

**Access and Terminals (AT);
Fixed network Multimedia Messaging Service (F-MMS);
PSTN/ISDN;
Part 6: Control strings (service codes)
for MMS functions and MMS supplementary services**



Reference

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Access and Terminals (AT).

The present document is part 6 of a multi-part deliverable covering the Fixed network Multimedia Messaging Service (F-MMS); PSTN/ISDN, as identified below:

- TS 102 314-1: "Overview";
 - ES 202 314-2: "Service description";
 - TS 102 314-3: "Network architecture and interconnection";
 - ES 202 314-4: "Multimedia Message communication between a fixed network Multimedia Messaging Terminal Equipment and a Multimedia Messaging Service Centre";
 - ES 202 314-5: "Digital Subscriber Signalling System No. One (DSS1) protocol, Signalling System No.7 (SS7) - ISDN User Part (ISUP), and interworking between DSS1 and ISUP";
- TR 102 314-6: "Control strings (service codes) for MMS functions and MMS supplementary services".**

Introduction

The Multimedia Messaging Service (MMS) is a service that shall make it possible to offer seamless MMS over different networks (PSTN, ISDN, PLMN).

In the following of this present document it is assumed that both the sending and receiving Terminal Equipment (TE) have appropriate capabilities to send, receive, store, display and delete multimedia messages. Further it is assumed that the Multimedia Messaging Service Centre (MM-SC) is able to receive and process all or part of the control strings (service codes) in annex A.

Alternatively, MMS control strings can be sent as an SMS to an SM-SC which is able to receive and forward MMS control strings to the relevant MM-SC. This is a service provider option.

Concerning the service codes the ETSI documents ETSI ES 201 382 [3] and ETSI TR 102 083 [4] have been taken into account as far as possible, even though these documents are only relevant for supplementary service codes used for public network services.

1 Scope

The present document defines the control strings (service codes) for functions and supplementary services defined in the service description of the Multimedia Messaging Service (MMS).

These MMS control strings can be used between a Multimedia Messaging Terminal Equipment (MM-TE) and a Multimedia Messaging Service Centre (MM-SC) to control both the MMS functions and the optional MMS supplementary services.

These MMS control strings can be used via ISDN and PSTN accesses.

The present document describes the method to implement MMS control strings only. Other MM-SC based methods may be possible.

The present document includes information applicable to service providers (MM-SC) and terminal equipment (MM-TE) manufacturers.

The present document describes only the MMS control strings to control the according functions and supplementary services in the MM-SC; any charging principles of those services are outside the scope of the present document.

There are no interactions relevant with telephony supplementary services.

Furthermore, conformance to the present document is met by conforming to the appropriate information sent and received by the MM-TE and the MM-SC. Therefore no method of testing is provided for the present document.

2 References

For the purposes of this Technical Report (TR) the following references apply:

- [1] ETSI TS 102 314-1: "Access and Terminals (AT); Fixed network Multimedia Messaging Service (F-MMS); PSTN/ISDN; Part 1: Overview".
- [2] ETSI ES 202 314-2: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Fixed network Multimedia Messaging Service (F-MMS); PSTN/ISDN; Part 2: Service description".
- [3] ETSI ES 201 382: "Human Factors (HF); Procedure for registering a supplementary service code".
- [4] ETSI TR 102 083: "Human Factors (HF); Supplementary service codes for use in public network services".
- [5] ETSI TS 123 040: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Technical realization of Short Message Service (SMS); (3GPP TS 23.040 Release 4)".
- [6] ETSI TS 123 140: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Multimedia Messaging Service (MMS); Functional description; Stage 2 (3GPP TS 23.140 Release 4)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ES 202 314-2 [2] and the following apply:

control string: number of defined characters which is a synonym for a specific control word

NOTE: It can be interpreted by a machine (e.g. in the MM-SC).

initiating user: user who has initiated a control MM or alternatively a control SM which includes an MM control string

3.2 Abbreviations

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

ACT	ACTivation
AMMR	Anonymous MM Rejection
DEACT	DEACTivation
GSM	Global System for Mobile communications
IMMBL	Incoming MM Black List
IMMBWL	Incoming MM Black/White List
IMMWL	Incoming MM White List
ISDN	Integrated Services Digital Network
MM	Multimedia Message
MMC	MM Copy
MMD	MM Diversion
MMDL	MM Distribution List
MMMID	Malicious MM IDentification
MMS	Multimedia Messaging Service
MM-SC	Multimedia Messaging Service Centre
MM-TE	Multimedia Message Terminal Equipment
MSN	Multiple Subscriber Number
OMMBL	Outgoing MM Black List
OMMBWL	Outgoing MM Black/White List
OMMWL	Outgoing MM White List
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
REG	REGistration
ERA	ERAsure
SC	Service Code
SM	Short Message
SMS	Short Message Service
SM-SC	Short Message Service Centre
TE	Terminal Equipment

4 Description

The Multimedia Messaging Service (MMS) enables a sending user to send an MM to a receiving user via an MM-SC.

To realize this service it may optionally be necessary, depending on the network/service provider, that a subscriber who wants to send and/or receive MM has to register his/her telephone number (e.g. MSN) on the preferred MM-SC, first.

The registration procedure as well as further basic functions (e.g. erasure, activation and deactivation of MM reception, etc.) or MMS supplementary services (e.g. MMC, MMMID, etc.) is done by sending a control string from the MM-TE to the MM-SC within an MM or alternatively to the related SM-SC within an SM to a specific service number.

The present document describes European harmonized control strings (service codes) for the known MMS functions and MMS supplementary services defined in the MMS service description [2] and defines a preferred specific service number where a control string shall be addressed to.

Most control strings defined in the present document are sent with a service code like for telephony supplementary services in PSTN/ISDN (e.g. * <SC> #). In some cases extra information is needed. The service centres should be able to recognize and process these control information.

Each control process should be managed in the MM-SC which should react accordingly. Further, the MM-SC shall send back a response MM or SM to the initiating MM-TE which contains a positive or negative acknowledgement about the previously submitted service request or the requested information in case of an interrogation.

The preparation of such a control MM as well as any necessary configurations in an MM-TE are outside the scope of the present document.

4.1 MM-SC functions

4.1.1 Information flow between MM-TE (MMS user) and MM-SC

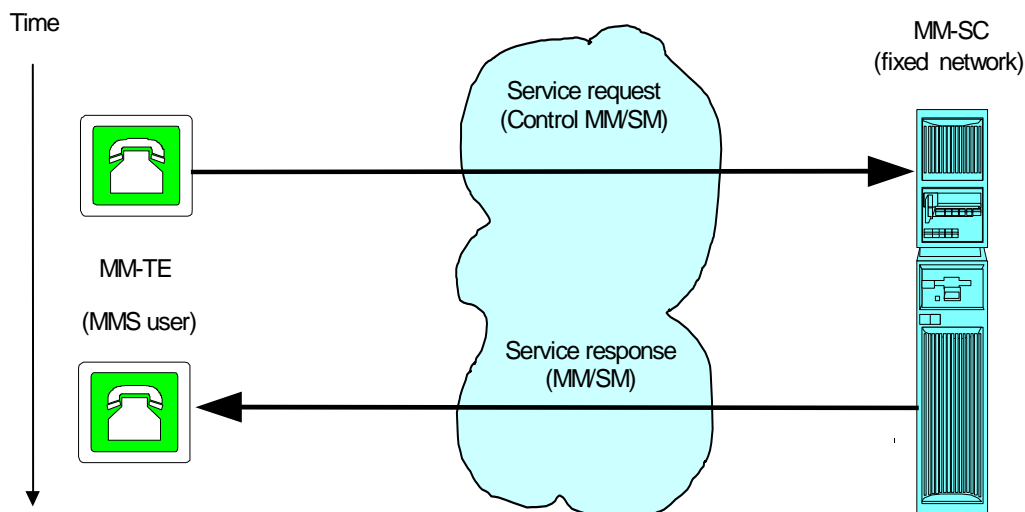


Figure 1: Information flow between MM-TE and MM-SC

Each control string is sent from an MM-TE to the MM-SC or alternatively to the SM-SC within an outgoing message.

After the MM-SC has received any control string the MM-SC shall verify and process the received function and should respond with an acknowledgement or the desired data within an MM or alternatively within an SM to the MM-TE (initiating user). In case where MMS control strings have been sent to the SM-SC, the SM-SC is responsible for forwarding this information to the MM-SC.

5 Control strings

Control strings are used to activate, deactivate or interrogate MMS functions or MMS supplementary services in the MM-SC. The list of MMS functions and MMS supplementary services with their control strings is given in annex A.

5.1 Syntax and semantics of control strings

5.1.1 Syntax

In the present document the syntax for all control strings is as follows:

< >	mandatory information is written in <brackets>
[]	optional information is written in [brackets]
{ }	repeated information is written in {braces}
::=	means "is defined as"
	means "exclusive OR"
;	remarks

5.1.2 Semantics

In the present document the semantics of a control string is as follows:

CONTROL INFORMATION	::= <* # *# > <SERVICE CODE> [{<*> <PARAMETER>}] <#>
SERVICE CODE	::= <NUMERIC STRING (SIZE(2...3))>
PARAMETER	::= <NUMERIC STRING (SIZE(n))> <ALPHANUMERIC STRING (SIZE(n))>
NUMERIC STRING	::= {0 1 2 3 4 5 6 7 8 9}
ALPHANUMERIC STRING	::= {A B C ... X Y Z a b c ... x y z 0 ... 9}
EMAIL STRING	::= Characters according to [5] or [6]
PIN	::= <ALPHANUMERIC STRING (SIZE(4...8))>

NOTE: <*> and the parameters that follow are for registration and activation procedures;
 <#> and the parameters that follow are for erasure and deactivation procedures;
 it is also used as end of string indication.
 <*#> and the parameters that follow are for interrogation of data in the user profile;
 <***> is used if one of a set of parameters (except the last one) is not used or necessary;
 (the last parameter can be left out without <***> and can be replaced by #).

5.2 Service codes

Control strings may consist of just a star and/or a hash followed by a service code <SC> and a hash. In some cases further information is necessary where each parameter is separated by a star or in some cases by a "blank" character. In all cases a hash is the last character (end of string). These strings are similar to those which are used for PSTN/ISDN supplementary services (e.g. keypad strings : * 21 * <DestNum> # = call forwarding to another destination number).

5.3 Service number

For sending any control string from an MM-TE to the MM-SC or alternatively to the SM-SC within an outgoing message, it is necessary to address this MM/SM to a specific service number in the MM-SC / SM-SC. To make it easier for TE designer and also for users, this service number should be the same in all MM-SC / SM-SC.

This European harmonized service number should be:

Service Number ::= 8889

6 Interworking requirements

There are no interworking requirements, except between the MM-TE and the MM-SC / SM-SC.

7 Interaction with supplementary services

There are no interactions with telephony supplementary services.

Interactions with other MMS supplementary services are described in the MMS service description [2].

Annex A: Control strings

In the following, control strings which facilitate the core features and optional features described in the service description [2] are defined. These control strings are sent from the MM-TE to the MM-SC / SM-SC within an outgoing message addressed to the service number, defined in clause 5.3.

The MMS functions (core features) and the MMS supplementary services (optional features) can be realized by using the control strings with service codes sent to the service number.

NOTE 1: In the following, the "DestinationAddress" is the address to which an MM/SM including a control string will be sent to.

NOTE 2: If an MM is used, any control information shall be conveyed in the "body" of an MM, not in the "subject".

A.1 MMS functions

A.1.1 Registration and erasure

For the optional registration and erasure procedures according to the service description [2], the following control strings apply:

Registration ::= * <SC> [* <PIN>] #
 Erasure ::= # <SC> [* <PIN>] #
 InterrogationRegistration ::= *# <SC> #
 SC ::= 00
 DestinationAddress ::= ServiceNumber

A.1.2 Activation and deactivation

For the optional activation and deactivation procedures according to the service description [2], the following control strings apply.

NOTE: The activation and deactivation procedure has influence only on MM notifications. The deactivation time period can be chosen by setting the time parameters for start and end of the deactivation time. If the user provides only the start parameter, the deactivation phase starts on that time for an uncertain duration; in that case the MMS user has to activate the reception of MM notifications, manually.
 If the time value of the DeactivationEnd parameter is less than the time value of the DeactivationStart parameter, the time of the DeactivationEnd should be interpreted as a time on next day (+ 24 hours). An automatic repetition (e.g. every day) of this deactivation period is not foreseen.

Activation ::= * <SC> [* <PIN>] #
 Deactivation ::= # <SC> [* <DeactivationStart> * [<DeactivationEnd>]] [* <PIN>] #
 InterrogationActivation ::= *# <SC> #
 SC ::= 35
 DeactivationStart ::= NUMERIC STRING (SIZE (4)) ; 0000 ... 2359 = Time (hhmm)
 DeactivationEnd ::= NUMERIC STRING (SIZE (4)) ; 0000 ... 2359 = Time (hhmm)
 DestinationAddress ::= ServiceNumber

A.2 SMS supplementary services

A.2.1 Multimedia Message Diversion (MMD)

For the MM diversion procedure according to the service description [2], the following control strings apply:

NOTE: After activation of MMD all incoming MMS are diverted to the diversion address.

MMD_activation	::= * <SC> [* <DiversionAddress>] #
MMD_deactivation	::= # <SC> #
MMD_interrogation	::= *# <SC> #
SC	::= 21
DiversionAddress	::= ALPHANUMERIC STRING (SIZE (1...50)) or EMAIL STRING (SIZE (1...50)) ; e.g. Destination (Phone/Fax-) number or E-mail-Address: 'xyz@domaine.xx
DestinationAddress	::= ServiceNumber

A.2.2 Multimedia Message Copy (MMC)

For the MM copy procedure according to the service description [2], the following control strings apply:

NOTE: After activation of MMC all incoming MMS are copied to the copy-to address !

MMC_activation	::= * <SC> [* <CopyToAddress>] #
MMC_deactivation	::= # <SC> #
MMC_interrogation	::= *# <SC> #
SC	::= 222
CopyToAddress	::= ALPHANUMERIC STRING (SIZE (1...50)) or EMAIL STRING (SIZE (1...50)) ; e.g. Destination (Phone/Fax-) number or E-mail-Address: 'xyz@domaine.xx
DestinationAddress	::= ServiceNumber

A.2.3 Anonymous Multimedia Message Rejection (AMMR)

For the anonymous MM rejection procedure according to the service description [2], the following control strings apply:

AMMR_activation	::= * <SC> #
AMMR_deactivation	::= # <SC> #
AMMR_interrogation	::= *# <SC> #
SC	::= 934
DestinationAddress	::= ServiceNumber

A.2.4 Void

A.2.5 Outgoing MM White List / Black List (OMMWL / OMMBL)

For the outgoing MM black list procedures or white list procedures according to the service description [2], the following control strings apply.

NOTE: The MMS user can decide whether he/she wants to use the OMMBL or the OMMWL; both services are mutually exclusive. This supplementary service can be activated and deactivated as well as modified and deleted by sending the respective control strings from the MM-TE to the MM-SC. The PIN parameter is mandatory for this service.

A.2.5.1 Insertion and deletion

NOTE: More than one entry may be inserted or deleted within an insertion or deletion control string ({ } means repetition of these parameters possible). An Entry can be added or deleted. The entire black or white list may be deleted with a specific control string.

OMMBL_add_entry	::=	* <SC1> * <Entry.1> [{ <blank> <Entry.n> }] * <PIN> #
OMMBL_delete_entry	::=	# <SC1> * <Entry.1> [{ <blank> <Entry.n> }] * <PIN> #
OMMWL_add_entry	::=	* <SC2> * <Entry.1> [{ <blank> <Entry.n> }] * <PIN> #
OMMWL_delete_entry	::=	# <SC2> * <Entry.1> [{ <blank> <Entry.n> }] * <PIN> #
OMMBWL_erase_list	::=	# <SC0> * <PIN> #
SC0	::=	340 ; Black or White list
SC1	::=	341 ; Black list
SC2	::=	342 ; White list
Entry	::=	ALPHANUMERIC STRING (SIZE (1...50)) or EMAIL STRING (SIZE (1...50)) ; e.g. Destination (Phone/Fax-) number or E-mail-Address: 'xyz@domaine.xx' ; to avoid misinterpretation there should be no "blank" within an Entry (see also the definition of alphanumeric string)!
blank	::=	Blank character
DestinationAddress	::=	ServiceNumber

A.2.5.2 Activation and deactivation

OMMBWL_activation	::=	* <SC> * <PIN> #
OMMBWL_deactivation	::=	# <SC> * <PIN> #
OMMBWL_interrogation	::=	*# <SC> #
SC	::=	34
DestinationAddress	::=	ServiceNumber

A.2.6 Incoming MM White List / Black List (IMMWL / IMMBL)

For the incoming MM black list procedures or white list procedures according to the service description [2], the following control strings apply.

NOTE: The MMS user can decide whether he/she wants to use the IMMBL or the IMMWL; both services are mutually exclusive. This supplementary service can be activated and deactivated as well as modified and deleted by sending the respective control strings from the MM-TE to the MM-SC. The PIN parameter is mandatory for this service.

A.2.6.1 Insertion and deletion

NOTE: More than one entry may be inserted or deleted within an insertion or deletion control string ({ } means repetition of these parameters possible). An entry can be added or deleted.
The entire black or white list may be deleted with a specific control string.

IMMBL_add_entry	::=	* <SC1> * <Entry.1> [{ <blank> <Entry.n> }] * <PIN> #
IMMBL_delete_entry	::=	# <SC1> * <Entry.1> [{ <blank> <Entry.n> }] * <PIN> #
IMMWL_add_entry	::=	* <SC2> * <Entry.1> [{ <blank> <Entry.n> }] * <PIN> #
IMMWL_delete_entry	::=	# <SC2> * <Entry.1> [{ <blank> <Entry.n> }] * <PIN> #
IMMBWL_erase_list	::=	# <SC0> * <PIN> #
SC0	::=	930 ; Black or White list
SC1	::=	931 ; Black list
SC2	::=	932 ; White list
Entry	::=	ALPHANUMERIC STRING (SIZE (1...50)) or EMAIL STRING (SIZE (1...50)) ; e.g. Destination (Phone/Fax-) number or E-mail-Address: 'xyz@domaine.xx' ; to avoid misinterpretation there should be no "blank" within an Entry (see also the definition of alphanumeric string)!
blank	::=	Blank character
DestinationAddress	::=	ServiceNumber

A.2.6.2 Activation and deactivation

IMMBWL_activation	::=	* <SC> * <PIN> #
IMMBWL_deactivation	::=	# <SC> * <PIN> #
IMMBWL_interrogation	::=	*# <SC> #
SC	::=	93
DestinationAddress	::=	ServiceNumber

A.2.7 Multimedia Message Distribution List (MMDL)

For the MM distribution list procedure according to the service description [2], the following control strings apply.

A.2.7.1 Creation, modification, deletion and copying

NOTE 1: More than one entry may be inserted or deleted within an insertion or deletion control string ({ } means repetition of these parameters is possible). A modification of an entry is done by deleting the actual one and adding a new one.

NOTE 2: To copy an MMDL to another or new MMDL the content of the origin MMDL is added to an already existing MMDL without double entries or a new MMDL is created with the same content. If an MMDL is copied to a receiving user, the whole content of this MMDL including the list name is sent as an MM to the recipient.

MMDL_add_entry	::=	* <SC1> * <ListName> * Entry.1 [{ <blank> <Entry.n> }] [* <PIN>] #
MMDL_delete_entry	::=	# <SC1> * <ListName> * Entry.1 [{ <blank> <Entry.n> }] [* <PIN>] #
MMDL_erase_list	::=	# <SC0> * <ListName> [* <PIN>] #
MMDL_copy_list	::=	* <SC2> * <ListName> * <CopyToListName> [* <PIN>] #

MMDL_send_list	::= * <SC3> * <ListName> * <SendToAddress> [* <PIN>] #
SC0	::= 710
SC1	::= 711
SC2	::= 712
SC3	::= 713
ListName	::= ALPHANUMERIC STRING (SIZE (1...8)) ; to avoid misinterpretation there should be no "blank" within a ListName (see also the definition of alphanumeric string) !
CopyToListName	::= ALPHANUMERIC STRING (SIZE (1...8))
Entry	::= ALPHANUMERIC STRING (SIZE (1...50)) or EMAIL STRING (SIZE (1...50)) ; e.g. Destination (Phone/Fax-) number or E-mail-Address: 'xyz@domaine.xx' ; to avoid misinterpretation there should be no "blank" within an Entry (see also the definition of alphanumeric string)!
SendToAddress	::= ALPHANUMERIC STRING (SIZE (1...50)) or EMAIL STRING (SIZE (1...50)) ; e.g. Destination (Phone/Fax-) number or E-mail-Address: 'xyz@domaine.xx'
blank	::= Blank character
DestinationAddress	::= ServiceNumber

A.2.7.2 Interrogation

NOTE: The MMS user can interrogate the names of all distribution lists by sending the interrogation control string without any specific list name or interrogate the list of entries of a specific distribution list by sending the interrogation control string containing a specific list name.

MMDL_interrogation	::= *#<SC0> [* <ListName>] #
SC0	::= 710
ListName	::= ALPHANUMERIC STRING (SIZE (1...8))
DestinationAddress	::= ServiceNumber

A.2.7.3 Invocation

An MM which is sent to an MM distribution list will be sent to the MM-SC with the invocation control string within the destination address (i.e. "TO"- and/or "CC"- and/or "BCC"-field). Besides the MMDL_invocation further addresses may be present in the "TO"- and/or "CC"- and/or "BCC"-field.

MMDL_invocation	::= * <SC0> * <ListName.1> [{ <blank> <ListName.n> }] #
SC0	::= 710
ListName	::= ALPHANUMERIC STRING (SIZE (1...8)) ; to avoid misinterpretation there should be no "blank" within a ListName (see also the definition of alphanumeric string)!
blank	::= Blank character
DestinationAddress	::= MMDL_invocation

A.2.8 Personal Identification Number (PIN)

For some of the MM supplementary services a PIN is required. This PIN may be used for other functions, too. The first PIN which is provided by the service provider shall be "0000" (four times zero) and has to be changed by the user before using it for any procedures. For that reason the user needs a possibility to modify the PIN. The following control string applies.

NOTE: Any restrictions on specific PINs (e.g. it should not be allowed to choose "1234" or "1111", etc.) is up to the service provider.

A.2.8.1 Modification of the PIN

NOTE 1: If the PIN has not been changed (default PIN = "0000") or is set to "0000" by the user, the relevant procedures where a PIN is mandatory may be rejected by the MM-SC.

NOTE 2: The new PIN has to be provided twice.

PIN_change	::=	* <SC> * <OldPin> * <NewPin> * <NewPin> #
<SC>	::=	03
<OldPin>	::=	PIN
<NewPin>	::=	PIN
DestinationAddress	::=	ServiceNumber

Annex B:

List of Service Codes used for MMS

SC	Service	Short description
00	REG / ERA	MMS registration, erasure and interrogation
03	PIN	PIN modification
21	MMD	Multimedia Message Diversion: Activation, deactivation and interrogation
222	MMC	Multimedia Message Copy: Activation, deactivation and interrogation
34	OMMWL / OMMBL	Outgoing MM White List / Black List: Activation, deactivation and interrogation
340	OMMWL / OMMBL	Erase list
341	OMMBL	Add entry / delete entry
342	OMMWL	Add entry / delete entry
35	ACT / DEACT	MMS activation and deactivation and interrogation
710	MMDL	Multimedia Message Distribution List: Erase list / Interrogation / Invocation
711	MMDL	Add entry / delete entry
712	MMDL	Copy list
713	MMDL	Send list
93	IMMWL / IMMBL	Incoming MM White List / Black List: Activation, deactivation and interrogation
930	IMMWL / IMMBL	Erase list
931	IMMBL	Add entry / delete entry
932	IMMWL	Add entry / delete entry
934	AMMR	Anonymous Multimedia Message Rejection: Activation, deactivation and interrogation

History

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