difficult to find the right information.

<b>Clauses affected:</b>	⌘	2, 3
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘	

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at:  
[http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

---

## 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- |      |   |
|------|---|
| [1]  | <del>GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and Acronyms"-void</del>   |
| [2]  | 3GPP TS 22.030: "Man-Machine Interface (MMI) of the User Equipment (UE)".   |
| [3]  | 3GPP TS 23.090: "Unstructured Supplementary Service Data (USSD) - Stage 2".   |
| [4]  | 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS) ".  |
| [5]  | 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".  |
| [6]  | 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".  |
| [7]  | 3GPP TS 24.012: "Cell Broadcast Service (CBS) support on the mobile radio interface".   |
| [8]  | 3GPP TS 27.005: "Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)".             |
| [10] | ISO/IEC 10646: "Information technology; Universal Multiple-Octet Coded Character Set (UCS)".  |
| [11] | 3GPP TS 24.090: "Unstructured Supplementary Service Data (USSD); Stage 3".  |
| [12] | ISO 639: "Code for the representation of names of languages".   |
| [13] | 3GPP TS 23.042: "Compression algorithm for text messaging services".  |
| [14] | 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".   |
| [15] | "Wireless Datagram Protocol Specification", Wireless Application Protocol Forum Ltd.  |
| [16] | ISO 1073-1 and ISO 1073-2 Alphanumeric character sets for optical recognition – Parts 1 and 2: Character sets OCR-A and OCR-B, respectively - Shapes and dimensions of the printed image. |

---

## 3 Abbreviations

For the purposes of the present document, the abbreviations used in the present document are listed in ~~GSM TR 01.04~~ ~~41 and~~ 3GPP TR 21.905



## CHANGE REQUEST

⌘ **23.040 CR 034** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction of Data Format Delivery Request		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ TEI5	<b>Date:</b>	⌘ 15-Nov-2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ Double use of bits 1..7 within octet 8		
<b>Summary of change:</b>	⌘ Correct calculation of bits in octet n		
<b>Consequences if not approved:</b>	⌘ Ambiguous specification due to incorrect calculation of bits in octet n		

<b>Clauses affected:</b>	⌘ Annex E.12		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

---

## E.12 Data Format Delivery Request

This Data Format Delivery Request is an optional feature used by an SME to indicate which Extended Object data formats, listed in clause 9.2.3.24.10.1.11, it is requesting for delivery. This Data Format Delivery Request may be included by an SME in a MO SM containing other EMS related data, or in a MO SM independently. Processing of this data format is optional in a MT short message.

The information in this data format represents an extensible bit field with the first bit being mapped to the first Extended Object (EO) data format defined in the table in clause 9.2.3.24.10.1.11.

Octet 8

Bit 0: If set to 1 indicates support for EO data format 00

Bit 1: If set to 1 indicates support for EO data format 01

Bit 2: If set to 1 indicates support for EO data format 02

.....

.....

Octet n

Bit 0: If set indicates support for EO data format  $((n - 8) * 8)$

Bit 1: If set indicates support for EO data format  $((n - 8) * 8) + 1$

Bit 2: If set indicates support for EO data format  $((n - 8) * 8) + 2$

.....

Any unused bits in the last octet shall be set to zero.

## CHANGE REQUEST

⌘ **23.040 CR 035** ⌘ **-** ⌘ Current version: **5.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Information Element Classification		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ TEI5	<b>Date:</b>	⌘ November 26, 2001
<b>Category:</b>	⌘ <b>F</b>		<b>Release:</b> ⌘ REL-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	<b>2</b> (GSM Phase 2)	
	<b>A</b> (corresponds to a correction in an earlier release)	<b>R96</b> (Release 1996)	
	<b>B</b> (addition of feature),	<b>R97</b> (Release 1997)	
	<b>C</b> (functional modification of feature)	<b>R98</b> (Release 1998)	
	<b>D</b> (editorial modification)	<b>R99</b> (Release 1999)	
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<b>REL-4</b> (Release 4)
			<b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ The purpose is two fold. First, the concept of IEIs have evolved from the initial SMS development to now take on different functionalities. Therefore, the functionality of IEIs needs to be identified. Second, existing text attempts to explain when duplicate or multiple IEIs are appropriate, but is not understandable. The changes in this CR clarify the functionality of each IEI and whether they can be duplicated or not.
<b>Summary of change:</b>	⌘ First, to modify the table of IEIs in section 9.2.3.24 by adding columns indicating their classification and repeatability. Second, add text describing the repeatability of IEIs based on their classification.
<b>Consequences if not approved:</b>	⌘ Continued vagueness in which IEIs are acceptable to be repeated within a short message, resulting in incorrect implementation of SMS.

<b>Clauses affected:</b>	⌘ 9.2.3.24		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘ <input type="checkbox"/>	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

9.2.3.24 TP-User Data (TP-UD)

The length of the TP-User-Data field is defined in the PDU's of the SM-TL (see subclause 9.2.2).

The TP-User-Data field may comprise just the short message itself or a Header in addition to the short message depending upon the setting of TP-UDHI.

Where the TP-UDHI value is set to 0 the TP-User-Data field comprises the short message only, where the user data can be 7 bit (default alphabet) data, 8 bit data, or 16 bit (UCS2 [24]) data.

Where the TP-UDHI value is set to 1 the first octets of the TP-User-Data field contains a Header in the following order starting at the first octet of the TP-User-Data field.

Irrespective of whether any part of the User Data Header is ignored or discarded, the MS shall always store the entire TPDU exactly as received.

FIELD	LENGTH
Length of User Data Header	1 octet
Information-Element-Identifier "A"	1 octet
Length of Information-Element "A"	1 octet
Information-Element "A" Data	1 to "n" octets
Information-Element-Identifier "B"	1 octet
Length of Information-Element "B"	1 octet
Information-Element "B" Data	1 to "n" octets
Information-Element-Identifier "n"	1 octet
Length of Information-Element "n"	1 octet
Information-Element "n" Data	1 to "n" octets

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for uncompressed GSM 7 bit default alphabet data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

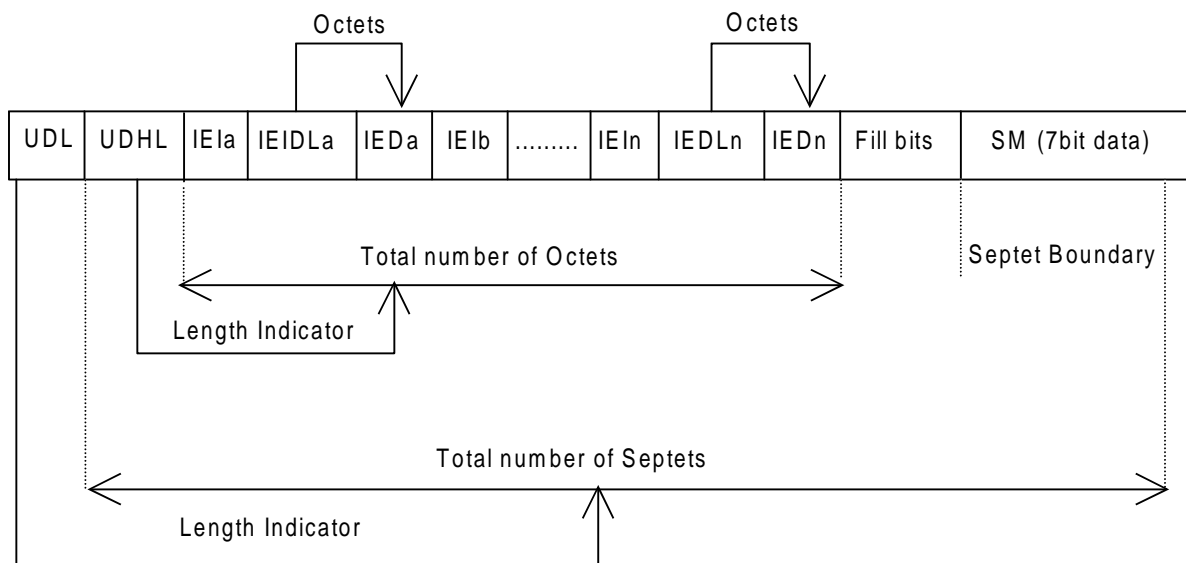


Figure 9.2.3.24 (a)

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for uncompressed 8 bit data or uncompressed UCS2 data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

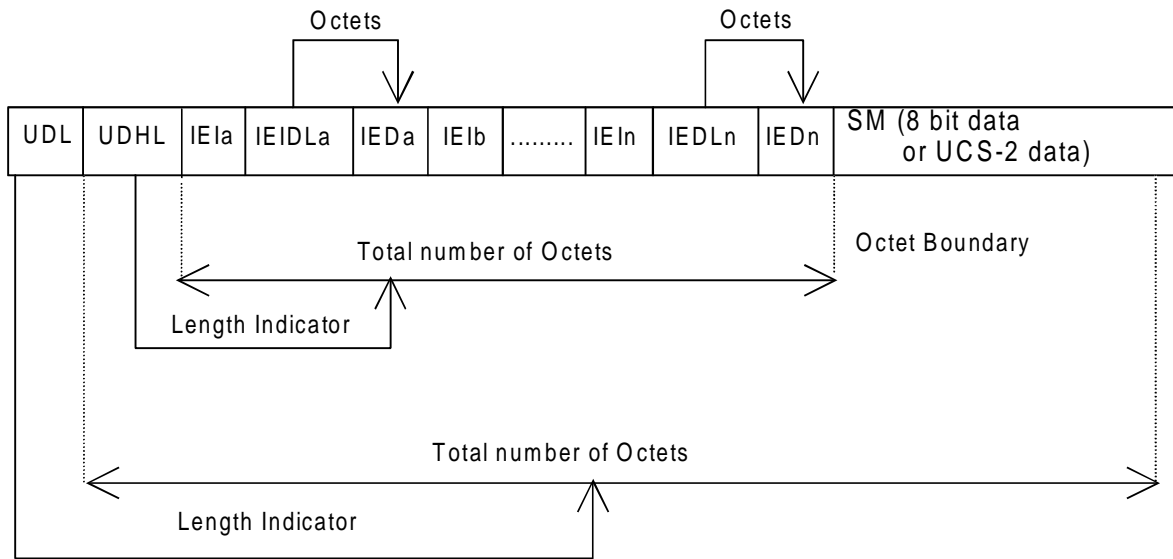


Figure 9.2.3.24 (b)

The diagram below shows the layout of the TP-User-Data-Length and the TP-User-Data for compressed GSM 7 bit default alphabet data, compressed 8 bit data or compressed UCS2 data. The UDHL field is the first octet of the TP-User-Data content of the Short Message.

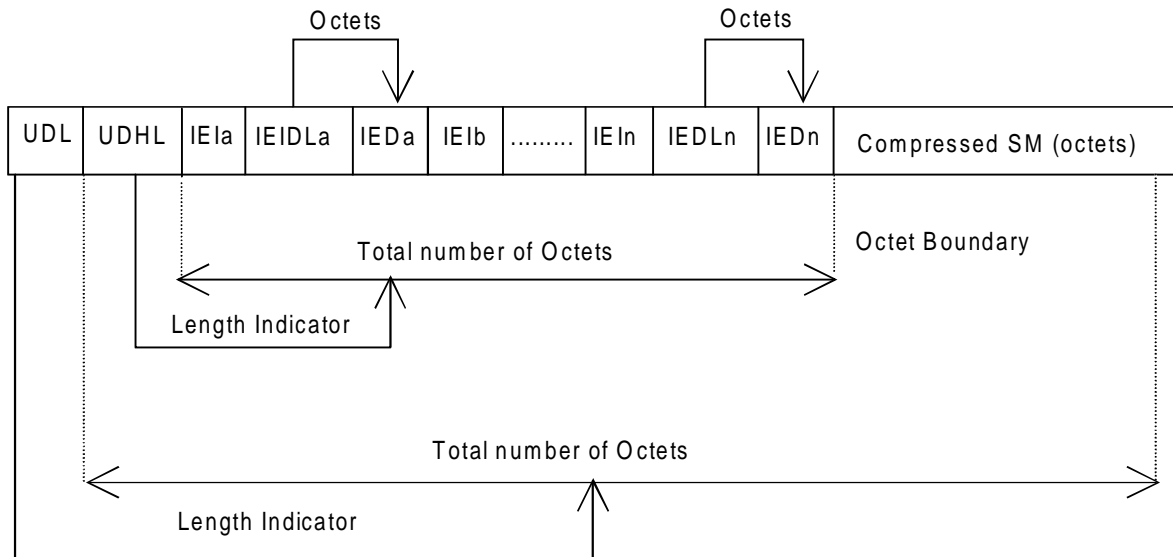


Figure 9.2.3.24 (c)

The definition of the TP-User-Data-Length field which immediately precedes the "Length of User Data Header" is unchanged and shall therefore be the total length of the TP-User-Data field including the Header, if present. (see 9.2.3.16)

The "Length-of-Information-Element" fields shall be the integer representation of the number of octets within its associated "Information-Element-Data" field which follows and shall not include itself in its count value.

The "Length-of-User-Data-Header" field shall be the integer representation of the number of octets within the "User-Data-Header" information fields which follow and shall not include itself in its count or any fill bits which may be present (see text below).

Information Elements may appear in any order and need not necessarily follow the order used in the present document. Information Elements are classified into 3 categories as described below.

- SMS Control – identifies those IEs which have the capability of dictating SMS functionality.
- EMS Control – identifies those IEs which manage EMS Content IEs.
- EMS Content – identifies those IEs containing data of a unique media format.

It's permissible for certain IEs to be repeated within a short message, or within a concatenated message. There is no restriction on the repeatability of IEs in the EMS Content classification. The repeatability of SMS Control and EMS Control IEs is determined on an individual basis. See the IE table below for the repeatability of each IE.

In the event that IEs determined as not repeatable are duplicated, the last occurrence of the IE shall be used. In the event that two or more IEs occur which have mutually exclusive meanings (e.g. an 8bit port address and a 16bit port address), then the last occurring IE shall be used.

In the case where there are no multiple instances of any Information Element type: If Information Elements are duplicated (either with the same or different content), within one single SM or within one segment of a concatenated message then the contents of the last occurrence of the Information Element shall be used.

In the case where there are multiple instances of any Information Element type: If certain types of Information Elements are duplicated (either with the same or different content) within one single SM or within one segment of a concatenated message and there is a contradiction in meaning (e.g. more than one Special Message Indication for voice) or there is a contradiction of Information Element types (e.g. an 8bit port address and a 16bit port address), then the contents of the last occurrence of the Information Element shall be used. Other types of Information Elements may occur more than once when there is additional information of the same type to be conveyed. The individual specifications for each Information Element will state if multiple use is permitted and in such a case will also indicate the maximum number of occurrences within one User Data Header.

If the length of the User Data Header overall is such that there are ~~appear to be~~ too few or too many octets in the final Information Element then the whole User Data Header shall be ignored.

If any reserved values are received within the content of any Information Element then that part of the Information Element shall be ignored.

The Information Element Identifier octet shall be coded as follows:

VALUE (hex)	MEANING
00	Concatenated short messages, 8-bit reference number
01	Special SMS Message Indication
02	Reserved
03	Value not used to avoid misinterpretation as <LF> character
04	Application port addressing scheme, 8-bit address
05	Application port addressing scheme, 16-bit address
06	SMSC Control Parameters
07	UDH Source Indicator
08	Concatenated short message, 16-bit reference number
09	Wireless Control Message Protocol
0A	Text Formatting
0B	Predefined Sound
0C	User Defined Sound (iMelody max 128 bytes)
0D	Predefined Animation
0E	Large Animation (16*16 times 4 = 32*4 = 128 bytes)
0F	Small Animation (8*8 times 4 = 8*4 = 32 bytes)
10	Large Picture (32*32 = 128 bytes)
11	Small Picture (16*16 = 32 bytes)
12	Variable Picture
13	User prompt indicator
14	Extended Object
15	Reused Extended Object
16	Compression Control
17	Object Distribution Indicator
18-1F	Reserved for future EMS features (see subclause 3.10)
20	RFC 822 E-Mail Header
21-6F	Reserved for future use
70-7F	(U)SIM Toolkit Security Headers
80-9F	SME to SME specific use
A0-BF	Reserved for future use
C0-DF	SC specific use
E0-FF	Reserved for future use



<u>VALUE</u> <u>(hex)</u>	<u>MEANING</u>	<u>Classification</u>	<u>Repeatability</u>
00	<u>Concatenated short messages, 8-bit reference number</u>	<u>SMS Control</u>	<u>No</u>
01	<u>Special SMS Message Indication</u>	<u>SMS Control</u>	<u>Yes</u>
02	<u>Reserved</u>	<u>N/A</u>	<u>N/A</u>
03	<u>Value not used to avoid misinterpretation as &lt;LF&gt; character</u>	<u>N/A</u>	<u>N/A</u>
04	<u>Application port addressing scheme, 8 bit address</u>	<u>SMS Control</u>	<u>No</u>
05	<u>Application port addressing scheme, 16 bit address</u>	<u>SMS Control</u>	<u>No</u>
06	<u>SMSC Control Parameters</u>	<u>SMS Control</u>	<u>No</u>
07	<u>UDH Source Indicator</u>	<u>SMS Control</u>	<u>Yes</u>
08	<u>Concatenated short message, 16-bit reference number</u>	<u>SMS Control</u>	<u>No</u>
09	<u>Wireless Control Message Protocol</u>	<u>SMS Control</u>	<u>Note 3</u>
0A	<u>Text Formatting</u>	<u>EMS Control</u>	<u>Yes</u>
0B	<u>Predefined Sound</u>	<u>EMS Content</u>	<u>Yes</u>
0C	<u>User Defined Sound (iMelody max 128 bytes)</u>	<u>EMS Content</u>	<u>Yes</u>
0D	<u>Predefined Animation</u>	<u>EMS Content</u>	<u>Yes</u>
0E	<u>Large Animation (16*16 times 4 = 32*4 =128 bytes)</u>	<u>EMS Content</u>	<u>Yes</u>
0F	<u>Small Animation (8*8 times 4 = 8*4 =32 bytes)</u>	<u>EMS Content</u>	<u>Yes</u>
10	<u>Large Picture (32*32 = 128 bytes)</u>	<u>EMS Content</u>	<u>Yes</u>
11	<u>Small Picture (16*16 = 32 bytes)</u>	<u>EMS Content</u>	<u>Yes</u>
12	<u>Variable Picture</u>	<u>EMS Content</u>	<u>Yes</u>
13	<u>User prompt indicator</u>	<u>EMS Control</u>	<u>Yes</u>
14	<u>Extended Object</u>	<u>EMS Content</u>	<u>Yes</u>
15	<u>Reused Extended Object</u>	<u>EMS Control</u>	<u>Yes</u>
16	<u>Compression Control</u>	<u>EMS Control</u>	<u>No</u>
17	<u>Object Distribution Indicator</u>	<u>EMS Control</u>	<u>Yes</u>
18-1F	<u>Reserved for future EMS features (see subclause 3.10)</u>	<u>N/A</u>	<u>N/A</u>
20	<u>RFC 822 E-Mail Header</u>	<u>SMS Control</u>	<u>No</u>
21	<u>Hyperlink format element</u>	<u>SMS Control</u>	<u>Yes</u>
22 – 6F	<u>Reserved for future use</u>	<u>N/A</u>	<u>N/A</u>
70 – 7F	<u>(U)SIM Toolkit Security Headers</u>	<u>SMS Control</u>	<u>Note 1</u>
80 – 9F	<u>SME to SME specific use</u>	<u>SMS Control</u>	<u>Note 2</u>
A0 – BF	<u>Reserved for future use</u>	<u>N/A</u>	<u>N/A</u>
C0 – DF	<u>SC specific use</u>	<u>SMS Control</u>	<u>Note 2</u>
E0 – FF	<u>Reserved for future use</u>	<u>N/A</u>	<u>N/A</u>

Note 1: The functionality of these IEIs is defined in 3GPP TSG 23.048 [28], and therefore, the repeatability is not within the scope of this document and will not be determined here.

Note 2: The functionality of these IEIs is used in a proprietary fashion by different SMSC vendors, and therefore, are not within the scope of this technical specification.

Note 3: The functionality of these IEIs is defined by the WAP Forum and therefore the repeatability is not within the scope of this document and will not be determined here.

A receiving entity shall ignore (i.e. skip over and commence processing at the next information element) any information element where the IEI is Reserved or not supported. The receiving entity calculates the start of the next information element by looking at the length of the current information element and skipping that number of octets.

The SM itself may be coded as 7, 8 or 16 bit data.

If 7 bit data is used and the TP-UD-Header does not finish on a septet boundary then fill bits are inserted after the last Information Element Data octet up to the next septet boundary so that there is an integral number of septets for the entire TP-UD header. This is to ensure that the SM itself starts on an septet boundary so that an earlier Phase mobile shall be capable of displaying the SM itself although the TP-UD Header in the TP-UD field may not be understood.

It is optional to make the first character of the SM itself a Carriage Return character encoded according to the default 7 bit alphabet so that earlier Phase mobiles, which do not understand the TP-UD-Header, shall over-write the displayed TP-UD-Header with the SM itself.

If 16 bit (USC2) data is used then padding octets are not necessary. The SM itself shall start on an octet boundary.

If 8 bit data is used then padding is not necessary. An earlier Phase mobile shall be able to display the SM itself although the TP-UD header may not be understood.

It is also possible for mobiles not wishing to support the TP-UD header to check the value of the TP-UDHI bit in the SMS-Deliver PDU and the first octet of the TP-UD field and skip to the start of the SM and ignore the TP-UD header.

## CHANGE REQUEST

⌘ **TS 23.040 CR 036** ⌘ ev **-** ⌘ Current version: **5.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification of LZSS compression for "EXTENDED OBJECTS" in EMS
<b>Source:</b>	⌘ T2
<b>Work item code:</b>	⌘ MESS5-EMS
<b>Date:</b>	⌘ Nov. 21, 2001
<b>Category:</b>	⌘ <b>F</b>
	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Use <u>one</u> of the following categories:</p> <p><b>F</b> (correction)</p> <p><b>A</b> (corresponds to a correction in an earlier release)</p> <p><b>B</b> (addition of feature),</p> <p><b>C</b> (functional modification of feature)</p> <p><b>D</b> (editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a>.</p> </div> <div style="width: 45%;"> <p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>REL-4 (Release 4)</p> <p>REL-5 (Release 5)</p> </div> </div>

<b>Reason for change:</b>	⌘ The compression format specified in the scope of the EMS extended object is inappropriately described. The reference given is inappropriate and does not provide a full description of any particular implementation.
<b>Summary of change:</b>	⌘ A description of an LZSS implementation is provided in a new annex F.
<b>Consequences if not approved:</b>	⌘ TS 23.040 does not provide enough detail for implementation of the compression control. Accordingly, EMS will not support extended object compression, or if implemented not guarantee can be made concerning interoperability issues. Compression will be implementation dependent.

<b>Clauses affected:</b>	⌘ References; 9.2.3.24.10.1.13; Figure Figure 9.2.3.24.10.1.13; new Annex F added; Revision History becomes annex G:												
<b>Other specs affected:</b>	<table style="width: 100%;"> <tr> <td style="width: 15%;">⌘ <input type="checkbox"/></td> <td style="width: 55%;">Other core specifications</td> <td style="width: 15%;">⌘</td> <td style="width: 15%;"></td> </tr> <tr> <td><input type="checkbox"/></td> <td>Test specifications</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>O&amp;M Specifications</td> <td></td> <td></td> </tr> </table>	⌘ <input type="checkbox"/>	Other core specifications	⌘		<input type="checkbox"/>	Test specifications			<input type="checkbox"/>	O&M Specifications		
⌘ <input type="checkbox"/>	Other core specifications	⌘											
<input type="checkbox"/>	Test specifications												
<input type="checkbox"/>	O&M Specifications												
<b>Other comments:</b>	⌘												

---

## 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TS 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".
- [2] 3GPP TS 02.03: "Digital cellular telecommunication system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [3] 3GPP TS 22.004: "General on supplementary services".
- [4] 3GPP TS 22.041: "Operator determined barring".
- [5] 3GPP TS 43.002: "Digital cellular telecommunication system (Phase 2+); Network architecture".
- [6] 3GPP TS 23.008: "Organization of subscriber data".
- [7] 3GPP TS 23.011: "Technical realization of supplementary services - General Aspects".
- [8] 3GPP TS 23.015: "Technical realization of Operator Determined Barring (ODB)".
- [9] 3GPP TS 23.038: "Alphabets and language-specific information".
- [10] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".
- [11] 3GPP TS 43.047: "Digital cellular telecommunication system; Example protocol stacks for interconnecting Service Centre(s) (SC) and Mobile-services Switching Centre(s) (MSC)".
- [12] 3GPP TS 44.008: "Digital cellular telecommunication system (Phase 2+); Mobile radio interface layer 3 specification".
- [13] 3GPP TS 24.011: "Short Message Service (SMS) support on mobile radio interface".
- [14] 3GPP TS 27.005: "Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)".
- [15] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [16] 3GPP TS 51.011: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM- ME) interface".
- [17] CCITT Recommendation E.164 (Blue Book): "Numbering plan for the ISDN era".
- [18] CCITT Recommendation E.163 (Blue Book): "Numbering plan for the international telephone service".
- [19] CCITT Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".
- [20] CCITT Recommendation T.100 (Blue Book): "International information exchange for interactive videotex".
- [21] CCITT Recommendation T.101 (Blue Book): "International interworking for videotex services".

- [22] CCITT Recommendation X.121 (Blue Book): "International numbering plan for public data networks".
- [23] CCITT Recommendation X.400 (Blue Book): "Message handling system and service overview".
- [24] ISO/IEC10646: "Universal Multiple-Octet Coded Character Set (USC); UCS2, 16 bit coding".
- [25] 3GPP TS 22.022: "Personalization of GSM ME Mobile functionality specification - Stage 1".
- [26] 3GPP TS 23.042: "Compression Algorithm for Text Messaging Services".
- [27] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [28] 3GPP TS 43.048: "Digital cellular telecommunications system (Phase 2+); Security Mechanisms for the SIM application toolkit; Stage 2".
- [29] 3GPP TR 21.905: "3G Vocabulary".
- [30] 3GPP TS 31.102: "Characteristics of the USIM application".
- [31] 3GPP TS 31.101: "UICC – Terminal interface; Physical and logical characteristics".
- [32] 3GPP TS 22.105: "Services and Service Capabilities".
- [33] Infrared Data Association. Specifications for Ir Mobile Communications (IrMC). iMelody.
- [34] IETF RFC 822: "Standard for the format of ARPA Internet text messages".
- [35] ~~Unused IETF RFC 1951: "Deflate Compressed Data Format Specification"~~
- [36] "vCard - The Electronic Business Card", version 2.1, The Internet Mail Consortium (IMC), September 18, 1996,  
[URL: http://www.imc.org/pdi/vcard-21.doc](http://www.imc.org/pdi/vcard-21.doc)
- [37] "vCalendar - the Electronic Calendaring and Scheduling Format", version 1.0, The Internet Mail Consortium (IMC), September 18, 1996,  
[URL: http://www.imc.org/pdi/vcal-10.doc](http://www.imc.org/pdi/vcal-10.doc)

.....

### 9.2.3.24.10.1.13 Compression Control

This information element is used to indicate a compressed ~~byte stream octet sequence~~. The compression control is only used in association with one or more Extended Objects and/or Reused Extended Objects. ~~containing one or more Extended Objects~~. The compressed ~~byte stream data~~ may extend across sequential short messages within a concatenated short message as illustrated by Figure 9.2.24.10.1.13. The first Compression Control IE of a compressed ~~byte stream data sequence~~ contains one octet of Compression Information and a 2-octet length field.

The SME shall support decompression if the Extended Object IE is implemented. An SME implementing the Extending Object IE shall be capable of decompressing a received stream for which the original uncompressed information fits into 1 to **min\_eo\_msg** messages. An SME may be capable of decompressing a received stream for which the original uncompressed information fits into more than **min\_eo\_msg** short messages. Variable **min\_eo\_msg** is defined in section 9.2.3.24.10.1.11.

The IE length is variable.

Octet 1          Compression information

Bits 0..3 represent the compression algorithm and bits 4..7 represent compression algorithm specific parameters.

Bit 0..3          Compression algorithm

~~0000~~ ~~RFC 1951 compression [35]~~

~~Bit 4..7~~ ~~Window size factor n (integer representation)~~  
~~Window size in octets = (n+1) \* 64~~

0000 LZSS Compression according to Annex F1, section 9.2.3.24.10.1.13.1

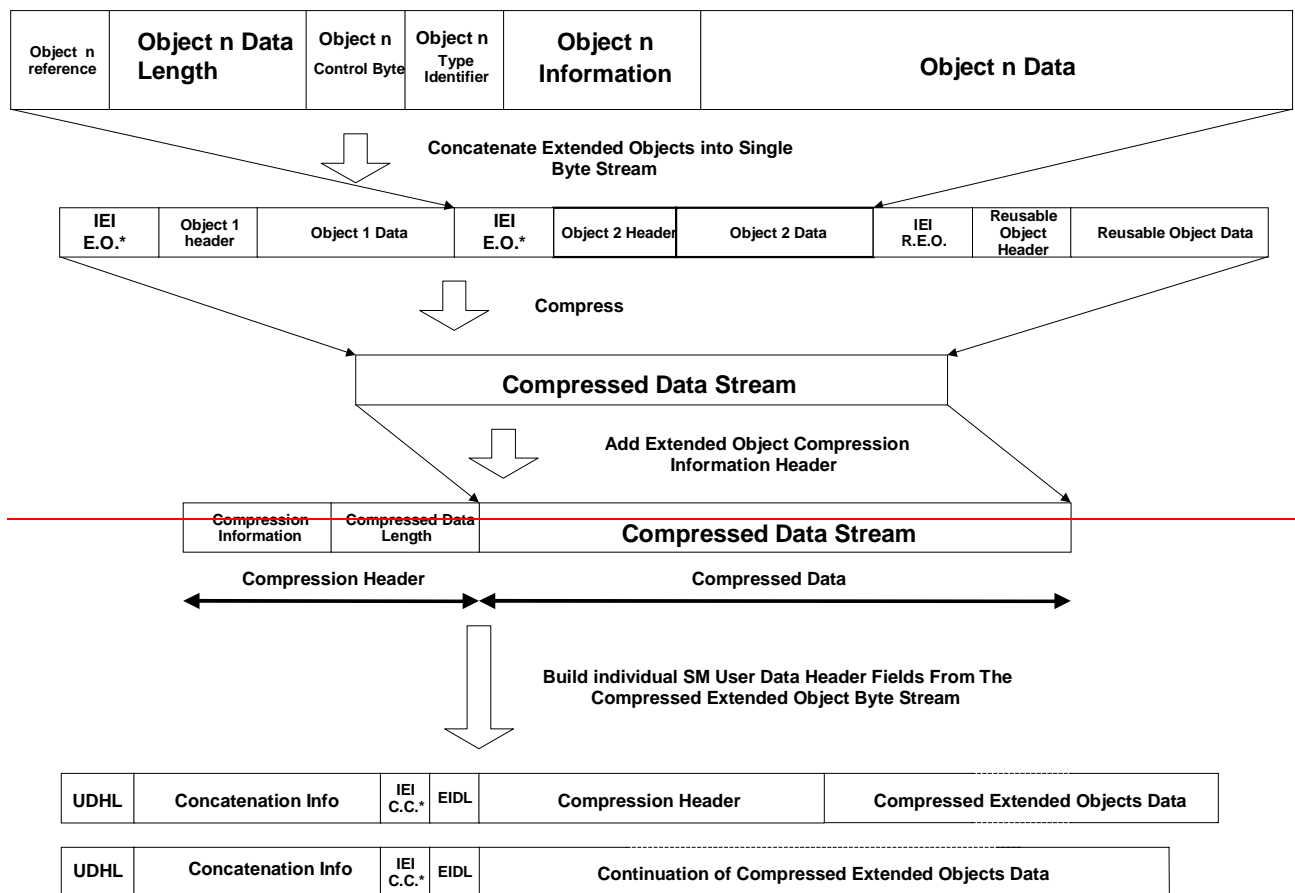
Bit 4..7 Shall be set 0.

0001..1111 reserved for future use; reserved bits shall be transmitted 0.

Bit 4..7 reserved

Octets 2..3 Length of the compressed ~~byte stream~~ data in octets (integer representation)  
The length indicates the length of the ~~byte stream~~ compressed data that may extend across several compression control IEs.

Octets 4..n Compressed data may contain one or more compressed Extended Objects. Figure 9.2.3.24.10.1.13 is an example and illustrates the assembly of a series of SM TPDUs from a sequence of concatenated and compressed extended objects. Each Extended Object is preceded by its IEI (Extended Object or Reused Extended Object). A series of Extended Objects is then compressed into a single buffer and this is split into several SM TPDUs as illustrated.

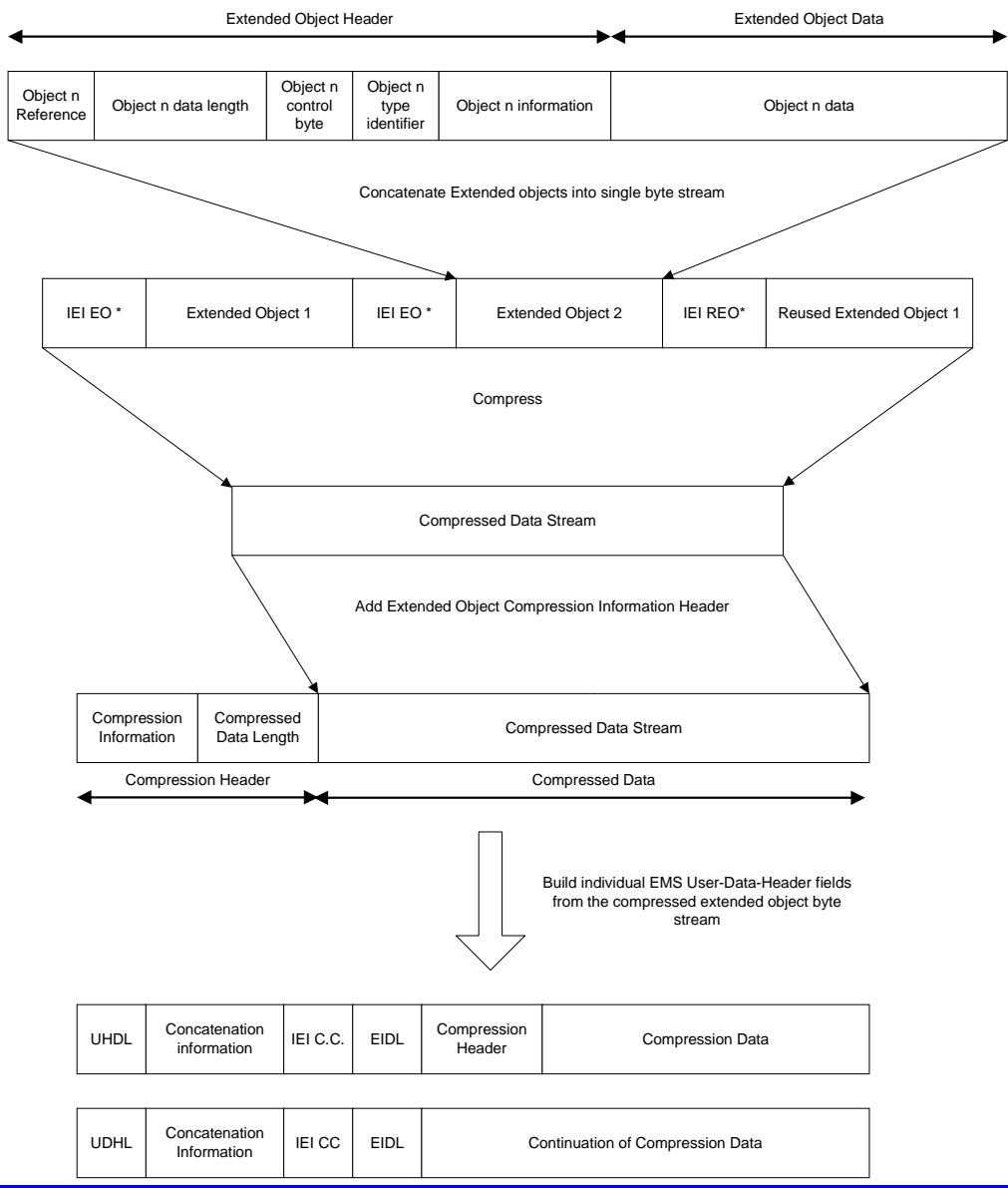


\* E.O. means Extended

R.E.O. means Reused Extended

C.C. means Compression

**Figure 9.2.3.24.10.1.13**



[\\*E.O Means Extended Object.](#)

[\\*R.E.O means Reused Extended Object.](#)

[C.C. means compression.](#)

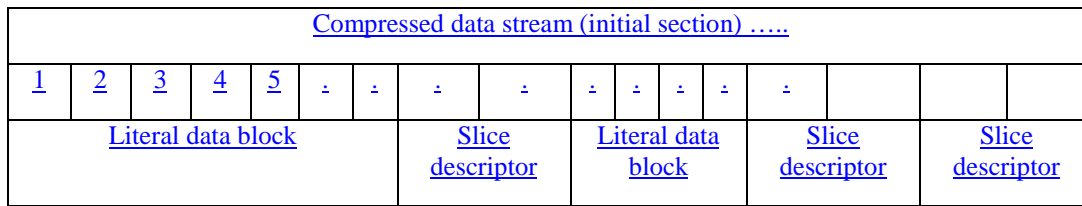
**[Figure 9.2.3.24.10.1.13](#)**

[9.2.3.24.10.1.13.1 LZSS Implementation for EMS extended object compression](#)

[LZSS compression uses two tokens to identify either literal strings \(byte-sequencies\) or references to repeated sequencies. These tokens \(for EMS extended-object compression\) are described in this section of the document. A more general introduction to LZSS compression together with an informative example \(based upon the tokens described below\) is provided in Annex F \(informative\).](#)

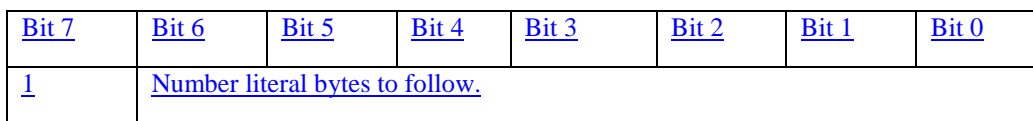
[The compressed data stream consists of any combination of literal data blocks and slice descriptor sequencies.](#)

[The format of the compressed data stream is illustrated as follows: -](#)



**Figure 9.2.3.24.10.1.13.1.a LZSS compressed data format.**

This diagram represents the structure of a compressed byte stream using LZSS. The stream contains a mixture of literal octets from the input buffer and slice descriptors representing the re-occurrence of an octet sequence together with a length and index for the matching octet sequence. The initial octets of a compressed buffer will always be a sequence of literal octets. The structures of the literal data blocks and Slice descriptors are given below.



**Figure 9.2.3.24.10.1.13.1.b Literal block identifier.**

When literal octets are written into the compression buffer (for instance during the initial phases of compression they are preceded by a literal block identifier. The most significant bit (bit 7) of this block shall be set 1. Bits 6-0 indicate the length of the literal block which follows (up to 127 octets). If no match can be found in a octet sequence of greater than 127 octets then 2 (or more) literal blocks shall be written sequentially.

<u>Octet 1</u>								<u>Octet 2</u>							
<u>Bit</u> <u>15</u>	<u>Bit</u> <u>14</u>	<u>Bit</u> <u>13</u>	<u>Bit</u> <u>12</u>	<u>Bit</u> <u>11</u>	<u>Bit</u> <u>10</u>	<u>Bit</u> <u>9</u>	<u>Bit</u> <u>8</u>	<u>Bit</u> <u>7</u>	<u>Bit</u> <u>6</u>	<u>Bit</u> <u>5</u>	<u>Bit</u> <u>4</u>	<u>Bit</u> <u>3</u>	<u>Bit</u> <u>2</u>	<u>Bit</u> <u>1</u>	<u>Bit</u> <u>0</u>
<u>0</u>	<u>Slice Length</u>						<u>Slice Offset</u>								

**Figure 9.2.3.24.10.1.13.1.c** Slice Descriptor.

As can be seen from the above table, the slice descriptor sequence length is two octets, hence only repeating slices of data longer than two octets are extracted. The “slice length” is contained in the descriptor high octet and describes a data slice length of up to 63 octets. The “slice offset index” to the start of the slice is contained in the lower 9 bits and limits the window to 511 octets. The “slice offset index” gives the start position of the source slice measured backwards from the current writing position in the output decoded message data buffer, expressed as a positive number.

#### 9.2.3.24.10.1.13.2 Data Compression

The compressed data output stream is constructed by repeating the following process until the end of the input data buffer is reached.

The input data buffer is scanned, from the current reading position (minus 1) through to the a position 511 bytes back from current reading position (the window) looking for the maximum (but limited to 63 octets) length matching data slice contained that matches the data starting at the current reading position (the look ahead buffer)

If no matching data slice, longer than two octets, is found then the input data octet at the current reading position is written to a literal buffer. Both the current reading position in the input data buffer and the current writing position in the output data buffer are incremented by one.

If a matching slice is found then a slice descriptor is written to the output data buffer at the current writing position in the output data buffer and the current writing position is incremented by two. The current reading position in the input data buffer is incremented by the length of the newly found matching data slice.

If the next read octet results in a matching slice being found then the literal buffer is written out. The literal block header, containing a count of the number of literals in the block, is written out first. (If more than 127 literal octets exist in the literal buffer, then it is split into multiple blocks).

The above sequence is repeated until the current reading position reaches the end of the input data buffer.

When encoding (compressing), it is the input data buffer, up to the current reading position, that is used to search for already known matching data slices, as this represents, and is equal to, the reconstructed output data buffer of the decoder at the receiving end.

#### 9.2.3.24.10.1.13.3 Data De-compression

The following sequence is repeated until the end of the input data buffer.

The data octet at the current reading position in the input data buffer is tested for either 0 or 1 in bit 7.

If the bit is set (bit 7 = 1), then the number of literal octets that follow is determined from the lower 7 bits of the header octet (this one).

The literal octet block is written to the output data buffer at the current writing position and both the output data writing position and the input data reading position pointers are incremented by the block size.



If the bit is clear (bit 07 = 0), then the “slice length” and “slice offset index” are extracted from the two octet slice descriptor.

The data slice is copied from within the output data buffer to the end of the output data buffer, where the start of the source slice is at a position “slice offset index” back from the current output data writing position and the destination start position of the slice is the current output buffer writing position. The input data buffer reading position is incremented by two and the output data writing position is incremented by the “slice length”.

#### 9.2.3.24.10.1.13.4 Test Vectors

In order to assist implementors of the compression algorithm described in this specification, a suite of test vectors and ‘help’ information are available in electronic format. The test vectors are supplied on a single diskette attached to this specification.

These test vectors provide checks for most of the commonly expected parameter value variants in this specification and may be updated as the need arises.

In addition Annex F (informative) contains an introduction to LZ-type compression algorithms and also has a brief informative example.

---

## Annex F (informative) : Compression methods for EMS

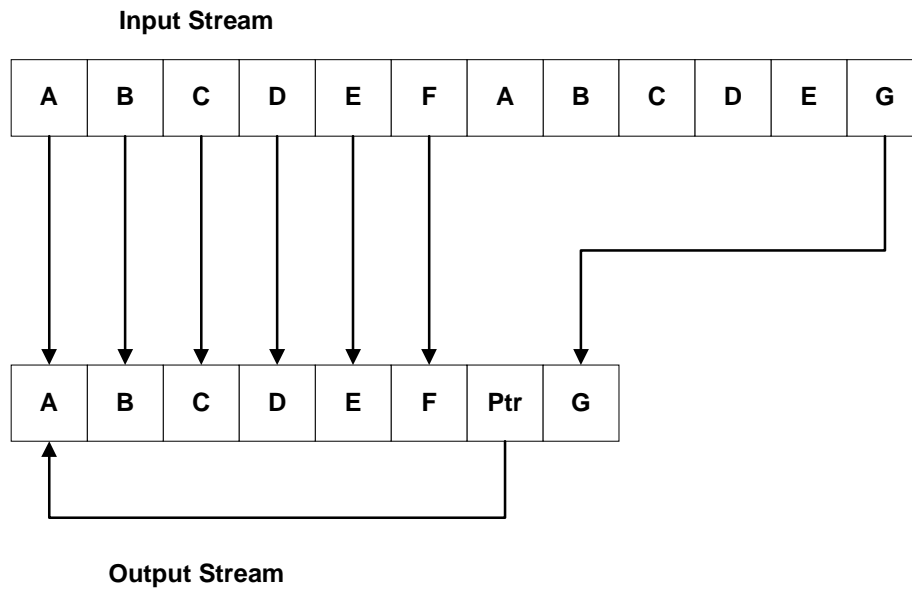
### F.1 LZSS compression

#### F.1.1 Introduction

The LZSS compression algorithm is one of a number of compression algorithms generally referred to as “Dictionary Methods”. These algorithms rely upon the fact that (in general) an input data buffer will contain repeating “patterns” or matching sequences of bytes.

The algorithms fall into 2 groups. Systems like LZ78 and LZW scan an input buffer and construct a “dictionary” of the most commonly occurring byte sequences or “phrases”. This dictionary is pre-pended with the compressed data and the compressed data comprises an array of indices into the dictionary.

A second set is a modification of this in that the data dictionary is implicit in the uncompressed data buffer. All are based upon an algorithm developed and published in 1977 by Abraham Lempel and Jakob Ziv LZ77. A refinement of this algorithm, which is the basis for practically all the later methods in this group, is the LZSS algorithm developed in 1982 by Storer and Szymanski. These methods try to find if the character sequence currently being compressed has already occurred earlier in the input data and then, instead of repeating it, output only a pointer to the earlier occurrence. This is illustrated in the following diagram:



**Figure F.1.1 Illustration of “Implicit Dictionary” compression methods.**

## F.1.2 LZSS Basic Algorithm

The algorithm searches the window (a buffer moving back from the current position in the input data). It searches for the longest match with the beginning of the look-ahead buffer (a buffer moving forward from the current position in the input data) and outputs a pointer to that match. This pointer indicates a position and length of that data match. It is referred to here as a “Slice Descriptor”.

Since it is possible that not even a one-character match can be found, the output cannot contain just pointers. Accordingly at times it is necessary to write literal octets into the output buffer. A block of literal octets is preceded by a “Literal Block Identifier” which indicates the length of the literal octet sequence that follows.

## F 1.3 Informative Example.

The following is provided as an informative example using the input buffer shown below.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
<u>0x01</u>	<u>0x02</u>	<u>0x03</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>	<u>0x04</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>

**Figure EF.12.6.1 Sample input buffer (16 octets long).**

### Step 1:

Starting position is byte 1 in the input buffer. For octets 1 to 3 there are no octet matches in the window for the look-ahead buffer. So write a literal octet sequence of 3 octets following a literal block header.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
<u>0x83</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>

**Figure EF.12.6.2 Output buffer after initial literal block is written.**

**Step 2:**

Current position is octet 4. Examining the look-ahead buffer and the window a 3 octet match is found beginning 3 octets before (octet 1) and of 3 octets in length. A 2 octet slice descriptor is added to the output buffer. The current position moves to octet 7 of the input buffer.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
<u>0x83</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>	<u>0x06</u>	<u>0x03</u>

**Figure EF.12.6.3 Output buffer after the first slice descriptor is written.**

**Step 3:**

Current position is octet 7 in the input buffer (0x04). There are no matches in the window for this value so a 2 octet literal sequence is written to the end of the output buffer. The current position moves to octet 8 of the input buffer.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
<u>0x83</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>	<u>0x06</u>	<u>0x03</u>	<u>0x81</u>	<u>0x04</u>

**Figure EF.12.6.4 Second literal block is written into output buffer**

**Step 4:**

Current position is octet 8 of the input buffer. Comparing the window with the look-ahead buffer reveals a octet match from the current position with octets 1 to 6 of the input buffer. That is a 6 octet sequence beginning 7 octets back from the current position.. A two-octet slice descriptor for this match is added to the output buffer. The current position moves to octet 14 of the input buffer (6 octets further on).

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
<u>0x83</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>	<u>0x06</u>	<u>0x03</u>	<u>0x81</u>	<u>0x04</u>	<u>0x0C</u>	<u>0x07</u>

**Figure EF.12.6.4 A 6 octet match slice descriptor is written into output buffer**

**Step 5:**

Current position is octet 14 of the input buffer. Comparing the window with the look-ahead buffer reveals another 3 octet sequence match (0x01, 0x02, 0x03). This octet sequence occurs several times in the window within the 511 octets that the slice descriptor allows. Therefore several different (but valid) slice descriptors could be written (this would be implementation dependent). However in this example we will reference the initial 3 octets of the input buffer and write a slice descriptor indicating a 3 octet match beginning 13 octets behind the current position.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
<u>0x83</u>	<u>0x01</u>	<u>0x02</u>	<u>0x03</u>	<u>0x06</u>	<u>0x03</u>	<u>0x81</u>	<u>0x04</u>	<u>0x0C</u>	<u>0x07</u>	<u>0x06</u>	<u>0x0D</u>

**Figure EF.12.6.4 A 3 octet match slice descriptor is written into output buffer: the final output buffer**

## ~~Annex F~~ Annex G (informative):

### Change history

TSG	TSG TDoc	Vers	CR	Rev	Ph	Cat	Subject	New Vers	Work Item
T#4	TP-99126	2.0.0	New				Creation of 3GPP 23.040 v3.0.0 out of GSM 03.40 v7.1.0	3.0.0	
T#4	TP-99124	3.0.0	001		R99	A	Clarification concerning SMSC address checking in the MS for concatenated messages and replace message types	3.1.0	TEI
T#4	TP-99146	3.0.0	002		R99	A	Guidance regarding the SMSC address in a Status Report	3.1.0	TEI
T#5	TP-99177	3.1.0	003		R99	A	Change to reserved port number range for SMS	3.2.0	TEI
T#5	TP-99177	3.1.0	004		R99	B	New TP-PID value for delivery of ANSI-136 Short Messages	3.2.0	SMS
T#5	TP-99177	3.1.0	005		R99	D	IEI values in concatenated SM's	3.2.0	SMS
T#6	TP-99237	3.2.0	007		R99	F	Adaptations for UMTS	3.3.0	TEI
T#6	TP-99237	3.2.0	006		R99	C	Duplicate messages	3.3.0	TEI
T#6	TP-99237	3.2.0	008		R99	A	Concatenated Short Message	3.3.0	TEI
T#7	TP-000024	3.3.0	009		R99	B	Enhancement of the Message Content in SMS	3.4.0	MMS
T#7	TP-000024	3.3.0	010		R99	B	Multiple Information Elements	3.4.0	TEI
T#7	TP-000024	3.3.0	011		R99	B	SMS E-MAIL PARAMETERS	3.4.0	TEI
-	-	3.4.0	-	-	R99	-	Editorial graphics update to make visible	3.4.1	-
T#8	TP-000073	3.4.1	012		R99	F	Alignment in Enhanced Messaging Service	3.5.0	EMS
T#8	TP-000073	3.4.1	014		R99	F	Correction to text on SMS TimeZone	3.5.0	TEI
T#8	TP-000073	3.4.1	015		R99	F	Correction of TP-PID	3.5.0	TEI
T#8	TP-000074	3.5.0	013		Rel4	B	Addition of numbering plan value for Service Centre Specific Addresses	4.0.0	TEI
T#9	TP-000144	4.0.0	016		Rel4	F	Presence of TP-PI	4.1.0	SMS TEI
T#9	TP-000144	4.0.0	017		Rel4	D	Big endian integer representation	4.1.0	SMS TEI
T#9	TP-000144	4.0.0	018		Rel4	B	SMS Address fields section needs clarification	4.1.0	SMS TEI
T#9	TP-000144	4.0.0	019		Rel4	B	User prompt indication	4.1.0	SMS TEI
T#11	TP-010029	4.1.0	020		Rel4	C	Predefined animations for EMS	4.2.0	TEI4
T#11	TP-010029	4.1.0	021		Rel4	C	Message Waiting Indication Status storage on the USIM	4.2.0	UICC1-CPHS
T#12	TP-010128	4.2.0	023		Rel4	F	Clarification of User Prompt Indicator	4.3.0	TEI4
T#12	TP-010128	4.2.0	025		Rel4	F	Clarification of Email Addressing for Email – SMS Interworking	4.3.0	TEI4
T#12	TP-010128	4.2.0	026		Rel4	F	Removal of duplicated values in TP-PID section	4.3.0	TEI4
T#12	TP-010128	4.2.0	027		Rel4	F	Application Port Addressing Clarification	4.3.0	TEI4
T#12	TP-010128	4.3.0	022		Rel5	B	Addition of text and background colour	5.0.0	MESS5-EMS
T#12	TP-010128	4.3.0	024		Rel5	B	Object Distribution Indicator	5.0.0	MESS5-EMS
T#12	TP-010149	4.3.0	028	1	Rel5	B	Extended Objects in EMS	5.0.0	MESS5-EMS
T#13	TP-010194	5.0.0	029		Rel5	B	Hyperlink Information Element	5.1.0	TEI5
T#13	TP-010194	5.0.0	031		Rel5	A	Removal of EMS PID	5.1.0	TEI5
T#13	TP-010194	5.0.0	033		Rel5	B	EMS Delivery Request	5.1.0	TEI5

CR-Form-v4
<b>CHANGE REQUEST</b>
⌘ <b>23.040 CR 037</b> ⌘ ev <b>-</b> ⌘ Current version: <b>5.1.0</b> ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Extended Object Positioning		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ TEI5	<b>Date:</b>	⌘ November 26, 2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ Displaying of MT short messages having multiple concatenated segments containing Extended Objects IEs can be a significant burden on a terminal's memory resources. Therefore, some guidelines must be placed on the position filed within the Extended Object to facilitate the presentation of messages.
<b>Summary of change:</b>	⌘ A note is added, advising that the sequence number of the short message segment containing an Extended Object (or Reused Extended Object) IE precede the short message segment that contains the text where the object is positioned. Also, require that the reference number of an Extended Object to be reused be restricted to those sequence numbers of short message segments that preceded the one where the Reused Extended Object is located.
<b>Consequences if not approved:</b>	⌘ Handsets may mis-present the Extended Objects in large messages.

<b>Clauses affected:</b>	⌘ 9.2.3.24.10.1.11 and 9.2.3.24.10.1.12		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

#### 9.2.3.24.10.1.11 Extended Object

The Extended Object allows an extended code range for format types. The Extended Object may extend across segment boundaries of a concatenated short message. Octets 1 through 7 of the first Extended Object IE shall be contained in a single segment. A single segment may include one or more Extended Object IEs.

If multiple SMSs are concatenated and at least one of them contains an Extended Object information element, then concatenation of the SMSs shall be done using the 'Concatenated short messages, 16-bit reference number', versus the 'Concatenated short messages, 8-bit reference number' information element. The re-assembly of the Extended Object segments shall be done according to the sequence number of the associated Concatenation IE.

One or more Extended Objects may be compressed using a compression algorithm as indicated in the Compression Control IE (see clause 9.2.3.24.10.1.13).

An SME implementing the Extended Object IE shall be capable of interpreting an uncompressed concatenated message composed of at least **min\_eo\_msg** short messages which have been received. According to current content provider requirements and handset manufacturer constraints, variable **min\_eo\_msg** is set to 8.

The first Extended Object IE of an Extended Object contains a reference number, length, control data, type and position. The subsequent Extended Object IEs shall only contain Extended Object data as illustrated in Figure 9.2.24.10.11.

The IE length is variable.

- |            |   |
|------------|---|
| Octet 1    | Extended Object reference number.<br>A modulo 256 counter indicating the reference number for the Extended Object. Two different Extended Objects in a single concatenated message shall have different reference numbers.  |
| Octet 2..3 | Extended Object length in number of octets (integer representation) as shown in Figure 9.2.3.24.10.1.11.  |
| Octet 4    | Control data.<br><br>Bit 0            Object distribution<br><br>0    Object may be forwarded<br>1    Object shall not be forwarded by SMS<br><br>Bit 1            User Prompt Indicator<br><br>0    Object shall be handled normally<br>1    Object shall be handled as a User Prompt (see 9.2.3.24.10.1.10)<br><br>Bit 2..7        reserved<br><br>Any reserved values shall be set to 0. |
| Octet 5    | Extended Object Type.<br>This octet indicates the format of the Extended Object from the table below.<br>If the value is reserved or if the associated format is not supported then the receiving entity shall ignore the Extended Object.  |



Format Type	Format Description
0x00	Predefined sound as defined in annex E.
0x01	iMelody as defined in annex E.
0x02	Black and white bitmap as defined in annex E.
0x03	2-bit greyscale bitmap as defined in annex E.
0x04	6-bit colour bitmap as defined in annex E.
0x05	Predefined animation as defined in annex E.
0x06	Black and white bitmap animation as defined in annex E.
0x07	2-bit greyscale bitmap animation as defined in annex E.
0x08	6-bit colour bitmap animation as defined in annex E.
0x09	vCard as defined in annex E.
0x0A	vCalendar as defined in annex E.
0x0B.. 0xFE	Reserved
0xFF	Data Format Delivery Request as defined in annex E.

Octet 6..7 Extended Object Position (integer representation).

The Extended Object Position indicates the absolute character position within the message text after which the object shall be played or displayed. The absolute character position relates to the entire text within the concatenated message, the first character is numbered character 1.

Note: Although this is an absolute value, for concatenated messages, it is suggested the **only valid positions used are those that lie within the text of short message segments that have the sequence number equal to or higher than the one that contains the Extended Object IE.**

If more than one Extended Object is located at the same position then they may be played or displayed in sequence or simultaneously.

Octet 8..n Extended Object Data.

This sequence of octets is structured as illustrated in the figure below and defined annex E. This figure illustrates the construction of a number of SMs containing a large Extended Object which crosses a SM boundary and is encoded into 2 SM TPDUs. The figure illustrates only the User Data field of the SM (TPDUs). For a description of concatenation of SM refer to Figures 9.2.3.24 (a, b and c)

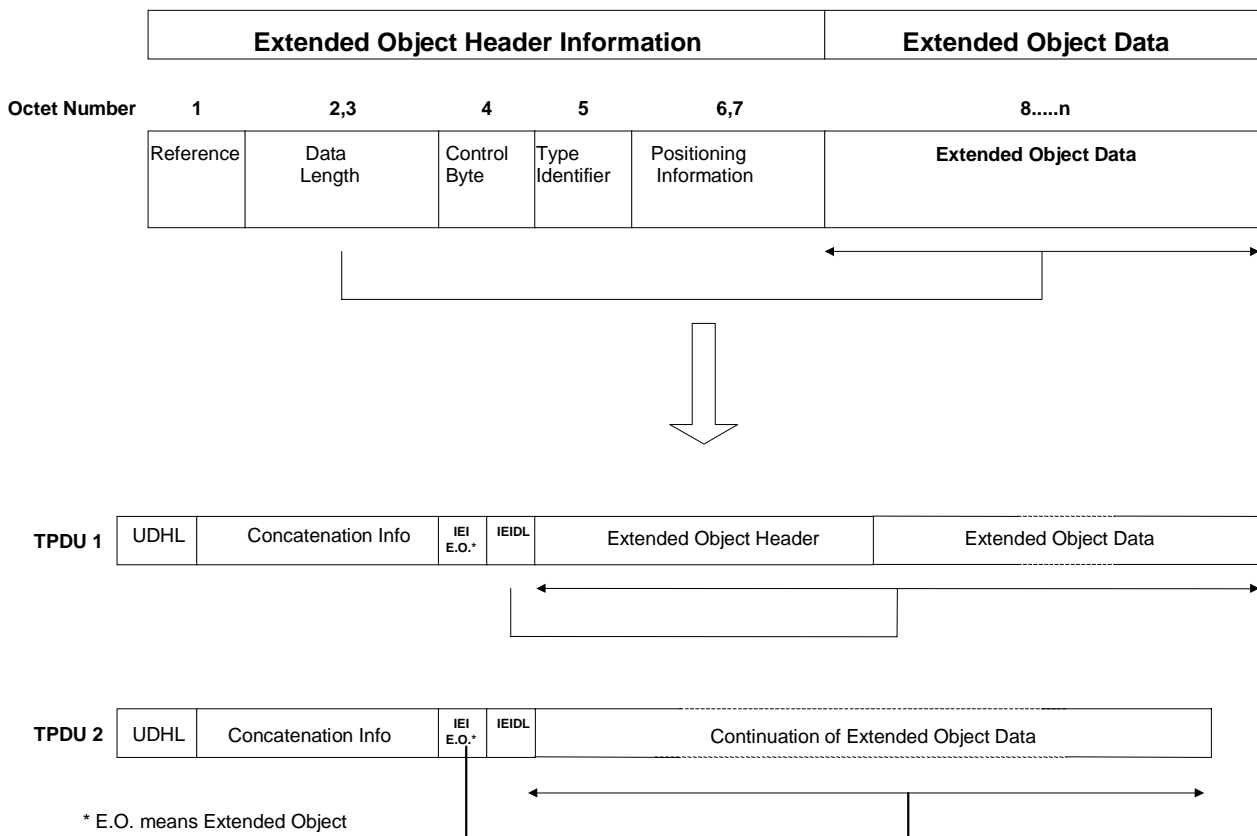


Figure 9.2.3.24.10.1.11

#### 9.2.3.24.10.1.12 Reused Extended Object

This facility is used to reuse an Extended Object in a message which has already been defined in the same message.

Octet 1                  Reference number of the Extended Object to be reused.  
Note: -The ~~only~~ suggested reference numbers ~~that are valid are~~ those of Extended Objects that are contained in short messages that have the sequence number equal to or lower than the one that contains the Reused Extended Object IE.

Octet 2..3            indicates in the concatenated message the absolute character position after which the object shall be played or displayed.  
Note: -Although ~~this is an absolute value, for concatenated messages, the suggested~~~~only~~ positions that ~~are valid are those that~~ lie within the text of short message segments that have the sequence number equal to or higher than the one that contains the Extended Object IE.

## CHANGE REQUEST

⌘ **23.040 CR 038** ⌘ rev **-** ⌘ Current version: **3.6.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction on SMS Information Element Data Length		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ SMS	<b>Date:</b>	⌘ 28 Nov. 01
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ There is an inconsistency regarding the valid length range of an information element data.
<b>Summary of change:</b>	⌘ This CR clarifies that an information element data length can be 0.
<b>Consequences if not approved:</b>	⌘ Specifications will remain inconsistent.

<b>Clauses affected:</b>	⌘ Section 9.2.3.24		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 9.2.3.24 TP-User Data (TP-UD)

The length of the TP-User-Data field is defined in the PDU's of the SM-TL (see subclause 9.2.2).

The TP-User-Data field may comprise just the short message itself or a Header in addition to the short message depending upon the setting of TP-UDHI.

Where the TP-UDHI value is set to 0 the TP-User-Data field comprises the short message only, where the user data can be 7 bit (default alphabet) data, 8 bit data, or 16 bit (UCS2 [24]) data.

Where the TP-UDHI value is set to 1 the first octets of the TP-User-Data field contains a Header in the following order starting at the first octet of the TP-User-Data field.

Irrespective of whether any part of the User Data Header is ignored or discarded, the MS shall always store the entire TPDU exactly as received.

FIELD	LENGTH
Length of User Data Header	1 octet
Information-Element-Identifier "A"	1 octet
Length of Information-Element "A"	1 octet
Information-Element "A" Data	0+ to "n" octets
Information-Element-Identifier "B"	1 octet
Length of Information-Element "B"	1 octet
Information-Element "B" Data	0+ to "n" octets
Information-Element-Identifier "X"	1 octet
Length of Information-Element "X"	1 octet
Information-Element "X" Data	0+ to "n" octets

...

## CHANGE REQUEST

⌘ **23.040 CR 039** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction on SMS Information Element Data Length		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ SMS	<b>Date:</b>	⌘ 28 Nov. 01
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ There is an inconsistency regarding the valid length range of an information element data.
<b>Summary of change:</b>	⌘ This CR clarifies that an information element data length can be 0.
<b>Consequences if not approved:</b>	⌘ Specifications will remain inconsistent.

<b>Clauses affected:</b>	⌘ Section 9.2.3.24		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 9.2.3.24 TP-User Data (TP-UD)

The length of the TP-User-Data field is defined in the PDU's of the SM-TL (see subclause 9.2.2).

The TP-User-Data field may comprise just the short message itself or a Header in addition to the short message depending upon the setting of TP-UDHI.

Where the TP-UDHI value is set to 0 the TP-User-Data field comprises the short message only, where the user data can be 7 bit (default alphabet) data, 8 bit data, or 16 bit (UCS2 [24]) data.

Where the TP-UDHI value is set to 1 the first octets of the TP-User-Data field contains a Header in the following order starting at the first octet of the TP-User-Data field.

Irrespective of whether any part of the User Data Header is ignored or discarded, the MS shall always store the entire TPDU exactly as received.

FIELD	LENGTH
Length of User Data Header	1 octet
Information-Element-Identifier "A"	1 octet
Length of Information-Element "A"	1 octet
Information-Element "A" Data	0+ to "n" octets
Information-Element-Identifier "B"	1 octet
Length of Information-Element "B"	1 octet
Information-Element "B" Data	0+ to "n" octets
Information-Element-Identifier "X"	1 octet
Length of Information-Element "X"	1 octet
Information-Element "X" Data	0+ to "n" octets

...

## CHANGE REQUEST

⌘ **23.040 CR 040** ⌘ rev **-** ⌘ Current version: **5.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction on SMS Information Element Data Length		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ SMS	<b>Date:</b>	⌘ 28 Nov. 01
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ There is an inconsistency regarding the valid length range of an information element data.
<b>Summary of change:</b>	⌘ This CR clarifies that an information element data length can be 0.
<b>Consequences if not approved:</b>	⌘ Specifications will remain inconsistent.

<b>Clauses affected:</b>	⌘ Section 9.2.3.24		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 9.2.3.24 TP-User Data (TP-UD)

The length of the TP-User-Data field is defined in the PDU's of the SM-TL (see clause 9.2.2).

The TP-User-Data field may comprise just the short message itself or a Header in addition to the short message depending upon the setting of TP-UDHI.

Where the TP-UDHI value is set to 0 the TP-User-Data field comprises the short message only, where the user data can be 7 bit (default alphabet) data, 8 bit data, or 16 bit (UCS2 [24]) data.

Where the TP-UDHI value is set to 1 the first octets of the TP-User-Data field contains a Header in the following order starting at the first octet of the TP-User-Data field.

Irrespective of whether any part of the User Data Header is ignored or discarded, the MS shall always store the entire TPDU exactly as received.

FIELD	LENGTH
Length of User Data Header	1 octet
Information-Element-Identifier "A"	1 octet
Length of Information-Element "A"	1 octet
Information-Element "A" Data	0+ to "n" octets
Information-Element-Identifier "B"	1 octet
Length of Information-Element "B"	1 octet
Information-Element "B" Data	0+ to "n" octets
Information-Element-Identifier "X <sub>#</sub> "	1 octet
Length of Information-Element "X <sub>#</sub> "	1 octet
Information-Element "X <sub>#</sub> " Data	0+ to "n" octets

...



## CHANGE REQUEST

⌘ **23.041 CR 008** ⌘ rev - ⌘ Current version: **4.1.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification on the use of Message IDs in multi-technology networks		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ TEI4	<b>Date:</b>	⌘ 15-Nov-2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-4
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Possible ambiguity of how to use Message IDs in multi-technology networks.		
<b>Summary of change:</b>	⌘ Clarify that Message ID values are assigned identically in each network technology.		
<b>Consequences if not approved:</b>	⌘ Assigning different Message ID values in different network technologies to one given topic will lead to much more complex implementation of many entities including the MMI of a terminal and confusion of the customer.		

<b>Clauses affected:</b>	⌘ 9.4.2.2.2		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 9.4 Message Format on the Radio Network – MS/UE Interface

### 9.4.1 GSM

The CBS messages which are transmitted by the BTS for the MS include the CBS Message (information for the user) and Schedule Message (schedule of CBS messages).

The use and the formatting of the CBS messages, which contain information for the MS user, is described in this section.

The Schedule Message is broadcast to support CBS DRX mode for Mobile Stations. The Schedule Message is helpful in minimizing battery usage for Cell Broadcast in the Mobile Station, because it allows the MS to ignore transmissions of CBS messages the customer is not interested in. The use and formatting of the Schedule Message is described in GSM 04.12.

#### 9.4.1.1 General Description

Each page of a CBS Message sent to the MS by the BTS is a fixed block of 88 octets as coded in GSM 04.12. This is sent on the channel allocated as CBCH by GSM 05.02. The 88 octets of the CBS Message are formatted as described in 9.3.2.

#### 9.4.1.2 Message Parameter

Octet Number(s)	Field
1-2	Serial Number
3-4	Message Identifier
5	Data Coding Scheme
6	Page Parameter
7-88	Content of Message

The octets in the above table are transmitted in order, starting with octet 1. The bits within these octets are numbered 0 to 7; bit 0 is the low order bit and is transmitted first.

##### 9.4.1.2.1 Serial Number

This parameter is a 16-bit integer which identifies a particular CBS message (which may be one to fifteen pages in length) from the source and type indicated by the Message Identifier and is altered every time the CBS message with a given Message Identifier is changed.

The two octets of the Serial Number field are divided into a 2-bit Geographical Scope (GS) indicator, a 10-bit Message Code and a 4-bit Update Number as shown below:

Octet 1								Octet 2							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
GS		Message Code										Update Number			

The most significant bit of the update number is octet 2 bit 3. The most significant bit of the Message Code is octet 1 bit 5 and the least significant bit of the Message Code is octet 2 bit 4. The most significant bit of the Geographical Scope is octet 1 bit 7.

- **Message Code:**

The Message Code differentiates between CBS messages from the same source and type (i.e. with the same Message Identifier). Message Codes are for allocation by PLMN operators.

The Message Code identifies different message themes. For example, let the value for the Message Identifier be "Automotive Association" (= source), "Traffic Reports" (= type). Then "Crash on A1 J5" could be one value for the message code, "Cow on A32 J4" could be another, and "Slow vehicle on M3 J3" yet another.

- **Geographical Scope:**

The Geographical Scope (GS) indicates the geographical area over which the Message Code is unique, and the display mode. The CBS message is not necessarily broadcast by all cells within the geographical area. When two CBS messages are received with identical Serial Numbers/Message Identifiers in two different cells, the Geographical Scope may be used to determine if the CBS messages are indeed identical.

In particular, the Geographical Scope tells the mobile if the CBS message is:

- only cell wide (which means that any CBS message if received in the next cell is regarded as "new"), or
- PLMN wide (which means that the Message Code and/or Update Number must change in the next cell for the CBS message to be "new"), or
- Location Area wide (in GSM) (which means that a CBS message with the same Message Code and Update Number may or may not be "new" in the next cell according to whether the next cell is in the same Location Area as the current cell), or
- Service Area Wide (in UMTS) (which means that a CBS message with the same Message Code and Update Number may or may not be "new" in the next cell according to whether the next cell is in the same Service Area as the current cell)

NOTE: According to 3GPP TS 23.003 [2] a Service Area consists of one cell only.

The display mode indicates whether the CBS message is supposed to be on the display all the time ("immediate") or only when the user wants to see it ("normal"). In either case, the CBS message will be displayed only if its Message Identifier is contained within the "search list" of the mobile (see 9.3.2). These display modes are indicative of intended use, without indicating a mandatory requirement or constraining the detailed implementation by mobile manufacturers. The user may be able to select activation of these different modes.

The coding of the Geographical Scope field is shown below:

GS Code	Display Mode	Geographical Scope
00	Immediate	Cell wide
01	Normal	PLMN wide
10	Normal	Location Area wide in GSM, Service Area wide in UMTS
11	Normal	Cell wide

Immediate = default direct display.

Normal = default display under user interaction.

NOTE: Code 00 is intended for use by the network operators for base station IDs.

- **Update Number:**

The Update Number indicates a change of the message content of the same CBS message, i.e. the CBS message with the same Message Identifier, Geographical Scope, and Message Code.

In other words, the Update Number will differentiate between older and newer versions of the same CBS message, within the indicated geographical area. A new CBS message may have Update Number 0000; however this number will increment by 1 for each update. Any Update Number eight or less higher (modulo 16) than the last received Update Number will be considered more recent, and shall be treated as a new CBS message, provided the mobile has not been switched off.

#### 9.4.1.2.2 Message Identifier

This parameter identifies the source and type of the CBS message. For example, "Automotive Association" (= source), "Traffic Reports" (= type) could correspond to one value. A number of CBS messages may originate from the same source and/or be of the same type. These will be distinguished by the Serial Number. The Message Identifier is coded in binary.

The ME shall attempt to receive the CBS messages whose Message Identifiers are in the "search list". This "search list" shall contain the Message Identifiers stored in the EF<sub>CBMI</sub>, EF<sub>CBMID</sub> and EF<sub>CBMIR</sub> files on the SIM (see GSM 11.11) and any Message Identifiers stored in the ME in a "list of CBS messages to be received". If the ME has restricted capabilities with respect to the number of Message Identifiers it can search for, the Message Identifiers stored in the SIM shall take priority over any stored in the ME.

The use/application of the Message Identifier is shown in the following list, with octet 3 of the Message Identifier shown first, followed by octet 4. Thus "1234" (hex) represents octet 3 = 0001 0010 and octet 4 = 0011 0100.

- 0000 - 03E7** (hex): To be allocated by PLMN operator associations. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive such CBS message.  
  
This version of GSM 03.41 does not prohibit networks from using Message Identifiers in the range 0000 - 03E7 (hex) for Cell Broadcast Data Download to the SIM.
- 03E8** (hex): LCS CBS Message Identifier for E-OTD Assistance Data message.
- 03E9** (hex): LCS CBS Message Identifier for DGPS Correction Data message.
- 03EA** (hex): LCS CBS Message Identifier for GPS Ephemeris and Clock Correction Data message.
- 03EB** (hex): LCS CBS Message Identifier for GPS Almanac and Other Data message.
- 03EC - 0FFF** (hex): Intended for standardization in future versions of GSM 03.41. These values shall not be transmitted by networks that are compliant to this version of GSM 03.41. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.
- 1000 - 107F** (hex): Networks shall only use Message Identifiers from this range for Cell Broadcast Data Download in "clear" (i.e. unsecured) to the SIM (see GSM 11.14). If a message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.
- 1080 – 10FF** (hex): Networks shall only use Message Identifiers from this range for Cell Broadcast Data Download secured according to GSM 03.48 [15] to the SIM (see GSM 11.14). If a message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.
- 1100 - 9FFF** (hex): intended for standardization in future versions of GSM 03.41. These values shall not be transmitted by networks that are compliant to this version of GSM 03.41. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.
- A000 - AFFF** (hex): PLMN operator specific range. The type of information provided by PLMN operators using these Message Identifiers is not guaranteed to be the same across different PLMNs. If a Message Identifier from this range is in the "search list", the ME shall attempt to receive this CBS message.

**B000 - FFFE** (hex): intended as PLMN operator specific range in future versions of GSM 03.41. These values shall not be transmitted by networks that are compliant to this version of GSM 03.41. If a Message Identifier from this range is in the "search list", then the ME shall attempt to receive this CBS message.

**FFFF** (hex): Reserved, and should not be used for new services, as this value is used on the SIM to indicate that no Message Identifier is stored in those two octets of the SIM. If this Message Identifier is in the "search list", the ME shall attempt to receive this CBS message.

Generally, the MMI for entering these codes in the ME is left to the manufacturers' discretion. However, the 1000 lowest codes shall be capable of being specified via their decimal representation i.e.:

Octet 3	Octet 4.	
0000 0000	0000 0000	(decimal '000').
0000 0000	0000 0001	(decimal '001').
0000 0000	0000 0010	(decimal '002').
0000 0000	0000 0011	(decimal '003').
:	:	:
:	:	:
0000 0011	1110 0111	(decimal '999').

#### 9.4.1.2.3 Data Coding Scheme

This parameter indicates the intended handling of the CBS message at the MS, the alphabet/coding, and the language (when applicable). This is defined in 3GPP TS 23.038 [3].

When the SIM indicates one or more language preferences, the ME shall, by default, use the language(s) stored in the SIM (in the EF<sub>PL</sub> file) to set any language filter mechanisms provided by the ME.

Optionally, the user can select the language(s) required by using an MMI, to determine whether a particular CBS message should be read and displayed.

#### 9.4.1.2.4 Page Parameter

This parameter is coded as two 4-bit fields. The first field (bits 0-3) indicates the binary value of the total number of pages in the CBS message and the second field (bits 4-7) indicates binary the page number within that sequence. The coding starts at 0001, with 0000 reserved. If a mobile receives the code 0000 in either the first field or the second field then it shall treat the CBS message exactly the same as a CBS message with page parameter 0001 0001 (i.e. a single page message).

#### 9.4.1.2.5 Content of Message

This parameter is a copy of the 'CBS-Message-Information-Page' as sent from the CBC to the BSC.

### 9.4.2 UMTS

The CBS messages which are transmitted by the RNS to the UE include two types of messages: CBS Message (user information) and Schedule Message (schedule of CBS messages).

The format of the CBS Message containing user information is described in this section and in 3GPP TS 25.324 [19].

The format of the Schedule Message is described in 3GPP TS 25.324 [19].

#### 9.4.2.1 General Description

The CBS message is transmitted as one unit over the radio interface. On layer two of the UMTS radio interface the logical channel CTCH is used.

## 9.4.2.2 Message Parameter

Octet Number(s)	Parameter
1	Message Type
2 – 3	Message ID
4 – 5	Serial Number
6	Data Coding Scheme
7 – n	CB Data

The octets in the above table are transmitted in order, starting with octet 1. The bits within these octets are numbered 0 to 7; bit 0 is the low order bit and is transmitted first.

### 9.4.2.2.1 Message Type

This parameter indicates the type of a message, either a CBS message or a Schedule Message. The Coding of the Message Type is described in 3GPP TS 25.324 [19].

### 9.4.2.2.2 Message ID

This parameter identifies the source and type of the CBS Message (see also 3GPP TS 25.324 [19]). It is identical with the Message Identifier described in 9.4.1.2.2 with respect to its structure and possible value range. Within a multi technology network of one operator, e.g. GSM combined with UMTS, the values identifying a given topic shall be identical for both the Message ID and the Message Identifier described in 9.4.1.2.2.

The UE shall attempt to receive the CBS messages whose Message ID's are in the "search list". This "search list" shall contain the Message IDs stored in the EF<sub>CBMI</sub>, EF<sub>CBMID</sub> and EF<sub>CBMIR</sub> files on the USIM (see 3GPP TS 31.102 [18]) and any Message Identifiers stored in the UE in a "list of CBS messages to be received". If the UE has restricted capabilities with respect to the number of Message ID's it can search for, the IDs stored in the USIM shall take priority over any stored in the UE.

### 9.4.2.2.3 Serial Number

This parameter identifies a particular CBS Message from the source and type indicated by the Message ID (see also 3GPP TS 25.324 [19]). It is identical with the Serial Number described in 9.4.1.2.1 with respect to its structure and possible value range.

### 9.4.2.2.4 Data Coding Scheme

This parameter identifies the the alphabet/coding and the language applied to a CBS Message as defined in 3GPP TS 23.038 [3].

When the USIM indicates one or more language preferences, the UE shall, by default, use the language(s) stored in the USIM (in the EF<sub>PL</sub> file) to set any language filter mechanisms provided by the UE.

Optionally, the user can select the language(s) required by using an MMI, to determine whether a particular CBS message should be read and displayed.

### 9.4.2.2.5 CB Data

This parameter consists of the WRITE-REPLACE primitive parameters Number-of-Pages, CBS-Message-Information-Page and CBS-Message-Information-Length as received from the CBC (see also 3GPP TS 25.324 [19]). The CBS-Message-Information-Page contains the user information (see subclause 9.2.2).

## CHANGE REQUEST

⌘ **23.140 CR 018** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Reference to TS 29.061 specification on RADIUS usage		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MMS	<b>Date:</b>	⌘ October 25 <sup>th</sup> , 2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-4
Use <u>one</u> of the following categories: <b>F</b> (essential correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)	

<b>Reason for change:</b>	⌘ 3GPP TSG CN#13 approved (NP-010530) the addition of RADIUS as an authentication/accounting protocol for Gi. The work was initiated from an LS from T2, related to MMS work. This CR adds the reference to clarify how authentication can be done with MMS.		
<b>Summary of change:</b>	⌘ Addition of reference to RADIUS support in TS29.061		
<b>Consequences if not approved:</b>	⌘ Proprietary mechanisms would be used, resulting in interoperability problems.		

<b>Clauses affected:</b>	⌘ 2, 3.2, 8.1		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 22.140: "Multimedia Messaging Service; Stage 1".

...

[53] IETF; RFC 1327: "Mapping between X.400(1988)/ISO 10021 and RFC 822", URL: <http://www.ietf.org/rfc/rfc1327.txt>.

[54] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting Packet Based Services and Packet Data Networks (PDN)"

...

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in [1] and [2] and the following apply:

CDR	Call Data Record
DNS	Domain Name System
EMA	Electronic Message Association
E-Mail	Electronic Mail
ENUM	Electronic Numbering
FQDN	Fully Qualified Domain Name
GW	Gateway
HTTP	Hypertext Transfer Protocol
IANA	Internet Assigned Numbering Authority
IETF	Internet Engineering Task Force
IMAP4	Internet Message Access Protocol
MIME	Multipurpose Internet Mail Extensions
MM	Multimedia Message
MMS	Multimedia Messaging Service
MMSE	Multimedia Messaging Service Environment
MMSNA	Multimedia Messaging Service Network Architecture
MTA	Mail Transfer Agent
PDU	Protocol Data Unit
POP3	Post Office Protocol Version 3
<u>RADIUS</u>	<u>Remote Authentication Dial In User Service</u>
RDF	Resource Description Format
RFC	Request for Comments
SMIL	Synchronised Multimedia Integration Language
SMTP	Simple Mail Transfer Protocol
UA	User Agent
UAProf	User Agent Profile
URI	Uniform Resource Identifiers
VAS	Value Added Service



VPIM	Voice Profile for Internet Mail
W3C	WWW Consortium
WAP	Wireless Application Protocol
WIM	WAP Identity Module
WML	Wireless Markup Language
WSP	WAP Session Protocol
WTLS	Wireless Transport Layer Security

...

## 8.1 Technical realisation of MMS on reference point MM1

On the MM1 reference point an underlying authentication mechanism should be available.

The network-provided MMS User Agent's ID (e.g. MSISDN or IMSI) should be made available to the MMS Relay/Server by the RADIUS mechanisms defined in [54]. This ID should be used to authenticate the MMS User Agent.

### 8.1.1 Submission of Multimedia Message

This part of MMS service covers the submission of an MM. For sending purposes a terminal-originated MM shall always be submitted from the originator MMS User Agent to the corresponding MMS Relay/Server. Involved abstract messages are outlined in Table 1 from type and direction points of view.

**Table 1: Abstract messages for submission of MM in MMS**

Abstract messages	Type	Direction
MM1_submit.REQ	Request	MMS UA -> MMS Relay/Server
MM1_submit.RES	Response	MMS Relay/Server -> MMS UA

## CHANGE REQUEST

⌘ **23.140 CR 019** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Reference to TS 29.061 specification on RADIUS usage		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ November 14 <sup>th</sup> , 2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		<b>2</b> (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		<b>R96</b> (Release 1996)
	<b>B</b> (addition of feature),		<b>R97</b> (Release 1997)
	<b>C</b> (functional modification of feature)		<b>R98</b> (Release 1998)
	<b>D</b> (editorial modification)		<b>R99</b> (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<b>REL-4</b> (Release 4)
			<b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ 3GPP TSG CN#13 approved (NP-010530) the addition of RADIUS as an authentication/accounting protocol for Gi. The work was initiated from an LS from T2, related to MMS work. This CR adds the reference to clarify how authentication can be done with MMS.
<b>Summary of change:</b>	⌘ Addition of reference to RADIUS support in TS29.061
<b>Consequences if not approved:</b>	⌘ Proprietary mechanisms would be used, resulting in interoperability problems.

<b>Clauses affected:</b>	⌘ 2, 3.2, 8.1		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 22.140: "Multimedia Messaging Service; Stage 1".

...

[53] IETF; RFC 1327: "Mapping between X.400(1988)/ISO 10021 and RFC 822", URL: <http://www.ietf.org/rfc/rfc1327.txt>.

[54] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting Packet Based Services and Packet Data Networks (PDN)"

...

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in [1] and [2] and the following apply:

CDR	Call Data Record
DNS	Domain Name System
EMA	Electronic Message Association
E-Mail	Electronic Mail
ENUM	Electronic Numbering
FQDN	Fully Qualified Domain Name
GW	Gateway
HTTP	Hypertext Transfer Protocol
IANA	Internet Assigned Numbering Authority
IETF	Internet Engineering Task Force
IMAP4	Internet Message Access Protocol
MIME	Multipurpose Internet Mail Extensions
MM	Multimedia Message
MMS	Multimedia Messaging Service
MMSE	Multimedia Messaging Service Environment
MMSNA	Multimedia Messaging Service Network Architecture
MTA	Mail Transfer Agent
PDU	Protocol Data Unit
POP3	Post Office Protocol Version 3
<u>RADIUS</u>	<u>Remote Authentication Dial In User Service</u>
RDF	Resource Description Format
RFC	Request for Comments
SMIL	Synchronised Multimedia Integration Language
SMTP	Simple Mail Transfer Protocol
UA	User Agent
UAProf	User Agent Profile
URI	Uniform Resource Identifiers
VAS	Value Added Service

VPIM	Voice Profile for Internet Mail
W3C	WWW Consortium
WAP	Wireless Application Protocol
WIM	WAP Identity Module
WML	Wireless Markup Language
WSP	WAP Session Protocol
WTLS	Wireless Transport Layer Security

...

## 8.1 Technical realisation of MMS on reference point MM1

On the MM1 reference point an underlying authentication mechanism should be available.

The network-provided MMS User Agent's ID (e.g. MSISDN or IMSI) should be made available to the MMS Relay/Server by the RADIUS mechanisms defined in [54]. This ID should be used to authenticate the MMS User Agent.

### 8.1.1 Submission of Multimedia Message

This part of MMS service covers the submission of an MM. For sending purposes a terminal-originated MM shall always be submitted from the originator MMS User Agent to the corresponding MMS Relay/Server. Involved abstract messages are outlined in Table 1 from type and direction points of view.

**Table 1: Abstract messages for submission of MM in MMS**

Abstract messages	Type	Direction
MM1_submit.REQ	Request	MMS UA -> MMS Relay/Server
MM1_submit.RES	Response	MMS Relay/Server -> MMS UA

## CHANGE REQUEST

⌘ **23.140** **CR** **020** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification of the reply-charging service behaviour description		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ October 17, 2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-5
Use <u>one</u> of the following categories: <b>F</b> (essential correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ Minor changes to the current reply-charging service behaviour description in 3GPP TS 23.140 REL-5 would be helpful for a better understanding of the usage of the <i>Reply-Charging</i> information element.
<b>Summary of change:</b>	⌘ small editorial changes to emphasize that different field values for the <i>Reply-Charging</i> information element upon submission and upon notification/retrieval may be used to inform a recipient MMS User Agent about the acceptance of a reply-charging request.
<b>Consequences if not approved:</b>	⌘ An inattentive reader might not be aware of the usage of different field values for the <i>Reply-Charging</i> information element.

<b>Clauses affected:</b>	⌘ 7.1.10		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

...

## 7.1.10 Support for Reply-Charging in MMS

The MMS User Agent may support reply-charging. If the MMS User Agent supports this feature it is expected that the MMS User Agent supports the following behaviour.

The MMS Relay/Server may support reply-charging. If the MMS Relay/Server supports this feature it is expected that the MMS Relay/Server supports the following behaviour.

A User of the MMS may be able to take over the charge for the sending of a reply-MM to their submitted MM from the recipient(s). Therefore the originator of an MM should be able to mark the MM as reply-charged. The originator's MMS Relay/Server could either accept the user's settings for reply-charging or not and should be able to convey feedback to the originator. It should be possible to take over the charge for reply-MMs from different recipients.

The recipient should be notified ~~that the originator is willing to pay for~~ [if she is not charged for](#) a reply-MM to this particular MM. However, the indication of reply-charging covers only the willingness/~~fact that to pay for~~ a reply-MM to an original MM [is free of charge](#), not ~~that for~~ the retrieval of the original MM marked as reply-charged [is free of charge](#). Both the originator and the recipient MMS Relay/Server shall be able to control that not more than one reply-MM per recipient is charged to the originator. The MMS User Agent may indicate to the user if an MM has already been replied to.

The request for reply-charging shall not be passed on to the recipient

- if the recipient is not known to belong to an MMSE peer entity or
- in the case the MM is forwarded.

NOTE: For this release the following limitations apply: Support for reply-charging in MMS is restricted to MMS User Agents belonging to the same MMSE, i.e. originator and recipient MMSE are identical. Reply-charging allows only one reply-MM per recipient, i.e. reply-charging applies to the first successful submission of an MM sent as a reply. Furthermore, a reply-MM is restricted to text only. These limitations may be elaborated further in future releases.

In addition to the service behaviour described in previous sections the following behaviour is expected to support reply-charging in MMS.

Within the submission of an MM the MM originator may indicate a willingness to pay the charge for one reply-MM per MM recipient. In this case the originator MMS User Agent:

- shall indicate the sender's willingness to pay the charge for one reply-MM per MM recipient
- may define a reply-charging limitation request (e.g. may specify the latest time of submission of the reply-MMs or a maximum size of reply-MMs)

In a response to the MM submission the originator MMS Relay/Server shall inform the originator MMS User Agent whether or not it accepts

- the originator's request for reply-charging in the original MM
- the reply-charging limitations set by the originator MMS User Agent in the original MM

Upon reception of an MM from an originator MMS User Agent the originator MMS Relay/Server

- may provide reply-charging limitations, i.e. it may also override the MMS User Agent's reply-charging limitations
- shall pass the indication whether or not a reply-MM is requested unaltered when routing the original MM towards the MM recipient(s) if the peer entity is known to be the same MMS Relay/Server.
- shall pass the latest time of submission for the reply-MM unaltered when routing the original MM towards the MM recipient(s) if the peer entity is known to be the same MMS Relay/Server.

If the MM recipient has requested the original MM to be forwarded to some other address the recipient MMS Relay/Server

- shall not pass any information about the reply-charging request towards the addressee(s) of the forwarding request

If reply-charging has been requested by the MM originator the recipient MMS Relay/Server should inform the recipient MMS User Agent with the MM notification and upon MM delivery

- that the MM originator is willing to pay for reply-MM to this original MM.
- It may also notify the recipient about the reply-charging limitations set by the originator (e.g. the latest time of submission of a reply-MM to the original MM).

When a user intends to send a reply-MM to the MM originator the recipient MMS User Agent (which is the originator MMS User Agent of the reply-MM):

- shall mark the MM as a reply-MM.
- shall provide the message-ID of the original MM which it replies to (if it is the reply-MM)
- shall submit the reply-MM to the recipient MMS Relay/Server
- may be able to indicate to the user whether this MM has already been replied to
- may be able to indicate to the user if the reply-charging limitations can not be met

Upon submission the recipient MMS Relay/Server

- shall reject the reply-MM and should convey this information back to the recipient MMS User Agent if the reply-MM does not meet the limitations set by the originator MMS User Agent
- shall be able to uniquely map the reply-MM to the original MM

## 7.2 MMSE Addressing responsibilities

...



CR-Form-v4

## CHANGE REQUEST

⌘ **23.140 CR 021** ⌘ ev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction of MM Status Code		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MMS	<b>Date:</b>	⌘ 011127
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-4
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Not all of the MM Status Codes have a sensible meaning.		
<b>Summary of change:</b>	⌘		
	<ul style="list-style-type: none"> <li>• X-Mms-MM-Status-Code value range corrected.</li> </ul>		
<b>Consequences if not approved:</b>	⌘ Less useful MM Status codes.		

<b>Clauses affected:</b>	⌘ 8.4.4.8		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

#### 8.4.4.8 Header Field Value Range

MMS information elements that are mapped to standard STD 11 "header fields", i.e. which do not have an "X-MMS-" prefix, should be used according to [5].

The rest of the header definitions used in this clause, including the mechanisms and pre-defined tokens, are described in an augmented Backus-Naur Form (BNF) defined in [48], similar to that used by RFC 822 [5]. Implementors will need to be familiar with the notation in order to understand these definitions.

For the residual MMS information elements the following applies:

##### **X-Mms-3GPP-MMS-Version:**

```
3GPP-MMS-Version = "X-Mms-3GPP-MMS-Version" ":" 1*DIGIT "." 1*DIGIT
                  "." 1*DIGIT
```

Note that the numbers MUST be treated as separate integers and that each may be incremented higher than a single digit. Thus, 2.1.4 is a lower version than 2.1.13, which in turn is lower than 2.3.0. Leading zeros shall be ignored by recipient MMS Relay/Server and shall NOT be sent. The version is according to the version of the present document (see also clause "Foreword").

##### **X-Mms-Message-Type:**

```
Message-type = "X-Mms-Message-Type" ":" ( "MM4_forward.REQ" |
      "MM4_forward.RES" | "MM4_delivery_report.REQ" |
      "MM4_delivery_report.RES" | "MM4_read_reply_report.REQ" |
      "MM4_read_reply_report.RES" )
```

##### **X-Mms-Transaction-Id:**

```
Transaction-id = "X-Mms-Transaction-ID" ":" quoted-string
```

##### **X-Mms-Message-Id:**

```
Message-id = "X-Mms-Message-ID" ":" quoted-string
```

##### **X-Mms-Message-Class:**

```
Message-class = "X-Mms-Message-Class" ":" ( Class-identifier |
      quoted-string )
Class-identifier = "Personal" | "Advertisement" | "Informational" |
                  "Auto"
```

##### **X-Mms-Expiry:**

```
Expiry-value = "X-Mms-Expiry" ":" ( HTTP-date | delta-seconds )
```

##### **X-Mms-Delivery-Report:**

```
Delivery-report = "X-Mms-Delivery-Report" ":" ( "Yes" | "No" )
```

##### **X-Mms-Priority:**

```
Priority = "X-Mms-Priority" ":" ( "Low" | "Normal" | "High" )
```

##### **X-Mms-Sender-Visibility:**

```
Sender-visibility = "X-Mms-Sender-Visibility" ":" ( "Hide" | "Show" )
```

##### **X-Mms-Read-Reply:**

Read-reply = "X-Mms-Read-Reply" ":" ( "Yes" | "No" )

**X-Mms-Ack-Request:**

Ack-Request = "X-Mms-Ack-Request" ":" ( "Yes" | "No" )

**X-Mms-Request-Status-Code:**

Request-status-Code = "X-Mms-Request-Status-Code" ":" ( "Ok" |  
"Error-unspecified" | "Error-service-denied" | "Error-message-format-  
corrupt" | "Error-sending-address-unresolved" | "Error-message-not-  
found" | "Error-network-problem" | "Error-content-not-accepted" |  
"Error-unsupported-message" )

**X-Mms-MM-Status-Code:**

MM-Status-Code = "X-Mms-MM-Status-Code" ":" ( "Expired" | "Retrieved" |  
"Rejected" | "Deferred" | "IntermediateIndeterminate" | "Forwarded" |  
"Unrecognised" )

## CHANGE REQUEST

⌘ **23.140 CR 022** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification of Forwarding in MM1 message retrieval		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MMS	<b>Date:</b>	⌘ November 27 <sup>th</sup> 2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ Implementations of the MM1 interface have highlighted that there is an essential need for clarification of the forwarding information on the MM1 interface for message retrieval. The Forward_counter, while essential on the MM4 interface, has no functional use on the MM1 interface and was added to the MM1_retrieve.RES abstract message largely in error. It was thought that perhaps it could be useful in detecting continuous forwarding loops but this is incorrect.
<b>Summary of change:</b>	⌘ The IE Forward_counter is removed from the MM1_retrieve.RES.
<b>Consequences if not approved:</b>	⌘ Incompatible implementations of the MM1_retrieve.RES abstract message.

<b>Clauses affected:</b>	⌘ 6.1.3, 8.1.3.3, 8.1.3.4		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 6.1.3 Retrieval of a Multimedia Message in the recipient MMSE

The recipient MMS User Agent shall be able to request delivery of an MM from the recipient MMS Relay/Server based on the information received in the notification.

Upon delivery request the recipient MMS Relay/Server

- shall deliver the MM to the recipient MMS User Agent,
- may perform data adaptation based on user profile and/or MMS User Agent capabilities,
- shall not provide the MM originator address to the MM recipient if the originator MMS User Agent requested its address to be hidden from the MM recipient,
- shall provide the MM originator address to the MM recipient if the originator MMS User Agent did not request its address to be hidden from the MM recipient and if the MM originator address is available at the recipient MMS Relay/Server,
- may provide an alias or clarifying text (e.g. "anonymous address" or "unknown address") in the originator address field instead of providing the originator address to the recipient MMS User Agent, if the originator has requested address hiding or the original message does not contain the originator address,
- shall give an indication to the recipient MMS User Agent that a delivery report is requested if such a delivery report has been requested by the originator MMS User Agent,
- shall give an indication to the recipient MMS User Agent that a read-reply report is requested if such a read reply report has been requested by the originator MMS User Agent,
- shall indicate the MIME content type of the MM to the recipient MMS User Agent,
- shall provide other available message qualifications unaltered to the recipient MMS User Agent,
- shall provide the time stamp of the MM unaltered to the recipient MMS User Agent,
- shall be responsible for the storage of messages in the network until the recipient MMS User Agent becomes reachable (e.g. user moves back into coverage, switches MMS User Agent on) or until the MM expires,

~~□ may provide the recipient MMS User Agent with a count of the number of times that the particular MM was forwarded, if the MM was forwarded and the counter information is available to the recipient MMS Relay/Server,~~

- should provide the recipient MMS User Agent with a list of addresses of forwarding MMS User Agents for the MM if the MM was forwarded and the address information is available to the recipient MMS Relay/Server.

In a response to an MM's delivery the recipient MMS User Agent may be able to

request a delivery report not to be generated by the MMS Relay/Server.

.....

### 8.1.3.3 Features

**Message Reference:** The recipient MMS User Agent shall always provide a reference, e.g., URI, for the MM in the MM1\_retrieve.REQ.

**Addressing:** The MM originator address may be provided to the recipient MMS User Agent in the addressing-relevant information field of MM1\_retrieve.RES. The MM originator address shall not be provided to the recipient MMS User Agent if the MM originator has requested her address to be hidden from the MM recipient. One or several address(es) of the MM recipient(s) may be provided to the recipient MMS User Agent in the addressing-relevant information field(s) of the MM1\_retrieve.RES.

**Time stamping:** The MM1\_retrieve.RES shall carry the time and date of submission of the MM or the time and date of the forwarding of the MM.

**Time constraints:** In case of reply-charging the deadline for the latest time of submission of a reply-MM shall be conveyed within the MM1\_retrieve.RES.

**Message class, priority and subject:** Information about class, priority, subject of the MM shall be included in the MM1\_retrieve.RES according to their presence and value received at the MMS Relay/Server. Information about additional end-to-end qualifiers of the MM should be included in the MM1\_retrieve.RES according to their presence and value received at the MMS Relay/Server.

**Reporting:** If the originator MMS User Agent has requested to have a read-reply report, the recipient MMS Relay/Server shall convey this information in the MM1\_retrieve.RES. If the originator MMS User Agent has requested to have a delivery report, the recipient MMS Relay/Server may convey this information to the recipient MMS User Agent in the MM1\_retrieve.RES. If a request for a delivery report is included in the MM1\_retrieve.RES the recipient MMS User Agent shall convey the information whether it accepts or denies the sending of a delivery report to the MM originator in MM1\_acknowledgement.REQ. If a delivery report is not requested, it is up to the recipient MMS User Agent to include this information in MM1\_acknowledgement.REQ or not.

**Reply-Charging:** In case of reply-charging the MMS Relay/Server should indicate in the MM1\_retrieve.RES that a reply to this particular original MM is free of charge and the reply-charging limitations.

**Identification:** The MMS Relay/Server shall provide a message identification for a message, which it has accepted for delivery in the MM1\_retrieve.RES. In case of reply-charging the MMS Relay/Server shall provide the message-ID of the original MM which is replied to in the MM1\_retrieve.RES.

**Content Type:** The type of the MM's content shall always be identified in the MM1\_retrieve.RES.

**Content:** The content of the multimedia message if added by the originator MMS User Agent of the MM may be conveyed in the MM1\_retrieve.RES.

**Status:** In case of normal operation the recipient MMS Relay/Server may indicate in the MM1\_retrieve.RES that the retrieval of the MM was processed correctly. In case of abnormal operation the recipient MMS Relay/Server shall indicate in the MM1\_retrieve.RES the reason why the multimedia message could not be retrieved. The corresponding reason codes should cover application level errors (e.g. "the media format could not be converted", "insufficient credit for retrieval"). Lower layer errors may be handled by corresponding protocols.

~~**Forward Counter:** A Counter indicating the number of times the particular MM was forwarded.~~

**Forwarded\_by:** The address of the forwarding MMS User Agent. Multiple addresses are possible. In the multiple address case this is a sequential list of the address(es) of the forwarding MMS User Agents who forwarded the same MM.

### 8.1.3.4 Information Elements

**Table 8: Information elements in the MM1\_retrieve.REQ**

Information element	Presence	Description
Message Reference	Mandatory	Location of the content of the MM to be retrieved.

**Table 9: Information elements in the MM1\_retrieve.RES**

Information element	Presence	Description
Message ID	Mandatory	The message ID of the MM.
Sender address	Conditional	The address of the originator of MM unless the originator MMS User Agent has requested her address to be hidden from the MM recipient.
Content type	Mandatory	The content type of the MM's content.
Recipient address	Optional	The address of the MM recipient. Multiple addresses are possible.
Message class	Optional	The class of the message (e.g., personal, advertisement, information service)
Date and time	Mandatory	The time and date of the submission of the MM or the time and date of the forwarding of the MM (time stamp)
Delivery report	Optional	A request for delivery report.
Priority	Conditional	The priority (importance) of the message if specified by the originator MMS User Agent..
Read reply	Conditional	A request for read-reply report if the originator MMS User Agent of the MM has requested a read-reply report.
Subject	Conditional	The title of the whole multimedia message if specified by the originator MMS User Agent of the MM.
Status	Optional	The status of the MM retrieve request.
Status Text	Optional	Description which qualifies the status of the MM retrieve request.
Reply-Charging	Optional	Information that a reply to this particular original MM is free of charge.
Reply-Charging-ID	Optional	In case of reply-charging this is the identification of the original MM replied to.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of a reply granted to the recipient.
Reply-Charging-Size	Optional	In case of reply-charging the maximum size of a reply-MM granted to the recipient.
Forward_counter	Conditional	<del>A Counter indicating the number of times the particular MM was forwarded.</del>
Forwarded_by	Conditional	The address of the forwarding MMS User Agent. Multiple addresses are possible. In the multiple address case this is a Sequential list of the address(es) of the forwarding MMS User Agents who forwarded the same MM.
Content	Conditional	The content of the multimedia message if specified by the originator MMS User Agent of the MM.

**Table 10: Information elements in the MM1\_acknowledgement.REQ**

Information element	Presence	Description
Report allowed	Optional	Request to allow or disallow the sending of a delivery report to the MM originator



## CHANGE REQUEST

⌘ **23.140 CR 023** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification of Forwarding in MM1 message retrieval		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ November 27 <sup>th</sup> 2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ Implementations of the MM1 interface have highlighted that there is an essential need for clarification of the forwarding information on the MM1 interface for message retrieval. The Forward_counter, while essential on the MM4 interface, has no functional use on the MM1 interface and was added to the MM1_retrieve.RES abstract message largely in error. It was thought that perhaps it could be useful in detecting continuous forwarding loops but this is incorrect.
<b>Summary of change:</b>	⌘ The IE Forward_counter is removed from the MM1_retrieve.RES.
<b>Consequences if not approved:</b>	⌘ Incompatible implementations of the MM1_retrieve.RES abstract message.

<b>Clauses affected:</b>	⌘ 7.1.3, 8.1.3.3, 8.1.3.4		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 7.1.3 Retrieval of a Multimedia Message in the recipient MMSE

The recipient MMS User Agent shall be able to request delivery of an MM from the recipient MMS Relay/Server based on the information received in the notification.

Upon delivery request the recipient MMS Relay/Server

- shall deliver the MM to the recipient MMS User Agent,
- may perform data adaptation based on user profile and/or MMS User Agent capabilities,
- shall not provide the MM originator address to the MM recipient if the originator MMS User Agent requested its address to be hidden from the MM recipient,
- shall provide the MM originator address to the MM recipient if the originator MMS User Agent did not request its address to be hidden from the MM recipient and if the MM originator address is available at the recipient MMS Relay/Server,
- may provide an alias or clarifying text (e.g. "anonymous address" or "unknown address") in the originator address field instead of providing the originator address to the recipient MMS User Agent, if the originator has requested address hiding or the original message does not contain the originator address,
- shall give an indication to the recipient MMS User Agent that a delivery report is requested if such a delivery report has been requested by the originator MMS User Agent,
- shall give an indication to the recipient MMS User Agent that a read-reply report is requested if such a read reply report has been requested by the originator MMS User Agent,
- shall indicate the MIME content type of the MM to the recipient MMS User Agent,
- shall provide other available message qualifications unaltered to the recipient MMS User Agent,
- shall provide the time stamp of the MM unaltered to the recipient MMS User Agent,
- shall be responsible for the storage of messages in the network until the recipient MMS User Agent becomes reachable (e.g. user moves back into coverage, switches MMS User Agent on) or until the MM expires,

~~□ may provide the recipient MMS User Agent with a count of the number of times that the particular MM was forwarded, if the MM was forwarded and the counter information is available to the recipient MMS Relay/Server,~~

- should provide the recipient MMS User Agent with a list of addresses of forwarding MMS User Agents for the MM if the MM was forwarded and the address information is available to the recipient MMS Relay/Server.

In a response to an MM's delivery the recipient MMS User Agent may be able to

request a delivery report not to be generated by the MMS Relay/Server.

.....

### 8.1.3.3 Features

**Message Reference:** The recipient MMS User Agent shall always provide a reference, e.g., URI, for the MM in the MM1\_retrieve.REQ.

**Addressing:** The MM originator address may be provided to the recipient MMS User Agent in the addressing-relevant information field of MM1\_retrieve.RES. The MM originator address shall not be provided to the recipient MMS User Agent if the MM originator has requested her address to be hidden from the MM recipient. One or several address(es) of the MM recipient(s) may be provided to the recipient MMS User Agent in the addressing-relevant information field(s) of the MM1\_retrieve.RES.

**Time stamping:** The MM1\_retrieve.RES shall carry the time and date of submission of the MM or the time and date of the forwarding of the MM.

**Time constraints:** In case of reply-charging the deadline for the latest time of submission of a reply-MM shall be conveyed within the MM1\_retrieve.RES.

**Message class, priority and subject:** Information about class, priority, subject of the MM shall be included in the MM1\_retrieve.RES according to their presence and value received at the MMS Relay/Server. Information about additional end-to-end qualifiers of the MM should be included in the MM1\_retrieve.RES according to their presence and value received at the MMS Relay/Server.

**Reporting:** If the originator MMS User Agent has requested to have a read-reply report, the recipient MMS Relay/Server shall convey this information in the MM1\_retrieve.RES. If the originator MMS User Agent has requested to have a delivery report, the recipient MMS Relay/Server may convey this information to the recipient MMS User Agent in the MM1\_retrieve.RES. If a request for a delivery report is included in the MM1\_retrieve.RES the recipient MMS User Agent shall convey the information whether it accepts or denies the sending of a delivery report to the MM originator in MM1\_acknowledgement.REQ. If a delivery report is not requested, it is up to the recipient MMS User Agent to include this information in MM1\_acknowledgement.REQ or not.

**Reply-Charging:** In case of reply-charging the MMS Relay/Server should indicate in the MM1\_retrieve.RES that a reply to this particular original MM is free of charge and the reply-charging limitations.

**Identification:** The MMS Relay/Server shall provide a message identification for a message, which it has accepted for delivery in the MM1\_retrieve.RES. In case of reply-charging the MMS Relay/Server shall provide the message-ID of the original MM which is replied to in the MM1\_retrieve.RES.

**Content Type:** The type of the MM's content shall always be identified in the MM1\_retrieve.RES.

**Content:** The content of the multimedia message if added by the originator MMS User Agent of the MM may be conveyed in the MM1\_retrieve.RES.

**Status:** In case of normal operation the recipient MMS Relay/Server may indicate in the MM1\_retrieve.RES that the retrieval of the MM was processed correctly. In case of abnormal operation the recipient MMS Relay/Server shall indicate in the MM1\_retrieve.RES the reason why the multimedia message could not be retrieved. The corresponding reason codes should cover application level errors (e.g. "the media format could not be converted", "insufficient credit for retrieval"). Lower layer errors may be handled by corresponding protocols.

~~**Forward Counter:** A Counter indicating the number of times the particular MM was forwarded.~~

**Forwarded\_by:** The address of the forwarding MMS User Agent. Multiple addresses are possible. In the multiple address case this is a sequential list of the address(es) of the forwarding MMS User Agents who forwarded the same MM.

### 8.1.3.4 Information Elements

**Table 8: Information elements in the MM1\_retrieve.REQ**

Information element	Presence	Description
Message Reference	Mandatory	Location of the content of the MM to be retrieved.

**Table 9: Information elements in the MM1\_retrieve.RES**

Information element	Presence	Description
Message ID	Mandatory	The message ID of the MM.
Sender address	Conditional	The address of the originator of MM unless the originator MMS User Agent has requested her address to be hidden from the MM recipient.
Content type	Mandatory	The content type of the MM's content.
Recipient address	Optional	The address of the MM recipient. Multiple addresses are possible.
Message class	Optional	The class of the message (e.g., personal, advertisement, information service)
Date and time	Mandatory	The time and date of the submission of the MM or the time and date of the forwarding of the MM (time stamp)
Delivery report	Optional	A request for delivery report.
Priority	Conditional	The priority (importance) of the message if specified by the originator MMS User Agent..
Read reply	Conditional	A request for read-reply report if the originator MMS User Agent of the MM has requested a read-reply report.
Subject	Conditional	The title of the whole multimedia message if specified by the originator MMS User Agent of the MM.
Status	Optional	The status of the MM retrieve request.
Status Text	Optional	Description which qualifies the status of the MM retrieve request.
Reply-Charging	Optional	Information that a reply to this particular original MM is free of charge.
Reply-Charging-ID	Optional	In case of reply-charging this is the identification of the original MM replied to.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of a reply granted to the recipient.
Reply-Charging-Size	Optional	In case of reply-charging the maximum size of a reply-MM granted to the recipient.
Forward_counter	Conditional	<del>A Counter indicating the number of times the particular MM was forwarded.</del>
Forwarded_by	Conditional	The address of the forwarding MMS User Agent. Multiple addresses are possible. In the multiple address case this is a Sequential list of the address(es) of the forwarding MMS User Agents who forwarded the same MM.
Content	Conditional	The content of the multimedia message if specified by the originator MMS User Agent of the MM.

**Table 10: Information elements in the MM1\_acknowledgement.REQ**

Information element	Presence	Description
Report allowed	Optional	Request to allow or disallow the sending of a delivery report to the MM originator

## CHANGE REQUEST

⌘ **23.140 CR 024** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Removing inconsistency of mandated functionality		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MMS	<b>Date:</b>	⌘ October 24, 2001
<b>Category:</b>	⌘ F	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories: <b>F</b> (essential correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ There are inconsistencies regarding the requirements of functionality in the R4 of 23.140. Few of the requirements, mentioned in clause 5, are not or differently realised in later clauses, e.g. clause 6, 8. Requirement about support for streaming is not clearly specified, though the group has agreed idea in this regard.
<b>Summary of change:</b>	⌘ The requirements of "the MM presentation" and "the presentation of notifications to the user" for MMS UA are made optional from mandatory. Storing of MMs in USIM is removed from the list of requirements of MMS UA. Streaming is directly mentioned as optional requirement.
<b>Consequences if not approved:</b>	⌘ 23.140 remains inconsistent in terms of functionality requirements. These will definitely cause confusion to the readers, as well as, to implementers.

<b>Clauses affected:</b>	⌘ Clauses 5.1.1 and 6.1.7	
<b>Other specs Affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘
	<input type="checkbox"/> Test specifications	
	<input type="checkbox"/> O&M Specifications	
<b>Other comments:</b>	⌘	

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

---

## 5 Functional Description of Involved MMS Elements

### 5.1 MMS User Agent

#### 5.1.1 MMS User Agent operations

The MMS User Agent shall provide the following application layer functionalities:-

- ~~the MM presentation;~~
- ~~the presentation of notifications to the user;~~
- the retrieval of MMs (initiate MM delivery to the MMS User Agent).

The MMS User Agent may provide additional application layer functionalities such as:-

- the MM composition
- the MM submission
- ~~the MM presentation;~~
- ~~the presentation of notifications to the user;~~
- the signing of an MM on an end-user to end-user basis;
- the decryption and encryption of an MM on an end-user to end-user basis;
- all aspects of storing MMs on the terminal ~~and/or USIM;~~
- the handling of external devices;
- the user profile management.

This optional list of additional functionalities of the MMS User Agent is not exhaustive.

-

---

## 6 MMS Service Behaviour Description

### 6.1 MMS services offered

#### 6.1.7 Support for Streaming in MMS

This clause defines the service behaviour specific to support for streaming in MMS. The term "According to the normal MMS framework.." indicates those clauses which are not specific to streaming but described elsewhere in clause 6.



MMS supports streaming for the retrieval of MM contents (one or more MM elements). Support for streaming is optional for both the MMS User Agent and the MMS Relay/Server.

The use of streaming for the retrieval of MM contents is independent of the MM submission. The retrieval of MM contents to the recipient MMS User Agent depends on the configuration and the capability of the recipient MMS User Agent and the recipient MMS Relay/Server. MM contents may be either delivered as non-streaming MM elements, or made available for streaming retrieval. The recipient MMS Relay/Server decides whether to use streaming based on the media type and the media format of the subjected MM contents, capability negotiation and/or user settings/preferences. The recipient MMS Relay/Server may convert media types and/or formats of MM contents to make it available for streaming retrieval. If streaming retrieval is used, the streaming-specific protocols, codecs, presentation, session negotiation and control are according to [40] and [41].

According to the normal MMS framework, the recipient MMS Relay/Server shall generate a notification which contains information to enable the recipient MMS User Agent to request for the delivery of the corresponding MM

Upon delivery request, the recipient MMS Relay/Server shall deliver a modified MM with one or several presentation descriptions, as one or several MM elements, in place of the corresponding streamable MM contents to the recipient MMS User Agent, if it has made the MM contents available for streaming retrieval. The format of the presentation description is as defined in [41]. MIME type of the format of the presentation description shall be used to indicate the content type of the MM elements, which contain the corresponding presentation description. The presentation description carries all required information to initiate the streaming process by the recipient MMS User Agent in order to retrieve the streamable MM content.

According to the normal MMS framework, the recipient MMS Relay/server shall base the generation of a delivery report on the receipt of a response to the delivery of the modified MM from the recipient MMS User Agent.

After the successful reception of the MM, which includes the presentation description, the recipient MMS User Agent may initiate a streaming process to retrieve the streamable MM contents depending on the information in the presentation description. According to the normal MMS framework, the recipient MMS User Agent may base the generation of a read-reply report either on the rendering/handling of the modified MM, or on the rendering/handling of the streamable MM contents.

## CHANGE REQUEST

⌘ **23.140 CR 025** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Removing inconsistency of mandated functionality		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ October 24, 2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (essential correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ There are inconsistencies regarding the requirements of functionality in the R4 of 23.140. Few of the requirements, mentioned in clause 5, are not or differently realised in later clauses, e.g. clause 6, 8. Requirement about support for streaming is not clearly specified, though the group has agreed idea in this regard.
<b>Summary of change:</b>	⌘ The requirements of "the MM presentation" and "the presentation of notifications to the user" for MMS UA are made optional from mandatory. Streaming is directly mentioned as optional requirement.
<b>Consequences if not approved:</b>	⌘ 23.140 remains inconsistent in terms of functionality requirements. These will definitely cause confusion to the readers, as well as, to implementers.

<b>Clauses affected:</b>	⌘ Clauses 5.1.1 and 6.1.7	
<b>Other specs Affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘
	<input type="checkbox"/> Test specifications	
	<input type="checkbox"/> O&M Specifications	
<b>Other comments:</b>	⌘	

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

---

## 5 Functional Description of Involved MMS Elements

### 5.1 MMS User Agent

#### 5.1.1 MMS User Agent operations

The MMS User Agent shall provide the following application layer functionalities:-

- ~~the MM presentation;~~
- ~~the presentation of notifications to the user;~~
- the retrieval of MMs (initiate MM delivery to the MMS User Agent).

The MMS User Agent may provide additional application layer functionalities such as:-

- the MM composition
- the MM submission
- ~~the MM presentation;~~
- ~~the presentation of notifications to the user;~~
- the signing of an MM on an end-user to end-user basis;
- the decryption and encryption of an MM on an end-user to end-user basis;
- all aspects of storing MMs on the terminal ~~and/or USIM;~~
- the handling of external devices;
- the user profile management.

This optional list of additional functionalities of the MMS User Agent is not exhaustive.

-

---

## 6 MMS Service Behaviour Description

### 6.1 MMS services offered

#### 6.1.7 Support for Streaming in MMS

This clause defines the service behaviour specific to support for streaming in MMS. The term "According to the normal MMS framework.." indicates those clauses which are not specific to streaming but described elsewhere in clause 6.

MMS supports streaming for the retrieval of MM contents (one or more MM elements). Support for streaming is optional for both the MMS User Agent and the MMS Relay/Server.

The use of streaming for the retrieval of MM contents is independent of the MM submission. The retrieval of MM contents to the recipient MMS User Agent depends on the configuration and the capability of the recipient MMS User Agent and the recipient MMS Relay/Server. MM contents may be either delivered as non-streaming MM elements, or made available for streaming retrieval. The recipient MMS Relay/Server decides whether to use streaming based on the media type and the media format of the subjected MM contents, capability negotiation and/or user settings/preferences. The recipient MMS Relay/Server may convert media types and/or formats of MM contents to make it available for streaming retrieval. If streaming retrieval is used, the streaming-specific protocols, codecs, presentation, session negotiation and control are according to [40] and [41].

According to the normal MMS framework, the recipient MMS Relay/Server shall generate a notification which contains information to enable the recipient MMS User Agent to request for the delivery of the corresponding MM

Upon delivery request, the recipient MMS Relay/Server shall deliver a modified MM with one or several presentation descriptions, as one or several MM elements, in place of the corresponding streamable MM contents to the recipient MMS User Agent, if it has made the MM contents available for streaming retrieval. The format of the presentation description is as defined in [41]. MIME type of the format of the presentation description shall be used to indicate the content type of the MM elements, which contain the corresponding presentation description. The presentation description carries all required information to initiate the streaming process by the recipient MMS User Agent in order to retrieve the streamable MM content.

According to the normal MMS framework, the recipient MMS Relay/server shall base the generation of a delivery report on the receipt of a response to the delivery of the modified MM from the recipient MMS User Agent.

After the successful reception of the MM, which includes the presentation description, the recipient MMS User Agent may initiate a streaming process to retrieve the streamable MM contents depending on the information in the presentation description. According to the normal MMS framework, the recipient MMS User Agent may base the generation of a read-reply report either on the rendering/handling of the modified MM, or on the rendering/handling of the streamable MM contents.

## CHANGE REQUEST

⌘ **23.140 CR 026** ⌘ ev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction of MM Status Code		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ 011127
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ Not all of the MM Status Codes have a sensible meaning..		
<b>Summary of change:</b>	⌘		
	<ul style="list-style-type: none"> <li>• X-Mms-MM-Status-Code value range corrected.</li> </ul>		
<b>Consequences if not approved:</b>	⌘ Less useful MM Status codes		

<b>Clauses affected:</b>	⌘ 8.4.4.8		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

#### 8.4.4.8 Header Field Value Range

MMS information elements that are mapped to standard STD 11 "header fields", i.e. which do not have an "X-MMS-" prefix, should be used according to [5].

The rest of the header definitions used in this clause, including the mechanisms and pre-defined tokens, are described in an augmented Backus-Naur Form (BNF) defined in [48], similar to that used by RFC 822 [5]. Implementors will need to be familiar with the notation in order to understand these definitions.

For the residual MMS information elements the following applies:

##### **X-Mms-3GPP-MMS-Version:**

```
3GPP-MMS-Version = "X-Mms-3GPP-MMS-Version" ":" 1*DIGIT "." 1*DIGIT
                  "." 1*DIGIT
```

Note that the numbers **MUST** be treated as separate integers and that each may be incremented higher than a single digit. Thus, 2.1.4 is a lower version than 2.1.13, which in turn is lower than 2.3.0. Leading zeros shall be ignored by recipient MMS Relay/Server and shall **NOT** be sent. The version is according to the version of the present document (see also clause "Foreword").

##### **X-Mms-Message-Type:**

```
Message-type = "X-Mms-Message-Type" ":" ( "MM4_forward.REQ" |
      "MM4_forward.RES" | "MM4_delivery_report.REQ" |
      "MM4_delivery_report.RES" | "MM4_read_reply_report.REQ" |
      "MM4_read_reply_report.RES" )
```

##### **X-Mms-Transaction-Id:**

```
Transaction-id = "X-Mms-Transaction-ID" ":" quoted-string
```

##### **X-Mms-Message-Id:**

```
Message-id = "X-Mms-Message-ID" ":" quoted-string
```

##### **X-Mms-Message-Class:**

```
Message-class = "X-Mms-Message-Class" ":" ( Class-identifier |
      quoted-string )
Class-identifier = "Personal" | "Advertisement" | "Informational" |
                  "Auto"
```

##### **X-Mms-Expiry:**

```
Expiry-value = "X-Mms-Expiry" ":" ( HTTP-date | delta-seconds )
```

##### **X-Mms-Delivery-Report:**

```
Delivery-report = "X-Mms-Delivery-Report" ":" ( "Yes" | "No" )
```

##### **X-Mms-Priority:**

```
Priority = "X-Mms-Priority" ":" ( "Low" | "Normal" | "High" )
```

##### **X-Mms-Sender-Visibility:**

```
Sender-visibility = "X-Mms-Sender-Visibility" ":" ( "Hide" | "Show" )
```

##### **X-Mms-Read-Reply:**

Read-reply = "X-Mms-Read-Reply" ":" ( "Yes" | "No" )

**X-Mms-Ack-Request:**

Ack-Request = "X-Mms-Ack-Request" ":" ( "Yes" | "No" )

**X-Mms-Request-Status-Code:**

Request-status-Code = "X-Mms-Request-Status-Code" ":" ( "Ok" |  
"Error-unspecified" | "Error-service-denied" | "Error-message-format-  
corrupt" | "Error-sending-address-unresolved" | "Error-message-not-  
found" | "Error-network-problem" | "Error-content-not-accepted" |  
"Error-unsupported-message" )

**X-Mms-MM-Status-Code:**

MM-Status-Code = "X-Mms-MM-Status-Code" ":" ( "Expired" | "Retrieved" |  
"Rejected" | "Deferred" | "IntermediateIndeterminate" | "Forwarded" |  
"Unrecognised" )



## CHANGE REQUEST

⌘ **23.140 CR 027** ⌘ rev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction on MM1 and MM4 abstract messages		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MMS	<b>Date:</b>	⌘ 27.11.2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel - 4
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ 1)If the MMS Relay/Server can not deliver a MM due to unspecified reasons it is not necessary to send the Message ID to the MMS User Agent. The Message ID is not a mandatory but a conditional element. 2) In the MM4_read_reply_report.REQ the informational element "Acknowledgement Request" should not request a MM4_delivery_report.RES but a MM4_read_reply_report.RES
<b>Summary of change:</b>	⌘ 1) Changing the message ID in the submit response from mandatory to conditional. 2) Changing in MM4_read_reply_report.REQ the "request of a delivery report response" to "request of a read reply report response".
<b>Consequences if not approved:</b>	⌘ The 23.140 will contain errors on the MM1 and MM4 interface.

<b>Clauses affected:</b>	⌘ 8.1.1.4; 8.4.3.4	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	
<b>Other comments:</b>	⌘	

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 8.1.1.4 Information Elements

Table 2: Information elements in the MM1\_submit.REQ.

Information element	Presence	Description
Recipient address	Mandatory	The address of the recipient MMS User Agent. Multiple addresses are possible.
Content type	Mandatory	The content type of the MM's content.
Sender address	Optional	The address of the MM originator.
Message class	Optional	The class of the MM (e.g., personal, advertisement, information service)
Date and time	Optional	The time and date of the submission of the MM (time stamp).
Time of Expiry	Optional	The desired time of expiry for the MM or reply-MM.
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient.
Delivery report	Optional	A request for delivery report.
Reply-Charging	Optional	A request for reply-charging.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of replies granted to the recipient(s).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s).
Priority	Optional	The priority (importance) of the message.
Sender visibility	Optional	A request to show or hide the sender's identity when the message is delivered to the recipient.
Read reply	Optional	A request for read reply report.
Subject	Optional	The title of the whole multimedia message.
Reply-Charging-ID	Optional	In case of reply-charging when the reply-MM is submitted within the MM1_submit.REQ this is the identification of the original MM that is replied to.
Content	Optional	The content of the multimedia message

Table 3: Information elements in the MM1\_submit.RES.

Information element	Presence	Description
Request Status	Mandatory	The status of the MM submit request.
Request Status Text	Optional	Description which qualifies the status of the MM submit request.
Message ID	<del>Mandatory</del> Conditional	<del>The identification of the MM if it is accepted by the originator MMS Relay/Server given to an accepted MM.</del>

...

## 8.4.3.4 Information Elements

**Table 26: Information elements in the MM4\_read\_reply\_report.REQ.**

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.REQ".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e. the originator of the read-reply report.
Sender address	Mandatory	The address of the MM originator of the original MM, i.e. the recipient of the read-reply report.
Message-ID	Mandatory	The message ID of the original MM.
Date and time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Acknowledgement Request	Optional	Request for MM4_ <del>delivery</del> read_reply_report.RES
MM Status Code	Mandatory	Status of the MM, e.g. Read, Deleted without being read
Status text	Optional	The text explanation corresponding to the Status code

**Table 27: Information elements in the MM4\_read\_reply\_report.RES.**

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
MM Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.RES".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Request Status Code	Mandatory	The status of the associated MM4_read_reply_report.REQ.
Status text	Optional	The textual explanation for the Status code

## CHANGE REQUEST

⌘ **23.140 CR 028** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction on MM1 and MM4 abstract messages		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MMS	<b>Date:</b>	⌘ 27.11.2001
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel - 5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ 1)If the MMS Relay/Server can not deliver a MM due to unspecified reasons it is not necessary to send the Message ID to the MMS User Agent. The Message ID is not a mandatory but a conditional element. 2) In the MM4_read_reply_report.REQ the informational element "Acknowledgement Request" should not request a MM4_delivery_report.RES but a MM4_read_reply_report.RES
<b>Summary of change:</b>	⌘ 1) Changing the message ID in the submit response from mandatory to conditional. 2) Changing in MM4_read_reply_report.REQ the "request of a delivery report response" to "request of a read reply report response".
<b>Consequences if not approved:</b>	⌘ The 23.140 will contain errors on the MM1 and MM4 interface.

<b>Clauses affected:</b>	⌘ 8.1.1.4; 8.4.3.4	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	
<b>Other comments:</b>	⌘	

**How to create CRs using this form:**

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 8.1.1.4 Information Elements

Table 2: Information elements in the MM1\_submit.REQ.

Information element	Presence	Description
Recipient address	Mandatory	The address of the recipient MMS User Agent. Multiple addresses are possible.
Content type	Mandatory	The content type of the MM's content.
Sender address	Optional	The address of the MM originator.
Message class	Optional	The class of the MM (e.g., personal, advertisement, information service)
Date and time	Optional	The time and date of the submission of the MM (time stamp).
Time of Expiry	Optional	The desired time of expiry for the MM or reply-MM.
Earliest delivery time	Optional	The earliest desired time of delivery of the MM to the recipient.
Delivery report	Optional	A request for delivery report.
Reply-Charging	Optional	A request for reply-charging.
Reply-Deadline	Optional	In case of reply-charging the latest time of submission of replies granted to the recipient(s).
Reply-Charging-Size	Optional	In case of reply-charging the maximum size for reply-MM(s) granted to the recipient(s).
Priority	Optional	The priority (importance) of the message.
Sender visibility	Optional	A request to show or hide the sender's identity when the message is delivered to the recipient.
Read reply	Optional	A request for read reply report.
Subject	Optional	The title of the whole multimedia message.
Reply-Charging-ID	Optional	In case of reply-charging when the reply-MM is submitted within the MM1_submit.REQ this is the identification of the original MM that is replied to.
Content	Optional	The content of the multimedia message

Table 3: Information elements in the MM1\_submit.RES.

Information element	Presence	Description
Request Status	Mandatory	The status of the MM submit request.
Request Status Text	Optional	Description which qualifies the status of the MM submit request.
Message ID	<del>Mandatory</del> Conditional	<del>The identification of the MM if it is accepted by the originator MMS Relay/Server given to an accepted MM.</del>

...

## 8.4.3.4 Information Elements

**Table 26: Information elements in the MM4\_read\_reply\_report.REQ.**

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.REQ".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e. the originator of the read-reply report.
Sender address	Mandatory	The address of the MM originator of the original MM, i.e. the recipient of the read-reply report.
Message-ID	Mandatory	The message ID of the original MM.
Date and time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Acknowledgement Request	Optional	Request for MM4_delivery_read_reply_report.RES
MM Status Code	Mandatory	Status of the MM, e.g. Read, Deleted without being read
Status text	Optional	The text explanation corresponding to the Status code

**Table 27: Information elements in the MM4\_read\_reply\_report.RES.**

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
MM Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.RES".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Request Status Code	Mandatory	The status of the associated MM4_read_reply_report.REQ.
Status text	Optional	The textual explanation for the Status code



CR-Form-v4

## CHANGE REQUEST

⌘ **23.140 CR 029** ⌘ ev **-** ⌘ Current version: **4.4.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ clarification of status codes in MM4_read_reply_report.REQ		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MMS	<b>Date:</b>	⌘ 011129
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-4
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ In the current specification the MM4_delivery_report.REQ and MM4_read_report.REQ have the same value ranges for the status codes they carry over MM4. A delivery report and a read report have different functions and should thus carry different status codes.
<b>Summary of change:</b>	⌘ <ul style="list-style-type: none"><li>• Added IE Read Status Code with appropriate value range.</li></ul>
<b>Consequences if not approved:</b>	⌘ Inappropriate status values in Read Reports.

<b>Clauses affected:</b>	⌘ 8.1.6.4, 8.4.3.2, 8.4.4.6, 8.4.4.8		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/>. For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

#### 8.1.6.4 Information Elements

**Table 17: Information elements in the MM1\_read\_reply\_recipient.REQ.**

Information element	Presence	Description
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e, the originator of the read-reply report.
Originator address	Mandatory	The address of the MM originator of the original MM, i.e, the recipient of the read-reply report.
Message-ID	Mandatory	The message ID of the original MM.
Date and Time	Optional	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
<u>Read Status</u>	Mandatory	Status of the MM, e.g. Read, Deleted without being read

**Table 18: Information elements in the MM1\_read\_reply\_originator.REQ.**

Information element	Presence	Description
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e, the originator of the read-reply report.
Originator address	Mandatory	The address of the MM originator of the original MM, i.e, the recipient of the read-reply report.
Message-ID	Mandatory	The message ID of the original MM.
Date and Time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
<u>MMRead Status</u>	Mandatory	Status of the MM, e.g. Read, Deleted without being read

#### 8.4.3.4 Information Elements

**Table 26: Information elements in the MM4\_read\_reply\_report.REQ.**

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.REQ".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e. the originator of the read-reply report.
Sender address	Mandatory	The address of the MM originator of the original MM, i.e. the recipient of the read-reply report.
Message-ID	Mandatory	The message ID of the original MM.
Date and time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Acknowledgement Request	Optional	Request for MM4_delivery_report.RES
<del>MM_Read_Status_Code</del>	Mandatory	Status of the MM, e.g. Read, Deleted without being read
Status text	Optional	The text explanation corresponding to the Status code

**Table 27: Information elements in the MM4\_read\_reply\_report.RES.**

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
MM Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.RES".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Request Status Code	Mandatory	The status of the associated MM4_read_reply_report.REQ.
Status text	Optional	The textual explanation for the Status code

#### 8.4.4.6 MM4\_Read\_reply\_report.REQ Header Mappings

The mappings of the MM4\_Read\_reply\_report.REQ information elements to STD 11 headers is detailed in the table below.

**Table 32: MM4\_Read\_reply\_report.REQ Information Elements to STD 11 Header Mappings**

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Recipient address	From:
Sender address	To:
Message-ID	X-Mms-Message-ID:
Date and time	Date:
Acknowledgement Request	X-Mms-Ack-Request:
<del>MM_Read_Status_Code</del>	<del>X-Mms-MMRead-Status-Code:</del>
Status text	X-Mms-Status-Text:
-	Sender:
-	Message-ID:
-	Date:

The meaning of Recipient address is that of the original MM, from whose MMS User Agent this Read-reply-report is being generated. The meaning of Sender address is that of the original MM, to whom the Read-reply-report is being sent.

The value of the Sender: header is a system address, to which the corresponding MM4\_Read\_reply\_report.RES shall be sent.

The Message-ID:, and Date: headers, which have no corresponding information attribute in the MM4\_Read\_reply\_report.REQ, are automatically provided appropriate values by the MMS Relay/Server.

#### 8.4.4.8 Header Field Value Range

MMS information elements that are mapped to standard STD 11 "header fields", i.e. which do not have an "X-MMS-" prefix, should be used according to [5].

The rest of the header definitions used in this clause, including the mechanisms and pre-defined tokens, are described in an augmented Backus-Naur Form (BNF) defined in [48], similar to that used by RFC 822 [5]. Implementors will need to be familiar with the notation in order to understand these definitions.

For the residual MMS information elements the following applies:

##### **X-Mms-3GPP-MMS-Version:**

```
3GPP-MMS-Version = "X-Mms-3GPP-MMS-Version" ":" 1*DIGIT "." 1*DIGIT
                  "." 1*DIGIT
```

Note that the numbers MUST be treated as separate integers and that each may be incremented higher than a single digit. Thus, 2.1.4 is a lower version than 2.1.13, which in turn is lower than 2.3.0. Leading zeros shall be ignored by recipient MMS Relay/Server and shall NOT be sent. The version is according to the version of the present document (see also clause "Foreword").

##### **X-Mms-Message-Type:**

```
Message-type = "X-Mms-Message-Type" ":" ( "MM4_forward.REQ" |
"MM4_forward.RES" | "MM4_delivery_report.REQ" |
"MM4_delivery_report.RES" | "MM4_read_reply_report.REQ" |
"MM4_read_reply_report.RES" )
```

##### **X-Mms-Transaction-Id:**

```
Transaction-id = "X-Mms-Transaction-ID" ":" quoted-string
```

**X-Mms-Message-Id:**

Message-id = "X-Mms-Message-ID" ":" quoted-string

**X-Mms-Message-Class:**

Message-class = "X-Mms-Message-Class" ":" ( Class-identifier | quoted-string )

Class-identifier = "Personal" | "Advertisement" | "Informational" | "Auto"

**X-Mms-Expiry:**

Expiry-value = "X-Mms-Expiry" ":" ( HTTP-date | delta-seconds )

**X-Mms-Delivery-Report:**

Delivery-report = "X-Mms-Delivery-Report" ":" ( "Yes" | "No" )

**X-Mms-Priority:**

Priority = "X-Mms-Priority" ":" ( "Low" | "Normal" | "High" )

**X-Mms-Sender-Visibility:**

Sender-visibility = "X-Mms-Sender-Visibility" ":" ( "Hide" | "Show" )

**X-Mms-Read-Reply:**

Read-reply = "X-Mms-Read-Reply" ":" ( "Yes" | "No" )

**X-Mms-Ack-Request:**

Ack-Request = "X-Mms-Ack-Request" ":" ( "Yes" | "No" )

**X-Mms-Request-Status-Code:**

Request-status-code = "X-Mms-Request-Status-Code" ":" ( "Ok" | "Error-unspecified" | "Error-service-denied" | "Error-message-format-corrupt" | "Error-sending-address-unresolved" | "Error-message-not-found" | "Error-network-problem" | "Error-content-not-accepted" | "Error-unsupported-message" )

**X-Mms-MM-Status-Code:**

MM-Status-Code = "X-Mms-MM-Status-Code" ":" ( "Expired" | "Retrieved" | "Rejected" | "Deferred" | "Intermediate" | "Forwarded" | "Unrecognised" )

**X-Mms-Read-Status:**

Read-Status = "X-Mms-Read-Status" ":" ( "Read" | "Deleted without being read" )

CR-Form-v4

## CHANGE REQUEST

⌘ **23.140 CR 030** ⌘ ev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ clarification of status codes in MM4_read_reply_report.REQ		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ 011129
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ In the current specification the MM4_delivery_report.REQ and MM4_read_report.REQ have the same value ranges for the status codes they carry over MM4. A delivery report and a read report have different functions and should thus carry different status codes.
<b>Summary of change:</b>	⌘ <ul style="list-style-type: none"><li>• Added IE Read Status Code with appropriate value range.</li></ul>
<b>Consequences if not approved:</b>	⌘ Inappropriate status values in Read Reports.

<b>Clauses affected:</b>	⌘ 8.1.6.4, 8.4.3.2, 8.4.4.6, 8.4.4.8		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

#### 8.1.6.4 Information Elements

**Table 17: Information elements in the MM1\_read\_reply\_recipient.REQ.**

Information element	Presence	Description
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e, the originator of the read-reply report.
Originator address	Mandatory	The address of the MM originator of the original MM, i.e, the recipient of the read-reply report.
Message-ID	Mandatory	The message ID of the original MM.
Date and Time	Optional	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
<u>Read Status</u>	Mandatory	Status of the MM, e.g. Read, Deleted without being read

**Table 18: Information elements in the MM1\_read\_reply\_originator.REQ.**

Information element	Presence	Description
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e, the originator of the read-reply report.
Originator address	Mandatory	The address of the MM originator of the original MM, i.e, the recipient of the read-reply report.
Message-ID	Mandatory	The message ID of the original MM.
Date and Time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
<u>MMRead Status</u>	Mandatory	Status of the MM, e.g. Read, Deleted without being read

#### 8.4.3.4 Information Elements

**Table 26: Information elements in the MM4\_read\_reply\_report.REQ.**

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.REQ".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Recipient address	Mandatory	The address of the MM recipient of the original MM, i.e. the originator of the read-reply report.
Sender address	Mandatory	The address of the MM originator of the original MM, i.e. the recipient of the read-reply report.
Message-ID	Mandatory	The message ID of the original MM.
Date and time	Mandatory	Date and time the MM was handled (read, deleted without being read, etc.) (time stamp)
Acknowledgement Request	Optional	Request for MM4_delivery_report.RES
<del>MM_Read_Status_Code</del>	Mandatory	Status of the MM, e.g. Read, Deleted without being read
Status text	Optional	The text explanation corresponding to the Status code

**Table 27: Information elements in the MM4\_read\_reply\_report.RES.**

Information element	Presence	Description
3GPP MMS Version	Mandatory	The MMS version of the recipient MMS Relay/Server as defined by the present document.
MM Message Type	Mandatory	The type of message used on reference point MM4: "MM4_read_reply_report.RES".
Transaction ID	Mandatory	The identification of the MM4_read_reply_report.REQ/MM4_read_reply_report.RES pair.
Request Status Code	Mandatory	The status of the associated MM4_read_reply_report.REQ.
Status text	Optional	The textual explanation for the Status code

#### 8.4.4.6 MM4\_Read\_reply\_report.REQ Header Mappings

The mappings of the MM4\_Read\_reply\_report.REQ information elements to STD 11 headers is detailed in the table below.



**Table 32: MM4\_Read\_reply\_report.REQ Information Elements to STD 11 Header Mappings**

Information element	STD 11 Header
3GPP MMS Version	X-Mms-3GPP-MMS-Version:
Message Type	X-Mms-Message-Type:
Transaction ID	X-Mms-Transaction-ID:
Recipient address	From:
Sender address	To:
Message-ID	X-Mms-Message-ID:
Date and time	Date:
Acknowledgement Request	X-Mms-Ack-Request:
<del>MM_Read_Status_Code</del>	<del>X-Mms-MMRead-Status-Code:</del>
Status text	X-Mms-Status-Text:
-	Sender:
-	Message-ID:
-	Date:

The meaning of Recipient address is that of the original MM, from whose MMS User Agent this Read-reply-report is being generated. The meaning of Sender address is that of the original MM, to whom the Read-reply-report is being sent.

The value of the Sender: header is a system address, to which the corresponding MM4\_Read\_reply\_report.RES shall be sent.

The Message-ID:, and Date: headers, which have no corresponding information attribute in the MM4\_Read\_reply\_report.REQ, are automatically provided appropriate values by the MMS Relay/Server.

#### 8.4.4.8 Header Field Value Range

MMS information elements that are mapped to standard STD 11 "header fields", i.e. which do not have an "X-MMS-" prefix, should be used according to [5].

The rest of the header definitions used in this clause, including the mechanisms and pre-defined tokens, are described in an augmented Backus-Naur Form (BNF) defined in [48], similar to that used by RFC 822 [5]. Implementors will need to be familiar with the notation in order to understand these definitions.

For the residual MMS information elements the following applies:

##### **X-Mms-3GPP-MMS-Version:**

```
3GPP-MMS-Version = "X-Mms-3GPP-MMS-Version" ":" 1*DIGIT "." 1*DIGIT
                  "." 1*DIGIT
```

Note that the numbers MUST be treated as separate integers and that each may be incremented higher than a single digit. Thus, 2.1.4 is a lower version than 2.1.13, which in turn is lower than 2.3.0. Leading zeros shall be ignored by recipient MMS Relay/Server and shall NOT be sent. The version is according to the version of the present document (see also clause "Foreword").

##### **X-Mms-Message-Type:**

```
Message-type = "X-Mms-Message-Type" ":" ( "MM4_forward.REQ" |
      "MM4_forward.RES" | "MM4_delivery_report.REQ" |
      "MM4_delivery_report.RES" | "MM4_read_reply_report.REQ" |
      "MM4_read_reply_report.RES" )
```

##### **X-Mms-Transaction-Id:**

Transaction-id = "X-Mms-Transaction-ID" ":" quoted-string

**X-Mms-Message-Id:**

Message-id = "X-Mms-Message-ID" ":" quoted-string

**X-Mms-Message-Class:**

Message-class = "X-Mms-Message-Class" ":" ( Class-identifier | quoted-string )

Class-identifier = "Personal" | "Advertisement" | "Informational" | "Auto"

**X-Mms-Expiry:**

Expiry-value = "X-Mms-Expiry" ":" ( HTTP-date | delta-seconds )

**X-Mms-Delivery-Report:**

Delivery-report = "X-Mms-Delivery-Report" ":" ( "Yes" | "No" )

**X-Mms-Priority:**

Priority = "X-Mms-Priority" ":" ( "Low" | "Normal" | "High" )

**X-Mms-Sender-Visibility:**

Sender-visibility = "X-Mms-Sender-Visibility" ":" ( "Hide" | "Show" )

**X-Mms-Read-Reply:**

Read-reply = "X-Mms-Read-Reply" ":" ( "Yes" | "No" )

**X-Mms-Ack-Request:**

Ack-Request = "X-Mms-Ack-Request" ":" ( "Yes" | "No" )

**X-Mms-Request-Status-Code:**

Request-status-code = "X-Mms-Request-Status-Code" ":" ( "Ok" | "Error-unspecified" | "Error-service-denied" | "Error-message-format-corrupt" | "Error-sending-address-unresolved" | "Error-message-not-found" | "Error-network-problem" | "Error-content-not-accepted" | "Error-unsupported-message" )

**X-Mms-MM-Status-Code:**

MM-Status-Code = "X-Mms-MM-Status-Code" ":" ( "Expired" | "Retrieved" | "Rejected" | "Deferred" | "Intermediate" | "Forwarded" | "Unrecognised" )

**X-Mms-Read-Status:**

Read-Status = "X-Mms-Read-Status" ":" ( "Read" | "Deleted without being read" )

## CHANGE REQUEST

⌘ **23.140 CR 031** ⌘ ev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Configuration of MMS-capable UEs		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ November 29, 2001
<b>Category:</b>	⌘ <b>B</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)	2	(GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)	R96	(Release 1996)
	<b>B</b> (addition of feature),	R97	(Release 1997)
	<b>C</b> (functional modification of feature)	R98	(Release 1998)
	<b>D</b> (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The work about storing MMS parameters (for configuration of MMS-capable UEs to reduce user interaction) on the USIM is going on in 3GPP TSG T3. MMS Connectivity Information and User Preferences are identified important data in this regard. But, existing 3GPP MMS specifications do not specifically describe those. The description in 3GPP MMS specification should be helpful in bringing harmony between the specifications in T2 (TS 23.140) and T3 (TS 31.102). The description, in this regard, is also expected to lighten so far dark area of MMS, and thus would provide better understanding of the MMS as a whole.
<b>Summary of change:</b>	⌘ Addition of description about MMS Connectivity information and User Preferences, based on present agreed architectural model of MMS, as a new annex. The annex defines the concept, and also depicts lists of information elements.
<b>Consequences if not approved:</b>	⌘ Possible discontinuity and lack of harmony between the work/specification in the T2 and T3 on the subject matter. The subject matter remains unfocused in the 3GPP MMS specification.

<b>Clauses affected:</b>	⌘ New annex (Annex F)		
<b>Other specs Affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

---

## 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TS 22.140: "Multimedia Messaging Service; Stage 1".
- [2] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [3] WAP Forum: "Wireless Application Environment Specification, Version 1.2", WAP-WAESpec-19991104, . URL: <http://www.wapforum.org/>.
- [4] 3GPP TS 23.057: "Mobile Execution Environment (MExE); Functional description; Stage 2".
- [5] IETF; STD 0011 (RFC 2822): "Internet Message Format", URL: <http://www.ietf.org/rfc/rfc2822.txt>.
- [6] IETF; RFC 2046: "Multipurpose Internet Mail extension (MIME) Part Two: Media Types", URL: <http://www.ietf.org/rfc/rfc2046.txt>.
- [7] The Unicode Consortium: "The Unicode Standard", Version 2.0, Addison-Wesley Developers Press, 1996. URL: <http://www.unicode.org/>.
- [8] ANSI X3.4, 1986: "Information Systems; Coded Character Set 7 Bit; American National Standard Code for Information Interchange".
- [9] ISO/IEC 8859-1:1998: "Information Processing; 8-bit Single-Byte Coded Graphic Character Sets; Part 1: Latin Alphabet No. 1".
- [10] IETF; RFC 2279: "UTF-8, A Transformation format of ISO 10646", URL: <http://www.ietf.org/rfc/rfc2279.txt>.
- [11] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".
- [12] 3GPP TS 26.090: "Mandatory Speech Codec speech processing functions; AMR Speech Codec Transcoding Functions".
- [13] 3GPP TS 26.093 (V3.1.0): "Mandatory Speech Codec speech processing functions; AMR Speech Codec; Source Controlled Rate Operation".
- [14] [ISO/IEC 11172-3:1993](#): "Information technology; Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s; Part 3: Audio" (MP3, MPEG1-Audio, MPEG2-Audio)
- [15] MIDI Manufacturers Association Incorporated, Los Angeles, California: "MIDI Sample Dump Standard (SDS)"; URL: <http://www.midi.org>.
- [16] ISO/IEC 14496-2:1999/FDAM4, ISO/IEC JTC1/SC 29/WG11 N3904, Pisa, January, 2001
- [17] ITU-T Recommendation T.81 | [ISO/IEC 10918-1:1994](#): "Information technology; Digital compression and coding of continuous-tone still images: Requirements and guidelines".
- [18] Compuserve Incorporated, Columbus, Ohio (1990): "Graphics Interchange Format (Version 89a)".

- [19] ISO/IEC 14496-2:1999: "Information technology; Coding of audio-visual objects; Part 2: Visual".
- [20] ITU-T Recommendation H.263 (1998): "Video coding for low bit rate communication".
- [21] ITU-T Recommendation H.263 (1998): "Video coding for low bit rate communication - Annex X, Profiles and Levels Definition"
- [22] IETF; STD 0010 (RFC 2821): "Simple Mail Transfer Protocol", URL: <http://www.ietf.org/rfc/rfc2821.txt>.
- [23] WAP Forum (November 1999): "WAP Wireless Session Protocol", WAP-WSP-19991105- , URL: <http://www.wapforum.org/>.
- [24] WAP Forum (November 1999): "WAP Push Access Protocol", WAP-PAP-19991108, URL: <http://www.wapforum.org/>.
- [25] WAP Forum (November 1999): "WAP User Agent Profile Specification", WAP-UAProf-19991110, URL: <http://www.wapforum.org/>.
- [26] W3C Recommendation 22 February 1999 "Resource Description Framework (RDF) Model and Syntax Specification", URL: <http://www.w3.org/TR/REC-rdf-syntax>.
- [27] WAP Forum (November 1999): "WAP Wireless Markup Language Specification, Version 1.2 ", WAP-WML-19991104, URL: <http://www.wapforum.org/>.
- [28] W3C Recommendation 15-June-1998: "Synchronized Multimedia Integration Language (SMIL) 1.0 Specification" - <http://www.w3.org/TR/REC-smil/>.
- [29] WAP Forum (November 1999): "WAP Wireless Transport Layer Security Specification", WAP-WTLS-19991105, URL: <http://www.wapforum.org/>.
- [30] WAP Forum (November 1999): "WAP Identity Module Specification", WAP-WIM-19991105, URL: <http://www.wapforum.org/>.
- [31] ITU-T Recommendation T.37 (06/98): "Procedures for the transfer of facsimile data via store-and-forward on the Internet".
- [32] ITU-T Recommendation T.30 (1996): "Procedures for document facsimile transmission in the general switched telephone network".
- [33] IETF; RFC 2421 (Sept. 1998): "Voice Profile for Internet Mail – version 2, VPIM" , URL: <http://www.ietf.org/rfc/rfc2421.txt>.
- [34] IETF; STD 0053 (RFC 1939): "POP 3, Post Office Protocol - Version 3" , URL: <http://www.ietf.org/rfc/rfc1939.txt>.
- [35] IETF; RFC 1730 (December 1994): "IMAP4, Internet Message Access Protocol - Version 4" , URL: <http://www.ietf.org/rfc/rfc1730.txt>.
- [36] Adobe Systems: "Tag Image File Format (TIFF), Version 6", URL:, <http://www.adobe.com>.
- [37] 3GPP TR 23.039: "Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)".
- [38] ISO/IEC TR 13818-5:1997/Amd 1:1999 "Advanced Audio Coding (AAC)"
- [39] IETF; Internet draft: "RTP payload format and file storage format for AMR and AMR-WB audio"; URL: <http://search.ietf.org/internet-drafts/draft-ietf-avt-rtp-amr-10.txt>.
- NOTE: Reference [39] is work in progress in IETF/AVT working group and to be replaced by the appropriate RFC number once the Internet draft is approved within the IETF (IESG approval is scheduled to spring/summer 2001).
- [40] 3GPP TS 26.233: "End-to-end transparent streaming Service (PSS); General Description".
- [41] 3GPP TS 26.234: "End-to-end transparent streaming Service (PSS); Protocols and Codecs".

[42] IETF; Internet Draft: "TCP over 2.5G and 3G Wireless Networks"; URL: <http://search.ietf.org/internet-drafts/draft-ietf-pilc-2.5g3g-03.txt>

NOTE: Reference [42] has to be replaced by the appropriate RFC number once the Internet draft is approved within the IETF.

[43] WAP Forum: "Wireless profiled TCP", WAP-225-TCP-20010331-a, URL: <http://www.wapforum.org>

[44] IETF; RFC 2045: "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", URL: <http://www.ietf.org/rfc/rfc2045.txt>

[45] IETF; RFC 2047: "Multipurpose Internet Mail Extensions (MIME) Part Three: Message Header Extensions for Non-ASCII-Text", URL: <http://www.ietf.org/rfc/rfc2047.txt>.

[46] IETF; RFC 2048: "Multipurpose Internet Mail Extensions (MIME) Part Four: Registration Procedures", URL: <http://www.ietf.org/rfc/rfc2048.txt>.

[47] IETF; RFC 2049: "Multipurpose Internet Mail Extensions (MIME) Part Five: Conformance Criteria and Examples", URL: <http://www.ietf.org/rfc/rfc2049.txt>.

[48] IETF; RFC 2616: "Hypertext Transfer Protocol, HTTP/1.1", URL: <http://www.ietf.org/rfc/rfc2616.txt>.

[49] IETF; STD 13 (RFC 1034, 1035): "Domain Names -- concepts and facilities", "Domain names -- implementation and specification", URL: <http://www.ietf.org/rfc/rfc1034.txt>, <http://www.ietf.org/rfc/rfc1035.txt>.

[50] IETF; STD 14 (RFC 947): "Multi-network broadcasting within the Internet", URL: <http://www.ietf.org/rfc/rfc947.txt>.

[51] IETF; RFC 2076: "Common Internet Message Headers", URL: <http://www.ietf.org/rfc/rfc2076.txt>.

[52] IETF; RFC 1893: "Enhanced Mail System Status Codes", URL: <http://www.ietf.org/rfc/rfc1893.txt>.

[53] IETF; RFC 1327: "Mapping between X.400(1988)/ISO 10021 and RFC 822", URL: <http://www.ietf.org/rfc/rfc1327.txt>.

[54] WAP-183-ProvCont, Provisioning Content, URL: <http://www.wapforum.org>

[55] WAP-209-MMSEncapsulation, MMS Encapsulation Protocol, URL: <http://www.wapforum.org>

---

## Annex F (Informative): Configuration of MMS-capable UEs

An MMS-capable UE may be configured with information about MMS connectivity and user preferences. A configured MMS-capable UE requires minimum user interaction for different MMS-specific purposes, e.g. accessing network infrastructure, composing mobile-originated MMs. The information may be stored on USIM as part of terminal configuration. MMS connectivity information and user preferences are described below.

### F.1 MMS Connectivity Information

MMS connectivity information consists of a set of information elements needed to access network infrastructure for the MMS purpose. This includes bearer, protocols, and addresses of related access points.

A list of information elements concerning MMS connectivity information is outlined below. Some of the connectivity information elements can also be used for purposes other than MMS. An MMS-capable UE can be configured with all or a subset of the listed elements depending on the provided service in terms of e.g. bearer, security, implementation protocol. Moreover, an MMS-capable UE can be configured with more than one sets of connectivity information for

multiple access mechanisms, e.g. bearer, access type. Further information about the listed information elements for WAP MMS implementation can be found in [54] and [55].

#### MMS Relay/Server

- address: the address of the associated MMS Relay/Server as defined in [55]

WAP Gateway for WAP implementation of MMS (all information elements are as defined in [54])

- address: the address of the associated WAP Gateway. The address can be of different types, as indicated by the "type of address"
- type of address: indicates the type (e.g. IPv4, IPv6) of the "address" of the WAP Gateway
- port: indicates the port number specific to the address of the WAP Gateway
- service: specifies available service, e.g. connection-less, secured
- authentication type: indicates the authentication method used by the WAP Gateway
- authentication id: indicates the authentication identifier used for authentication by the WAP Gateway
- authentication pw: indicates the authentication secret used for authentication by the WAP Gateway

Interface to core network including access point for the core network (e.g. GGSN) and required Bearer (all information elements are as defined in [54])

- bearer: indicates the type of network (e.g. CSD, GPRS)
- address: the address of the associated access point. The address could be of different types depending on the bearer, as indicated by the "type of address"
- type of address: indicates the type (e.g. MSISDN for CSD, APN for GPRS) of the "address" of the access point
- speed: indicates the speed of the connection for circuit switched bearers
- call type: indicates type of call for specific bearer (e.g. analogue for CSD)
- authentication type: indicates the authentication protocol used by the access point
- authentication id: indicates the authentication id used for authentication by the access point
- authentication pw: indicates the authentication secret used for authentication by the access point

## F.2 User Preferences

User preferences consist of a set of information elements with user-defined values. The set is a subset of information elements required for composing an MM. User preferences include following information elements

- Delivery report
- Read reply
- Sender visibility
- Priority
- Time of expiry



- Earliest delivery time

Further information about the information elements, listed here, can be found in section 8.1.1 (Submission of Multimedia Message) of this specification.

## CHANGE REQUEST

⌘ **23.140 CR 032** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ MMS address hiding		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ 27.11.2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-5
Use <u>one</u> of the following categories: <b>F</b> (essential correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)	

<b>Reason for change:</b>	⌘ When an MMS Service Provider does not allow its subscribers to use the address hiding feature (sender anonymity) and a sender requests for her address to be hidden, the current MMS spec allows a service provider to overwrite the sender's request for address hiding although it also mandates the Service Provider to reject the MM.
<b>Summary of change:</b>	⌘ It is clarified that allowing address hiding is optional for an MMSE but if a sender has requested anonymity then it is essential that his address is hidden from the recipient.
<b>Consequences if not approved:</b>	⌘ A ambiguity in 6.1.9 (address hiding) of 23.140 would not be resolved.

<b>Clauses affected:</b>	⌘ 7.1.9		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘ This CR is included already in Rel-4 (CR009) but was removed from Rel-5 by CR014 unintentionally (TSG-T#13).		

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

...

### 7.1.9 Address Hiding in MMS

An originator MMS User Agent may support a request for the sender's address to be hidden from the recipient(s). An MMSE may support such a request, i.e., it may allow address hiding. In any case, a recipient MMSE shall ensure that a sender's address is hidden from the recipient MMS User Agent when address hiding is requested for an MM.

If the originator's MMS Relay/Server does not allow address hiding (anonymous messages) (e.g. legislation does not permit anonymous messages) a message containing a request for address hiding ~~the message~~ shall be rejected upon submission and the originator's MMS Relay/Server shall return an error information to the originator MMS User Agent.

In the case of originator's MMS Relay/Server rejects the message because it does not allow address hiding the rejection information shall be delivered in a submit response together with optional status text.

In case the recipient MMS Relay/Server rejects the message because it does not allow address hiding and the originator MMS User Agent has requested a delivery report, then the recipient MMS Relay/Server shall inform the originator of the message rejection within the delivery report.

In case the recipient MMS Relay/Server rejects the message because it does not allow address hiding and the originator MMS User Agent has not requested a delivery report, then the originator MMS Relay/Server may inform the MM originator by generating a new MM which is sent back to the MM originator.

~~The originator MMS Relay/Server may have the possibility to override the originator's requirement of address hiding without informing the originator.~~

Independent of whether or not the originator's address is shown or hidden to the recipient, the originator may be able to ask for a delivery report to an MM and also receive the delivery report according to the normal behaviour of the MMS framework.

If the originator MMS User Agent has requested both its address to be hidden and a read-reply report the originator MMS User Agent might not receive the read-reply report.

If the recipient forwards the MM outside the MMSE and the peer entity is unknown to the forwarding MMS Relay/Server the recipient MMS Relay/Server shall not transfer the originator's address but replace it with either appropriate coded address or leave the originator address field blank.

## CHANGE REQUEST

⌘ **TS 23.140** **CR 033** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ reply-charging clarifications		
<b>Source:</b>	⌘ T2		
<b>Work item code:</b>	⌘ MESS5-MMS	<b>Date:</b>	⌘ 07.11.2001
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ REL-5
	Use <u>one</u> of the following categories: <b>F</b> (essential correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ To make the discription of the reply-charging support clearer.
<b>Summary of change:</b>	⌘ Editorial changes and clarifications on the reply-charging support.
<b>Consequences if not approved:</b>	⌘ Existing text may cause misunderstandings.

<b>Clauses affected:</b>	⌘ 7.1.10	
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘
	<input type="checkbox"/> Test specifications	
	<input type="checkbox"/> O&M Specifications	
<b>Other comments:</b>	⌘ This CR is included already in Rel-4 as CR015 but was removed partly from Rel-5 by CR014 unintentionally (TSG-T#13).	

### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: [http://www.3gpp.org/3G\\_Specs/CRs.htm](http://www.3gpp.org/3G_Specs/CRs.htm). Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://www.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

...

### 7.1.10 Support for Reply-Charging in MMS

The MMS User Agent may support reply-charging. If the MMS User Agent supports this feature it is expected that the MMS User Agent supports the following behaviour.

The MMS Relay/Server may support reply-charging. If the MMS Relay/Server supports this feature it is expected that the MMS Relay/Server supports the following behaviour.

A User of the MMS may be able to take over the charge for the sending of a reply-MM to their submitted MM from the recipient(s). Therefore the originator of an MM should be able to mark the MM as reply-charged. The originator's MMS Relay/Server could either accept the user's settings for reply-charging or not and should be able to convey feedback to the originator. It should be possible to take over the charge for reply-MMs from different recipients.

The recipient should be notified that the originator is willing to pay for a reply-MM to this particular MM. However, the indication of reply-charging covers only the willingness to pay for a reply-MM to an original MM, not for the retrieval of the original MM marked as reply-charged. Both the originator and the recipient MMS Relay/Server shall be able to control that not more than one reply-MM per recipient is charged to the originator. The MMS User Agent may indicate to the user if an MM has already been replied to.

The request for reply-charging shall not be passed on to the recipient

- if the recipient is not known to belong to an MMSE peer entity or
- in the case the MM is forwarded.

NOTE: For this release the following limitations apply: Support for reply-charging in MMS is restricted to MMS User Agents belonging to the same MMSE, i.e. originator and recipient MMSE are identical. Reply-charging allows only one reply-MM per recipient, i.e. reply-charging applies to the first successful submission of an MM sent as a reply. Furthermore, a reply-MM is restricted to text only. These limitations may be elaborated further in future releases.

In addition to the service behaviour described in previous sections the following behaviour is expected to support reply-charging in MMS.

Within the submission of an MM the MM originator may indicate a willingness to pay the charge for one reply-MM per MM recipient. In this case the originator MMS User Agent:

- shall indicate the sender's willingness to pay the charge for one reply-MM per MM recipient
- may define a reply-charging limitation request (e.g. may specify the latest time of submission of the reply-MMs or a maximum size of reply-MMs)

In a response to the MM submission the originator MMS Relay/Server shall inform the originator MMS User Agent whether or not it accepts

- the originator's request for reply-charging in the original MM
- the reply-charging limitations set by the originator MMS User Agent in the original MM

Upon reception of an MM from an originator MMS User Agent the originator MMS Relay/Server

- may provide reply-charging limitations, i.e. it may also override by further limiting the MMS User Agent's settings for reply-charging limitations
- shall pass the indication whether or not a reply-MM is requested unaltered when routing the original MM towards the MM recipient(s) if the peer entity is known to be the same MMS Relay/Server.
- shall pass the reply-charging limitations ~~latest time of submission~~ for the reply-MM ~~unaltered~~ when routing the original MM towards the MM recipient(s) if the peer entity is known to be the same MMS Relay/Server.

If the MM recipient has requested the original MM to be forwarded to some other address the recipient MMS Relay/Server

- shall not pass any information about the reply-charging request towards the addressee(s) of the forwarding request

If reply-charging has been requested by the MM originator the recipient MMS Relay/Server ~~should inform the recipient MMS User Agent with the MM notification and upon MM delivery~~

- ~~that the MM originator is willing to pay for reply-MM to this original MM.~~
- should inform the recipient MMS User Agent with the MM notification and upon MM delivery that the MM originator is willing to pay for a reply-MM to this original MM.
- ~~It may also~~ notify the recipient about the reply-charging limitations set by the originator (e.g. the latest time of submission of a reply-MM to the original MM).

When a user intends to send a reply-MM to the MM originator the recipient MMS User Agent (which is the originator MMS User Agent of the reply-MM):

- shall mark the MM as a reply-MM.
- shall provide the message-ID of the original MM which it replies to (if it is the reply-MM)
- shall submit the reply-MM to the recipient MMS Relay/Server
- may be able to indicate to the user whether this MM has already been replied to
- may be able to indicate to the user if the reply-charging limitations can not be met

Upon submission the recipient MMS Relay/Server

- shall reject the reply-MM submission attempt and should convey this information back to the recipient MMS User Agent if the reply-MM submission attempt does not meet the limitations set by the originator MMS User Agent
- shall be able to uniquely map the reply-MM to the original MM