34 Short message service (SMS)

Ref.: GSM 03.40, GSM 04.11 (point to point)
GSM 03.41, GSM 04.12 (cell broadcast)

34.1 General

The purpose of these tests is to verify that the MS can handle GSM functions when submitting or receiving Short Messages (SM) between MS and a short message service centre as described in GSM 03.40.

The procedures are based upon services provided by the Mobility Management (MM) sublayer which is not tested in this case.

The SMS comprises three basic services. The SMS point to point services shall work in an active MS at any time independent of whether or not there is a speech or data call in progress. The SMS cell broadcast service only works when the MS is in idle mode.

Since the timer TC1M currently is not standardized, the value of TC1M shall be declared by the manufacturer (to be used in 34.2.1 and 34.2.2).

The manufacturer shall declare whether SMS messages are stored in the SIM and/or the ME. This shall be referred to as the SMS message store in the following tests.

Unless otherwise stated default message contents from section 26.6.14 applies for GSM 900 and default message contents from section 26.6.15 applies for DCS 1 800.

34.2 Short message service point to point

34.2.1 SMS mobile terminated

34.2.1.1 Conformance requirements

An active MS shall be able to receive short message TPDU (SMS-DELIVER) at any time, independently of whether or not there is a speech or data call in progress. A report will always be returned to the SC, confirming that the MS has received the short message.

Reference

GSM 03.40; 3.1.

34.2.1.2 Test purpose

To verify the ability of a MS to receive and decode the SMS where provided for the point to point service.

34.2.1.3 Method of test

Initial Conditions

System simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in "Idle, updated" state.

The SMS message storage shall be empty.

Related PICS/PIXIT Statements

Support for Short message MT/PP.

Description of the basic procedures to display a mobile terminated short message.

The value of timer TC1M.

Whether SMS messages are stored in the SIM and/or the ME.

Support for call control state U10.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) The SS initiates the transmission of a short message using a paging request. Upon response of the MS to the paging the SS assigns an SDCCH, authenticates the MS and activates ciphering. Then the SS establishes SAPI 3 by sending a SABM frame with SAPI 3 on the SDCCH.
When a UA frame (SAPI 3) is received in response, the SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU).

b) The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

c) The SS sends a CP-ACK to the MS within TC1M with no further CP-DATA messages and the SS initiates channel release.

d) Steps a), b) and c) are repeated but the first CP-DATA message from the MS is not acknowledged. The second CP-DATA message from the MS is acknowledged by a CP-ACK within a time TC1M.

e) Steps a) and b) are repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 seconds after the last CP-DATA retransmission the SS then initiates the channel release. The 5 seconds is the appropriate time to wait to verify that the MS does not send more than the maximum allowed (3) CP-DATA retransmissions.

f) The SMS message store shall be cleared manually by the operator.

g) A data or speech call is established on a TCH with the SS and the state U10 of call control is entered. The SS sends a SABM frame with SAPI-3 on the SACCH associated to the TCH.
When a UA frame (SAPI-3) is received in response, the SS sends a CP-DATA message. The information element of the CP-DATA message will be RP-DATA RPDU (SMS DELIVER TPDU). The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.

h) The SS sends a CP-ACK to the MS within TC1M with no further CP-DATA messages and the SS initiates channel release. The SMS message store shall be cleared manually by the operator.

i) Steps g) and h) are repeated but the first CP-DATA message from the MS is not acknowledged. The second CP-DATA message from the MS is acknowledged by a CP-ACK within a time TC1M.

j) Step g) is repeated. The SS is configured not to send CP-ACK. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 seconds after the last CP-DATA retransmission the SS initiates the channel release. The 15 seconds is the appropriate time to wait to verify that the MS does not send more than the maximum allowed (3) CP-DATA retransmissions (during a call in progress).

k) A data or speech call is established on a TCH with the SS and the state U10 of call control shall be entered. The SS sends a SABM frame with SAPI-3 on the SACCH associated to the TCH. After the UA response on SAPI-3, the speech call is cleared by the SS with a disconnect message. (The call clearing is continued on the FACCH in parallel to the following exchange of messages related to SMS).
The SS sends a CP-DATA RPDU (SMS DELIVER TPDU) message. The information element of the CP-DATA message is RP-DATA.

The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.
The SS sends a CP-ACK to the MS within TC1M with no further CP-DATA messages and the SS initiates channel release.
The SMS message store shall be cleared manually by the operator.

l) A data or speech call is established on a TCH with the SS and the state U10 of call control is entered. The SS sends a SABM frame with SAPI-3 on the SACCH associated to the TCH. After the UA response on SAPI-3, the speech call shall be cleared from the MS. (The call clearing is continued on the FACCH in parallel to the following exchange of messages related to SMS).
The SS sends a CP-DATA message. The information element of the CP-DATA message is RP-DATA RPDU (SMS DELIVER TPDU).
The SS waits a maximum of 25 seconds for the CP-ACK message and then a maximum of 60 seconds for the CP-DATA message containing the RP-ACK RPDU.
The SS sends a CP-ACK to the MS within TC1M with no further CP-DATA messages and the SS initiates channel release.
The SMS message store shall be cleared manually by the operator.

Maximum Duration of Test

20 minutes

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
11	MS -> SS	UA (SAPI=3)	MS shall respond to SABM in step 10
12	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
13	SS		Waits max 25 seconds for CP-ACK
14	MS -> SS	CP-ACK	
15	SS		Waits max 60 seconds for RP-ACK RPDU
16	MS -> SS	CP-DATA	Contains RP-ACK RPDU
17	SS -> MS	CP-ACK	
18			There should be no further CP-DATA messages until the MS aborts the RR connection (disconnection of layer 2).
19	MS		The MS shall indicate that an SM has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed
20	SS -> MS	PAGING REQUEST	
21	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
22	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
23	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
24	SS -> MS	AUTHENTICATION REQUEST	
25	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
26	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
27	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
28	SS		SS starts ciphering.
29	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
30	MS -> SS	UA (SAPI=3)	The MS shall respond to the SABM
31	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
32	SS		Waits max 25 seconds for CP-ACK
33	MS -> SS	CP-ACK	
34	SS		Waits max 60 seconds for RP-ACK RPDU
35	MS -> SS	CP-DATA	First CP-DATA from MS, contains RP-ACK RPDU
36	SS		First CP-DATA message not acknowledged by SS
37	MS -> SS	CP-DATA	Retransmitted CP-DATA from MS within twice TC1M, after step 35, contains RP-ACK RPDU
38	SS -> MS	CP-ACK	Second CP-DATA message is acknowledged
39		CHANNEL RELEASE	There should be no further CP-DATA messages until the MS aborts the RR connection (disconnection of layer 2).The main signalling link is released.
40	MS		The MS shall indicate that an SM has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed
41	SS -> MS	PAGING REQUEST	
42	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"

43	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
44	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
45	SS -> MS	AUTHENTICATION REQUEST	
Step	**Direction**	**Message**	**Comments**
46	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
47	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
48	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
49	SS		SS starts ciphering.
50	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
51	MS -> SS	UA (SAPI=3)	The MS shall respond to the SABM
52	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
53	SS		Waits max 25 seconds for CP-ACK
54	MS -> SS	CP-ACK	
55	SS		Waits max 60 seconds for RP-ACK RPDU
56	MS -> SS	CP-DATA	Contains RP-ACK RPDU
57	SS		First CP-DATA message not acknowledged by SS
58	MS -> SS	CP-DATA	Retransmitted CP-DATA from MS within twice TC1M after step 56, contains RP-ACK RPDU
59	SS		Retransmitted CP-DATA message not acknowledged by SS
60	MS		Depending upon the maximum number of CP-DATA retransmissions implemented, step 58 and 59 may be repeated.
61	SS -> MS	CHANNEL RELEASE	The main signalling link is released after a duration of TC1M + 5 seconds after the last CP-DATA retransmission..
62	MS		The MS shall indicate that an SM has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed
63	SS		A data or speech call is established on a TCH and the state U10 of call control is entered.
64	SS -> MS	SABM (SAPI=3)	Sent on SACCH associated with the TCH
65	MS -> SS	UA (SAPI=3)	The MS shall respond to the SABM
66	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
67	SS		Waits max 25 seconds for CP-ACK
68	MS -> SS	CP-ACK	
69	SS		Waits max 60 seconds for RP-ACK RPDU
70	MS -> SS	CP-DATA	Contains RP-ACK RPDU
71	SS -> MS	CP-ACK	
72-1	SS -> MS	DISCONNECT	Disconnect the active call
72-2	MS -> SS	RELEASE	
72-3	SS -> MS	RELEASE COMPLETE	
72-4	MS		There should be no further CP-DATA messages until the MS aborts the RR connection (disconnection of layer 2)
73	MS		The MS shall indicate that an SM has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed
74	MS		Clear the SMS message store
75	SS		A data or speech call is established on a TCH and the state U10 of call control is entered.
76	SS -> MS	SABM (SAPI=3)	Sent on SACCH associated with the TCH
77	MS -> SS	UA (SAPI=3)	The MS shall respond to the SABM
78	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
79	SS		Waits max 25 seconds for CP-ACK
80	MS -> SS	CP-ACK	
81	SS		Waits max 60 seconds for RP-ACK RPDU

82	MS -> SS	CP-DATA	First CP-DATA from MS, contains RP-ACK RPDU
83	SS		First CP-DATA message not acknowledged by SS

Step	Direction	Message	Comments
84	MS -> SS	CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 82, contains RP-ACK RPDU
85	SS -> MS	CP-ACK	Second CP-DATA message is acknowledged
86-1	SS -> MS	DISCONNECT	Disconnect the active call
86-2	MS -> SS	RELEASE	
86-3	SS -> MS	RELEASE COMPLETE	
86-4	MS		There should be no further CP-DATA messages until the MS aborts the RR connection (disconnection of layer 2)
87	MS		The MS shall indicate that an SM has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed
88	MS		Clear the SMS message store
89	SS		A data or speech call is established on a TCH and the state U10 of call control is entered.
90	SS -> MS	SABM (SAPI=3)	Sent on SACCH associated with the TCH
91	MS -> SS	UA (SAPI=3)	The MS shall respond to the SABM
92	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
93	SS		Waits max 25 seconds for CP-ACK
94	MS -> SS	CP-ACK	
95	SS		Waits max 60 seconds for RP-ACK RPDU
96	MS -> SS	CP-DATA	First CP-DATA from MS, contains RP-ACK RPDU
97	SS		First CP-DATA message not acknowledged by SS
98	MS -> SS	CP-DATA	Transmitted CP-DATA message within twice TC1M after step 96, contains RP-ACK RPDU
99	SS		Retransmitted CP-DATA message not acknowledged by SS
100	MS		Depending on the maximum number of CP-DATA retransmissions implemented, step 98-99 may be repeated. The maximum number of retransmissions may however not exceed three.
101	SS -> MS	CHANNEL RELEASE	The main signalling link is released after a duration of TC1M + 15 seconds after the last CP-DATA retransmission.
102	MS		The MS shall indicate that an SM has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed
103	MS		Clear the SMS message store
104	SS		A data or speech call is established on a TCH and the state U10 of call control is entered.
105	SS -> MS	SABM (SAPI=3)	Sent on SACCH associated with the TCH
106	MS -> SS	UA (SAPI=3)	The MS shall respond to the SABM
107	SS -> MS	DISCONNECT	The speech call is cleared by the SS. The call clearing is continued on the FACCH in parallel to the following exchange of messages related to SMS.
108	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
109	SS		Waits max 25 seconds for CP-ACK
110	MS -> SS	CP-ACK	
111	SS		Waits max 60 seconds for RP-ACK RPDU
112	MS -> SS	CP-DATA	Contains RP-ACK RPDU
113	SS -> MS	CP-ACK	
114			There should be no further CP-DATA messages until the MS aborts the RR connection (disconnection of layer 2.
115	MS		The MS shall indicate that an SM has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed

116	MS		Clear the SMS message store
117	SS		A data or speech call is established on a TCH and the state U10 of call control is entered.
Step	**Direction**	**Message**	**Comments**
118	SS -> MS	SABM (SAPI=3)	Sent on SACCH associated with the TCH
119	MS -> SS	UA (SAPI=3)	The MS shall respond to the SABM
120	MS -> SS	DISCONNECT	The speech call is cleared from the MS.
121	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
122	SS -> MS	RELEASE	This message is likely to be sent on the FACCH before all of the CP-DATA message has been sent on the SACCH.
123	MS -> SS	RELEASE COMPLETE	
124	MS -> SS	CP-ACK	shall be sent before 25 seconds after the start of step 121
125	SS		Waits max 60 seconds for RP-ACK RPDU
126	MS -> SS	CP-DATA	Contains RP-ACK RPDU
127	SS -> MS	CP-ACK	
128			There should be no further CP-DATA messages until the MS aborts the RR connection (disconnection of layer 2.
129	MS		The MS shall indicate that an SM has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed
130	MS		Clear the SMS message store

NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the MS has enough time to respond to the different messages.

Specific Message Contents:

SMS DELIVER TPDU

Information element	Comment Value
TP-MTI	SMS DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM "0"B
TP-SRI	no status report returned "0"B
TP-OA	an international number coded E.164
TP-PID	default "00000000"B
TP-DCS	default alphabet "00000000"B
TP-SCTS	any legal value (cf. GSM 03.40)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

NOTE: The 160 characters shall include at least one occurrence of each character in the default alphabet (see GSM 03.40 annex 2).

34.2.2 SMS mobile originated

34.2.2.1 Conformance requirements

An active MS shall be able to submit short message TPDU (SMS-SUBMIT) at any time, independently of whether or not there is a speech or data call in progress.

Reference

GSM 03.40; 3.1.

34.2.2.2 Test purpose

To verify that the MS is able to correctly send a short message where the SMS is provided for the point to point service. The test also verifies that the MS is capable of simultaneously receive a network originated SM whilst sending a mobile originated SM.

34.2.2.3 Method of test

Initial Conditions

System simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in "Idle, updated" state.
The SMS message storage shall be empty.

Related PICS/PIXIT Statements

Support for Short message MO/PP.

Description of the basic procedures to display a mobile originated short message.

Support for state U10 of call control.

The value of timer TC1M.

Whether SMS messages are stored in the SIM and/or the ME.

Maximum length (characters) of a mobile originated short message.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) The MS shall be set up to send a SM to the SS. The SS responds to the channel request message by allocating an SDCCH. The SS answers correctly to the SABM on SAPI 0 and then performs the authentication and ciphering procedures.

b) The SS responds with a UA frame SAPI-3 to the MS.

c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the MS with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 seconds for the CP-ACK message.

d) The SS sends a channel release message to the MS.

e) Steps a) and b) are repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 5 seconds after the last CP-DATA retransmission the SS initiates channel release. The 5 seconds is the appropriate time to wait to verify that the MS does not send more than the maximum CP-DATA retransmissions.

f) Steps a) and b) are repeated. On receipt of the CP-DATA from the MS the SS sends a CP-ERROR message within TC1M containing a "Network Failure" cause. Then the SS initiates channel release.

g) A data or speech call is established on a TCH with the SS and the state U10 of call control is entered. The MS is setup to send an SM to the SS. After the reception of the CM SERVICE

REQUEST, the SS sends a CM SERVICE ACCEPT message. The SS responds with a UA frame SAPI-3 to the SABM with SAPI-3 received from the MS.

h) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the MS with a CP-ACK message within TC1M followed by a CP-DATA message containing the correct RP-ACK RPDU. The SS waits a maximum of 25 seconds for the CP-ACK message. Then the SS sends a channel release message to the MS.

i) Step g) is repeated. The SS is configured not to send the CP-ACK message. Then maximum 3 CP-DATA retransmissions may occur. After a duration of TC1M + 15 seconds after the last CP-DATA retransmission the SS initiates channel release. The 15 seconds is the appropriate time to wait to verify that the MS does not send more than the maximum CP-DATA retransmissions (during a call in progress).

j) The SS is configured to receive a mobile originated SM. Steps a) and b) are repeated and, using the end of the CP-DATA message from the MS as a trigger, the SS sends a SM to the MS. In this case a new transaction identifier shall be used in the CP messages of SMS mobile terminated.

k) The MS is set up to send an SM to the SS. On receipt of the CM SERVICE REQUEST the SS sends a CM SERVICE REJECT message with the reject cause set to "Service Option not supported" or "Service Option temporarily out of order". After 5 seconds the SS initiates channel release.

Maximum Duration of Test

20 minutes

Expected Sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	Establishment cause is “Other procedures which can be completed with an SDDCH” NECI = 0
2	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
3	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM on SAPI 0. CM service type set to "Short message transfer"
4	SS -> MS	AUTHENTICATION REQUEST	
5	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
6	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
7	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
8	SS		SS starts ciphering.
9	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
10	SS -> MS	UA (SAPI=3)	
11	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
12	SS -> MS	CP-ACK	Sent within TC1M after step 11
13	SS -> MS	CP-DATA	Contains RP-ACK RPDU
14	SS		Waits max 25 seconds for CP-ACK
15	MS -> SS	CP-ACK	
16	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
17	MS -> SS	DISC (SAPI=0)	MS shall respond to channel release with a layer 2 DISC frame with SAPI 0
18	MS -> SS	CHANNEL REQUEST	Establishment cause is “Other procedures which can be completed with an SDDCH” (NECI=0)
19	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
20	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM on SAPI 0.
21	SS -> MS	AUTHENTICATION REQUEST	
22	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
23	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
24	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
25	SS		SS starts ciphering.
26	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
27	SS -> MS	UA (SAPI=3)	
28	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
29	SS		SS configured not to send CP-ACK
30	MS -> SS	CP-DATA	Retransmitted CP-DATA message within twice TC1M after step 28
31	MS		Depending on the maximum number of CP-DATA retransmissions implemented, step 30 may be repeated. The maximum number of retransmissions may however not exceed three.
32	SS -> MS	CHANNEL RELEASE	The main signalling link is released after a duration of TC1M + 5 seconds after the last CP-DATA retransmission.
32a	MS -> SS	DISC (SAPI = 0)	MS shall respond to channel release with a layer 2 DISC frame with SAPI 0.
33	MS -> SS	CHANNEL REQUEST	Establishment cause is “Other procedures which can be completed with an SDDCH” (NECI=0)
34	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
35	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. CM service type set to "short message transfer"
36	SS -> MS	AUTHENTICATION REQUEST	
37	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
38	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.

39	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
40	SS		SS starts ciphering.
41	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
42	SS -> MS	UA (SAPI=3)	
43	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
44	SS -> MS	CP-ERROR	Sent within TC1M containing "Network Failure" cause.
45	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
45a	MS -> SS	DISC (SAPI = 0)	MS shall respond to channel release with a layer 2 DISC frame with SAPI 0.
46	SS		A data or speech call is established on a TCH and the state U10 of call control is entered.
47	MS		The MS is set up to send an SM
48	MS -> SS	CM SERVICE REQUEST	Sent in a layer 2 frame on the FACCH. CM service type set to "short message transfer"
49	SS -> MS	CM SERVICE ACCEPT	
50	MS -> SS	SABM (SAPI=3)	Sent on SACCH associated with the TCH
51	SS -> MS	UA (SAPI=3)	
52	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
53	SS -> MS	CP-ACK	Sent within TC1M after step 52
54	SS -> MS	CP-DATA	Contains RP-ACK RPDU
55	SS		Waits max 25 seconds for CP-ACK
56	MS -> SS	CP-ACK	
57	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
58	MS -> SS	DISC (SAPI =0)	The MS shall respond to channel release with a layer 2 DISC frame with SAPI 0.
59	SS		A data or speech call is established on a TCH and the state U10 of call control is entered.
60	MS -> SS	CM SERVICE REQUEST	Sent in a layer 2 frame on the FACCH. CM service type set to "short message transfer"
61	SS -> MS	CM SERVICE ACCEPT	
62	MS -> SS	SABM (SAPI=3)	Sent on SACCH associated with the TCH
63	SS -> MS	UA (SAPI=3)	
64	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
65	SS		SS configured not to send CP-ACK
66	MS -> SS	CP-DATA	Transmitted CP-DATA message within twice TC1M after step 64
67	MS		Depending on the maximum number of CP-DATA retransmissions implemented, step 66 may be repeated. The maximum number of retransmissions may however not exceed three.
68	SS -> MS	CHANNEL RELEASE	The main signalling link is released after a duration of TC1m + 15 seconds after the last CP-DATA retransmission.
69	MS -> SS	DISC (SAPI =0)	The MS shall respond to channel release
70	MS -> SS	CHANNEL REQUEST	Establishment cause is “Other procedures which can be completed with an SDDCH” (NECI=0)
71	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
72	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. CM service type set to "short message transfer"
73	SS -> MS	AUTHENTICATION REQUEST	
74	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
75	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
76	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
77	SS		SS starts ciphering.
78	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
79	SS -> MS	UA (SAPI=3)	
80	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)

81	SS		The SS sends an SM to the MS triggered by the end of the CP-DATA message from the MS
82	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU)
83	MS		The MS shall correctly receive the SM and indicate that a message has arrived. If the MS provides the functionality to display MT messages, it is checked that the correct message is displayed. In the MO case the MS shall send the CP-ACK message with transaction identifier assigned to this transfer. In the MT case the MS shall send a CP-ACK message and a CP-DATA message containing the RP-ACK RPDU. The transaction identifier shall be the same as chosen by the SS for the MT transfer.
84	MS -> SS	CHANNEL REQUEST	Establishment cause is “Other procedures which can be completed with an SDDCH” (NECI=0)
85	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
86	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. CM service type set to "short message transfer"
87	SS -> MS	CM SERVICE REJ	Reject cause set to "Service Option not supported" or "Service Option temporarily out of order"
88	MS		The MS shall not establish SAPI-3
89	SS -> MS	CHANNEL RELEASE	Sent 5 seconds after CM SERVICE REJ

NOTE: Time values for SS wait times are chosen sufficiently high to be sure that the MS has enough time to respond to the different messages.

Specific Message Contents:

SMS SUBMIT TPDU

Information element	Comment Value
TP-MTI	SMS SUBMIT "01"B
TP-VPF	not checked
TP-RP	no reply path "0"B
TP-UDHI	not checked
TP-SRR	not checked
TP-MR	not checked
TP-RD	not checked
TP-DA	not checked (an E164 number)
TP-PID	default "00000000"B
TP-DCS	default alphabet "00000000"B
TP-VP	not checked
TP-UDL	as applicable
TP-UD (140 octets max)	maximum number of characters (text of message) as defined by the manufacturer (see PICS/PIXIT)

34.2.3 Test of memory full condition and memory available notification:

The Memory Available Notification provides a means for the MS to notify the network that it has memory available to receive one or more short messages. The SMS status field in the SIM contains status information on the "memory available" notification flag.

34.2.3.1 Conformance requirement

1. When a mobile terminated message is Class 2, the MS shall ensure that the message has been transferred to the SMS data field in the SIM before sending an acknowledgement to the SC. The MS shall return a protocol error message if the short message cannot be stored in the SIM and there is other short message storage available in the MS. If all the short message storage in the MS is already in use, the MS shall return "memory capability exceeded".

2. When the MS rejects a short message due to lack of available memory capability the need to transfer notification shall be stored in the SIM.

3. If the memory capability becomes available because memory is cleared, the value of the memory capability exceeded notification flag in the SIM is read. If the flag is set, the MS notifies the network that memory capability is now available. After a positive acknowledgement from the network, the ME unsets the memory capability exceeded notification flag in the SIM.

References

GSM 03.40, 9.2.3.10, GSM 03.38, 4.
GSM 03.40, 10.3 (operation 14).
GSM 03.40, 10.3 (operation 14).

34.2.3.2 Test purpose

1. To verify that the MS sends the correct acknowledgement when its memory in the SIM becomes full.

2. To verify that the MS sends the correct acknowledgement when its memory in the ME and the SIM becomes full, and sets the "memory exceeded" notification flag in the SIM.

3. To verify that the MS performs the "memory available" procedure when its message store becomes available for receiving short messages, and only at this moment.

34.2.3.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters

Mobile Station:

The MS shall be in the idle updated state.

The SMS message storage shall be empty.

The MS shall be connected to the SIM simulator. The following shall be present in the SIM simulator:

- EF_{SMS} with at least one record;

- $EF_{SMSstatus}$, with SMS "Memory Cap. Exceed" notification flag set to "memory available";

- Service no. 4 (SMS) in EF_{SST} set to allocated and activated.

For storing of Class 1 Short Messages the MS shall be set up to store Short Messages in the ME memory (by way of MMI, as described in PICS/PIXIT statement).

Related PICS/PIXIT Statements

Support for Short message MT/PP.

Description of the basic procedures to display a mobile terminated short message.

Whether SMS messages are stored in the SIM and/or the ME.

The value of timer TC1M.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) step a) of 34.2.5.3 (test of Class 2 Short Messages) is repeated until the MS sends a negative acknowledgement (RP-ERROR). The SIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the SIM.

b) a Class 1 Short Message is sent to the MS.

c) step b) is repeated until the MS sends a negative acknowledgement (RP-ERROR). The SIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the SIM.

d) a Short Message is sent to the MS with the DCS field of the SMS-DELIVER TPDU set to 0.

e) the SS prompts the operator to read a short message and to remove it from the message store of the MS.

f) the SS waits for a CHANNEL REQUEST from the MS, and sends an IMMEDIATE ASSIGNMENT allocating an SDCCH.

g) the SS answers correctly to the SABM on SAPI 0.

h) the SS answers correctly to the SABM on SAPI 3.

i) the SS answers to the RP-SMMA from the MS with a CP-DATA containing a RP-ACK RPDU.

j) after the MS has acknowledged the CP-DATA with a CP-ACK, the SS releases the channel with a CHANNEL RELEASE message. The SIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the SIM.

k) step e) is repeated.

Maximum Duration of Test

-

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
11	MS -> SS	UA (SAPI=3)	
12	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
13	SS		Waits max 25 seconds for CP-ACK
14	MS -> SS	CP-ACK	
15	SS		Waits max 60 seconds for RP-ACK RPDU
16	MS -> SS	CP-DATA	Contains RP-ACK RPDU
17	SS -> MS	CP-ACK	Within TC1M after step 16
18	SS -> MS	CHANNEL RELEASE	The main signalling link is released. Step 1-18 is repeated until MS sends a negative acknowledgement (RP-ERROR) in step 16. The RP-ERROR RPDU cause field shall be "Protocol error, unspecified" if there is message capability in the ME, or "Memory capability exceeded" if there is no message capability in the ME. If the total memory store of the MS is full, the ME shall set the "memory capability exceeded" notification flag on the SIM.
19	SS -> MS	PAGING REQUEST	
20	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
21	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
22	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
23	SS -> MS	AUTHENTICATION REQUEST	
24	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
25	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
26	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
27	SS		SS starts ciphering.
28	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
29	MS -> SS	UA (SAPI=3)	
30	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message
31	SS		Waits max 25 seconds for CP-ACK
32	MS -> SS	CP-ACK	
33	SS		Waits max 60 seconds for RP-ACK RPDU
34	MS -> SS	CP-DATA	Shall contain RP-ACK RPDU if there is memory capability in the ME. If not it shall contain RP-ERROR RPDU which cause field shall be "memory capability exceeded". If the total memory store of the MS now becomes full at this step, the ME shall set the "memory cap. exceed" notification flag on the SIM.
35	SS -> MS	CP-ACK	Within TC1M after step 34

36	SS -> MS	CHANNEL RELEASE	The main signalling link is released. Step 19-36 is repeated until the MS sends an RP-ERROR. The SIM simulator shall indicate if the "memory capability exceeded" notification flag has been set on the SIM.
37	SS -> MS	PAGING REQUEST	
38	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
39	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
40	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
41	SS -> MS	AUTHENTICATION REQUEST	
42	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
43	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
44	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
45	SS		SS starts ciphering.
46	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
47	MS -> SS	UA (SAPI=3)	
48	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) with TP-DCS set to 0
49	SS		Waits max 25 seconds for CP-ACK
50	MS -> SS	CP-ACK	
51	SS		Waits max 60 seconds for RP-ACK RPDU
52	MS -> SS	CP-DATA	Shall contain RP-ERROR RPDU with error cause "memory capability exceeded".
53	SS -> MS	CP-ACK	Within TC1M after step 52
54	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
55	SS		Prompts the operator to remove one of the short messagesfrom the message store of the MS.
57	MS -> SS	CHANNEL REQUEST	Establishment cause "Other services which can be completed with an SDCCH" (NECI=0).
58	SS -> MS	IMMEDIATE ASSIGNMENT	SS allocates an SDCCH
59	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM. CM service type information element is set to "Short message transfer".
60	SS -> MS	CM SERVICE ACCEPT (UA)	SAPI 0
61	MS -> SS	SABM (SAPI=3)	MS shall establish SAPI 3
62	SS -> MS	UA (SAPI=3)	
63	MS -> SS	CP-DATA	Contains RP-SMMA RPDU
64	SS -> MS	CP-ACK	
65	SS -> MS	CP-DATA	Contains RP-ACK RPDU
66	MS -> SS	CP-ACK	Acknowledge of CP-DATA containing the RP-ACK RPDU. The ME shall unset the "memory capability exceeded" notification flag on the SIM.
67	SS -> MS	CHANNEL RELEASE	The main signalling link is released. The SIM simulator shall indicate if the "memory capability exceeded" notification flag has been unset on the SIM.
68	SS		Prompts the operator to remove one of the short messagesfrom the message store of the MS.
69	MS		Shall not attempt to send a RP-SMMA RPDU. This is verified by checking that the MS does not send a CHANNEL REQUEST message with the establishment cause "Other services which can be completed with an SDCCH"

NOTE: Time values for SS wait time are chosen sufficiently high to be sure that the MS has enough time to respond to the different messages.

Specific Message Contents:

SMS-DELIVER TPDU in step 12

Information element	Comment Value
TP-MTI	SMS DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM "0"B
TP-SRI	no status report returned "0"B
TP-OA	an international number coded E.164
TP-PID	default "00000000"B
TP-DCS	default alphabet, class 2 "11110010"B
TP-SCTS	any legal value (cf. GSM 03.40)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

SMS-DELIVER TPDU in step 30

same as in step 12 except:

TP-DCS	default alphabet, class 1 "11110001"B

SMS-DELIVER TPDU in step 48

same as in step 12 except:

TP-DCS	default alphabet "00000000"B

34.2.4 Test of the status report capabilities and of SMS-COMMAND:

This test applies to MSs which support the status report capabilities.

34.2.4.1 Conformance requirement

The SMS offers the SC the capabilities of informing the MS of the status of a previously sent mobile originated short message. This is achieved by the SC returning a status report TPDU (SMS-STATUS-REPORT) to the originating MS.

SMS-COMMAND enables an MS to invoke an operation at the SC.

The MS shall increment TP-MR by 1 for each SMS-SUBMIT or SMS-COMMAND being submitted.

References

GSM 03.40; 3.2.9.

GSM 03.40; 9.2.3.6.

34.2.4.2 Test purpose

1) To verify that the MS is able to accept a SMS-STATUS-REPORT TPDU.

2) To verify that the MS is able to use the SMS-COMMAND functionality correctly and sends an SMS-COMMAND TPDU with the correct TP-Message-Reference.

34.2.4.3 Method of test

Initial conditions

System Simulator:
1 cell, default parameters.
Mobile Station:
The MS shall be in the idle updated state.

Related PICS/PIXIT Statements

Support of SMS MO/PP and MT/PP.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) The MS is made to send a Mobile Originated short message as in steps a) to d) of test 34.2.2 (SMS Mobile originated).

b) The SS establishes a data link on SAPI-3 with the MS, then sends a CP-DATA message containing a RP-DATA RPDU itself containing an SMS-STATUS-REPORT TPDU.

c) The SS sends a CHANNEL RELEASE message.

d) The MS is made to send an SMS-COMMAND message enquiring about the previously submitted short message.

e) The SS responds to the MS so as to enable it to establish a data link on SAPI-3 on an SDCCH.

f) The SS acknowledges the CP-DATA message from the MS with a CP-ACK followed by a CP-DATA message containing an RP-ACK RPDU

g) After receiving the CP-ACK from the MS, the SS releases the channel by using a CHANNEL RELEASE message.

h) The MS is made to send an SMS-COMMAND message requiring to delete the previously submitted short message.

i) steps e) to g) are repeated.

Maximum Duration of Test

-

Expected Sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	Establishment cause is "Other procedures which can be completed with an SDCCH " (NECI=0)
2	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
3	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM.
4	SS -> MS	AUTHENTICATION REQUEST	
5	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
6	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
7	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
8	SS		SS starts ciphering.
9	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
10	SS -> MS	UA (SAPI=3)	
11	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU)
12	SS -> MS	CP-ACK	Sent within TC1M after step 11
13	SS -> MS	CP-DATA	Contains RP-ACK RPDU
14	SS		Waits max 25 seconds for CP-ACK
15	MS -> SS	CP-ACK	
16	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
17	SS -> MS	PAGING REQUEST	
18	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
19	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
20	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
22	SS -> MS	AUTHENTICATION REQUEST	
23	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
24	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
25	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
26	SS		SS starts ciphering.
27	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
28	MS -> SS	UA (SAPI=3)	
29	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS-STATUS-REPORT TPDU)
30	MS -> SS	CP-ACK	
31	MS -> SS	CP-DATA	Contains RP-ACK RPDU
32	SS ->MS	CP-ACK	
33	SS -> MS	CHANNEL RELEASE	
34	MS		The MS is made to send an SMS-COMMAND message enquiring about the previously submitted SM
35	MS -> SS	CHANNEL REQUEST	Establishment cause "Other services which can be completed with an SDCCH".
36	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
37	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM.
38	SS -> MS	AUTHENTICATION REQUEST	
39	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
40	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
41	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
42	SS		SS starts ciphering.
43	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
44	SS -> MS	UA (SAPI=3)	
45	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
46	SS -> MS	CP-ACK	

47	SS -> MS	CP-DATA	Contains RP-ACK RPDU
48	MS -> SS	CP-ACK	
49	SS -> MS	CHANNEL RELEASE	
50	MS	The MS is made to send an SMS-COMMAND	message requiring to delete the previously submitted SM.
51	MS -> SS	CHANNEL REQUEST	Establishment cause "Other services which can be completed with an SDCCH".
52	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
53	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM.
54	SS -> MS	AUTHENTICATION REQUEST	
55	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
56	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
57	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
58	SS		SS starts ciphering.
59	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
60	SS -> MS	UA (SAPI=3)	
61	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS-COMMAND TPDU) which shall contain the correct TP-MR
62	SS -> MS	CP-ACK	
63	SS -> MS	CP-DATA	Contains RP-ACK RPDU
64	MS -> SS	CP-ACK	
65	SS -> MS	CHANNEL RELEASE	

Specific Message Contents:

SMS SUBMIT TPDU

Information element	Comment Value
TP-MTI	SMS SUBMIT "01"B
TP-VPF	not checked
TP-RP	no reply path "0"B
TP-UDHI	not checked
TP-SRR	status report is requested "1"B
TP-MR	not checked
TP-RD	not checked
TP-DA	not checked (an E164 number)
TP-PID	default "00000000"B
TP-DCS	default alphabet "00000000"B
TP-VP	not checked
TP-UDL	as applicable
TP-UD (140 octets max)	maximum number of characters

SMS-STATUS-REPORT TPDU (SS to MS in step 29):

Information element	Comment Value
TP-MTI	SMS-STATUS-REPORT "10"B
TP-MR	same as previous SMS-SUBMIT
TP-MMS	no more messages "1"B
TP-SRQ	result of SMS-SUBMIT "0"B
TP-RA	same as the Destination address of the SMS-SUBMIT
TP-SCTS	any legal value (cf. GSM 03.40)
TP-DT	any legal value (cf. GSM 03.40)
TP-ST	SM received "00000000"B

first SMS-COMMAND TPDU (MS to SS in step 44)

Information element	Comment Value
TP-MTI	SMS-COMMAND "10"B
TP-MR	TP-MR in previous SMS-SUBMIT plus "1"
TP-SRR	status report requested (GSM 03.40 9.2.3.19) "1"B
TP-PID	default "00000000"B
TP-CT	Enquiry relating to previously submitted short message "00000000"B
TP-MN	not checked (TP-MR in previous SMS-SUBMIT)
TP-DA	not checked (an E164 number)
TP-CDL	not checked
TP-CD	not checked

second SMS-COMMAND TPDU (MS to SS in step 60)

Information element	Comment Value
TP-MTI	SMS-COMMAND "10"B
TP-MR	TP-MR in previous SMS-COMMAND plus "1"
TP-SRR	status report not requested "0"B
TP-PID	default "00000000"B
TP-CT	Delete previously submitted short message "00000010"B
TP-MN	not checked (TP-MR in previous SMS-SUBMIT)
TP-DA	not checked (an E164 number)
TP-CDL	not checked
TP-CD	not checked

34.2.5 Test of message class 0 to 3

The tests under this section only apply to a MS capable of displaying short messages (see PICS/PIXIT).

34.2.5.1 Short message class 0

34.2.5.1.1 Conformance requirement

When a mobile terminated message is class 0 and the MS has the capability of displaying short messages, the MS shall display the message immediately and send an acknowledgement to the SC when the message has successfully reached the MS irrespective of whether there is memory available in the SIM or ME. The message shall not be automatically stored in the SIM or ME.

References

GSM 03.38, 4.

34.2.5.1.2 Test purpose

To verify that the MS will accept and display but not store a class 0 message, and that it will accept and display a class 0 message if its message store is full.

NOTE: failure of this test in a mobile could cause it to reject a class 0 message when its SMS memory becomes full. This could lead to unwanted repetitions between the MS and the service centre.

34.2.5.1.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in the idle updated state.

The MS message store shall be empty.

Related PICS/PIXIT Statements

Support for Short message MT/PP.

Description of the basic procedures to display a mobile terminated short message.

The value of timer TC1M.

Whether SMS messages are stored in the SIM and/or the ME.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) The SS sends a class 0 message by using the method described in step a) of section 34.2.1 but with the TPDU described in this section.

b) The MS message store shall be filled (for example by using the method of 34.2.3 test of the memory available notification) with the same SMS-DELIVER TPDU except that TP-DCS is set to class 1.

c) The SS sends a class 0 message as in step a).

Maximum Duration of Test

-

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
11	MS -> SS	UA (SAPI=3)	
12	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message
13	MS -> SS	CP-ACK	
14	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
15	SS -> MS	CP-ACK	
16	SS -> MS	CHANNEL RELEASE	
17	MS		The content of the short message shall be displayed by the ME. The MS shall not store the message. This can be checked by verifying that it is impossible to retrieve any short messages from the MS message store.
18	SS		The MS message store shall be filled (for example by using the method of 34.2.3) with Class 1 SMS-DELIVER TPDU.
19	SS -> MS	PAGING REQUEST	
20	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
21	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
22	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
23	SS -> MS	AUTHENTICATION REQUEST	
24	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
25	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
26	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
27	SS		SS starts ciphering.
28	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
29	MS -> SS	UA (SAPI=3)	
30	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 0 Short Message
31	MS -> SS	CP-ACK	
32	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
33	SS -> MS	CP-ACK	
34	SS -> MS	CHANNEL RELEASE	
35	MS		The content of the short message shall be displayed by the ME.

Specific Message Contents:

SMS-DELIVER TPDU (containing a class 0 message) (SS to MS):

Information element	Comment Value
TP-MTI	SMS-DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM "0"B
TP-SRI	no status report returned 0
TP-OA	an international number coded E.164
TP-PID	default "00000000"B
TP-DCS	default alphabet, class 0 “1111 0000"B
TP-SCTS	any legal value (cf. GSM 03.40)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

SMS-DELIVER TPDU (containing a class 1 message to fill the MS message store) (SS to MS):

Information element	Comment Value
TP-MTI	SMS-DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM "0"B
TP-SRI	no status report returned 0
TP-OA	an international number coded E.164
TP-PID	default "00000000"B
TP-DCS	default alphabet, class 1 "1111 0001"B
TP-SCTS	any legal value (cf. GSM 03.40)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

34.2.5.2 Test of class 1 short messages

This test shall apply to MSs which support:

- storing of received Class 1 Short Messages and

- displaying of stored Short Messages.

34.2.5.2.1 Conformance requirement

When a mobile terminated message is class 1, the MS shall send an acknowledgement to the SC when the message has successfully reached the MS and can be stored, either in the ME or in the SIM.

References

GSM 03.38, 4.

34.2.5.2.2 Test purpose

This procedure verifies that the MS acts correctly on receiving a class 1 message, i.e. that it stores the message in the ME or SIM and sends an acknowledgement (at RP and CP-Layer).

34.2.5.2.3 Method of test

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in the idle updated state.
The MS message store shall be empty.
For storing of class 1 Short Messages, the MS shall be set up to store Short Messages in the ME memory (by way of MMI, as described in PICS/PIXIT statement).

Related PICS/PIXIT Statements

Support for Short message MT/PP.

Description of the basic procedures to display a mobile terminated short message.

The value of timer TC1M.

Whether SMS messages are stored in the SIM and/or the ME.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) the SS delivers a Short Message of class 1 to the MS as specified in section 34.2.1, step a).

b) the Short Message is recalled (e.g. by means of the MMI).

Maximum Duration of Test

-

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
11	MS -> SS	UA (SAPI=3)	
12	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 1 Short Message
13	MS -> SS	CP-ACK	
14	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
15	SS -> MS	CP-ACK	
16	SS -> MS	CHANNEL RELEASE	
17	MS		The short message shall be recalled and displayed at the MS.

Specific Message Contents:

SMS-DELIVER TPDU (containing a class 1 message) (SS to MS):

Information element	Comment Value
TP-MTI	SMS-DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM "0"B
TP-SRI	no status report returned 0
TP-OA	an international number coded E.164
TP-PID	default "00000000"B
TP-DCS	default alphabet, class 1 "1111 0001"B
TP-SCTS	any legal value (cf. GSM 03.40)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

34.2.5.3 Test of class 2 short messages

34.2.5.3.1 Definition and applicability

Class 2 Short Messages are defined as SIM specific, and the MS shall ensure that a message of this class is stored on the SIM.

This test shall apply to MSs which support:

- storing of received Class 2 Short Messages in the SIM.

34.2.5.3.2 Conformance requirement

When a mobile terminated message is Class 2, the MS shall ensure that the message has been correctly transferred to the SMS data field in the SIM before sending an acknowledgement to the SC. The MS shall return a "protocol error, unspecified" error message if the short message cannot be stored in the SIM and

there is other short message storage available at the MS. If all the short message storage at the MS is already in use, the MS shall return "memory capacity exceeded".

Reference(s)

GSM 03.40, 9.2.3.10; GSM 03.38, 4. GSM 11.11, 10.3.3.

34.2.5.3.3 Test purpose

This procedure verifies that the MS acts correctly on receiving a class 2 message, i.e. that it stores the message correctly in the SIM, and if this is not possible, returns a protocol error message, with the correct error cause, to the network.

There are 2 cases:

1) If the MS supports storing of short messages in the SIM and in the ME, and storage in the ME is not full, and the short message cannot be stored in the SIM, the error cause shall be "protocol error, unspecified".

2) If the MS supports storing of short messages in the SIM and not in the ME, and storage in the ME is not full, and the short message cannot be stored in the SIM, the error cause shall be "memory capacity exceeded".

   NOTE: If the MS supports storing of short messages in the SIM and the ME, and storage in the ME is full, and the short message cannot be stored in the SIM, the error cause shall be "memory capacity exceeded". This case is not tested in this test.

34.2.5.3.4 Test method

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in the idle updated state.

The ME message store shall be empty.

The ME shall be connected to the SIM simulator. The following shall be present in the SIM simulator:

- EF_{SMS} with at least two free records and one full record;
- $EF_{SMSstatus}$, with SMS "Memory Cap. Exceed" notification flag set to "memory available";
- Service no. 4 (SMS) in EF_{SST} set to allocated and activated;

For storing of Class 1 Short Messages the MS shall be set up to store Short Messages in the ME memory (by way of MMI, as described in PICS/PIXIT statement).

Related PICS/PIXIT Statements

Support for Short message MT/PP.

The value of timer TC1M.

Whether SMS messages are stored in the SIM and/or the ME.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) the SS delivers a Short Message of class 2 to the MS as specified in section 34.2.1, step b).

b) following an attempt by the ME to store the short message in a free record of EF_{SMS} in the SIM, the SIM simulator returns the status response "OK" ("90 00").

c) step a) is repeated.

d) following an attempt by the ME to store the short message in a free record of EF_{SMS} in the SIM, the SIM simulator returns the status response "memory problem" ("92 40").

e) the SIM simulator indicates if an attempt was made in steps a) and c) to store the messages and if the messages are stored according to the requirement.

Maximum Duration of Test

-

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
11	MS -> SS	UA (SAPI=3)	
12	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
13	MS -> SS	CP-ACK	
14	ME		The ME shall correctly store the short message in a free record of EFSMS in the SIM, i.e. - the ME shall use a free record - the first byte of the record shall indicate "message received by MS from network" - the TS-Service-Centre-Address shall be correctly stored - the TPDU shall be identical to that sent by the SS - bytes following the TPDU shall be set to "FF"
15	SIM		The SIM simulator returns the status response "OK" ("90 00"). The SIM simulator shall indicate if an attempt was made by the ME to store the short message in the SIM.
16	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
16A	SS -> MS	CP-ACK	
17	SS -> MS	CHANNEL RELEASE	
18	SS -> MS	PAGING REQUEST	
19	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
20	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
21	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
22	SS -> MS	AUTHENTICATION REQUEST	
23	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
24	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
25	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
26	SS		SS starts ciphering.
27	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
28	MS -> SS	UA (SAPI=3)	
29	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU), Class 2 Short Message
30	MS -> SS	CP-ACK	
31	ME		The ME shall attempt to store the short message in a free record of EFSMS in the SIM.
32	SIM		The SIM simulator returns the status response "memory problem" ("92 40"). The SIM simulator shall indicate if an attempt was made by the ME to store the short message in the SIM.
33	MS -> SS	CP-DATA	Contains RP-ERROR RPDU with error cause "protocol error, unspecified" if the MS supports storing of short messages in the ME, or error cause "memory capacity exceeded" if not.

33A	SS -> MS	CP-ACK	
34	SS -> MS	CHANNEL RELEASE	

Specific Message Contents:

SMS-DELIVER TPDU (containing a class 2 message) (SS to MS):

Information element	Comment Value
TP-MTI	SMS-DELIVER "00"B
TP-MMS	more messages are waiting in SC "0"B
TP-RP	no reply path "0"B
TP-UDHI	TP-UD contains only the SM "0"B
TP-SRI	no status report returned 0
TP-OA	an international number coded E.164
TP-PID	default "00000000"B
TP-DCS	default alphabet, class 2 "1111 0010"B
TP-SCTS	any legal value (cf. GSM 03.40)
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters)

34.2.5.4 Test of class 3 short messages

For further study.

34.2.6 Test of short message type 0

For further study.

34.2.7 Test of the replace mechanism for SM type 1-7

34.2.7.1 Definition and applicability

This test shall apply to MSs which support:

- Replace Short Messages and
- display of received Short Messages.

34.2.7.2 Conformance requirement

On receipt of a short message, the MS shall check to see if the associated Protocol Identifier contains a Replace Short Message Type code. If such a code is present, then the MS will check the associated SC address (RP-OA) and originating address (TP-OA) and replace any existing stored message having the same Protocol Identifier code, SC address and originating address with the new short message.

Reference(s)

GSM 03.40; 9.2.3.9.

34.2.7.3 Test purpose

This procedure verifies the correct implementation of the replace mechanism for Replace Short Messages.

34.2.7.4 Test method

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in the idle updated state.

The MS message store shall be empty.

Related PICS/PIXIT Statements

Support for Short message MT/PP.

Description of the basic procedures to display a mobile terminated short message.

The value of timer TC1M.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) two different numbers n and m are drawn randomly between 1 and 7. Two different addresses for TP-Originating-Address (TPOA1 and TPOA2) are drawn. Two different addresses for RP-Originating-Address (RPOA1 and RPOA2) are drawn.

b) the SS delivers a short message to the MS as specified in section 34.2.1 step a). In the SMS-DELIVER TPDU, the TP-Protocol-Identifier parameter is "Replace Short Message Type n", the TP-Originating-Address is TPOA1, and the RP-Originating-Address is RPOA1.

c) step b) is repeated but with a different TP-Originating-Address (TPOA2), and different contents of TP-User-Data in the SMS-DELIVER TPDU. The other parameters are the same as in step b).

d) step c) is repeated but with RPOA2 in the RP-Originated-Address, and contents of TP-User-Data different from the former two messages. The other parameters are the same as in step c).

e) step d) is repeated but with the TP-Protocol-Identifier equal to "Replace Short Message Type m", and contents of TP-User-Data different from the former three messages. The other parameters are the same as in step d).

f) step e) is repeated but the contents of TP-User-Data are different from that used in step e).

g) the SS prompts the operator to display the Short Messages stored in the MS.

Maximum Duration of Test

-

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
11	MS -> SS	UA (SAPI=3)	
12	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA1 and RP-OA is RPOA1
13	MS -> SS	CP-ACK	
14	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
14A	SS -> MS	CP-ACK	
15	SS -> MS	CHANNEL RELEASE	
16	SS -> MS	PAGING REQUEST	
17	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
18	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
19	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
20	SS -> MS	AUTHENTICATION REQUEST	
21	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
22	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
23	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
24	SS		SS starts ciphering.
25	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
26	MS -> SS	UA (SAPI=3)	
27	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA1, TP-UD different from step 12
28	MS -> SS	CP-ACK	
29	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
29A	SS -> MS	CP-ACK	
30	SS -> MS	CHANNEL RELEASE	
31	SS -> MS	PAGING REQUEST	
32	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
33	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
34	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
35	SS -> MS	AUTHENTICATION REQUEST	
36	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
37	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
38	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
39	SS		SS starts ciphering.
40	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
41	MS -> SS	UA (SAPI=3)	

42	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type n", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 12 and 27
43	MS -> SS	CP-ACK	
44	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
44A	SS -> MS	CP-ACK	
45	SS -> MS	CHANNEL RELEASE	
46	SS -> MS	PAGING REQUEST	
47	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
48	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
49	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
50	SS -> MS	AUTHENTICATION REQUEST	
51	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
52	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
53	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
54	SS		SS starts ciphering.
55	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
56	MS -> SS	UA (SAPI=3)	
57	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 12, 27 and 42
58	MS -> SS	CP-ACK	
59	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
59A	SS -> MS	CP-ACK	
60	SS -> MS	CHANNEL RELEASE	
61	SS -> MS	PAGING REQUEST	
62	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
63	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
64	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
65	SS -> MS	AUTHENTICATION REQUEST	
66	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
67	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
68	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
69	SS		SS starts ciphering.
70	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
71	MS -> SS	UA (SAPI=3)	
72	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-PID is "Replace Short Message Type m", TP-OA is TPOA2 and RP-OA is RPOA2, TP-UD different from step 57
73	MS -> SS	CP-ACK	
74	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
74A	SS -> MS	CP-ACK	
75	SS -> MS	CHANNEL RELEASE	
76	SS		Prompts the operator to display the Short Messages stored in the MS. Only the Short Messages delivered in step 12, 27, 42 and 72 shall be retrievable and displayed

Specific Message Contents:

SMS-DELIVER TPDU

Information element	Comment Value
TP-MTI	SMS-DELIVER "00"B
TP-MMS	no more messages are waiting in SC "1"B
TP-RP	no Reply Path "0"B
TP-UDHI	TP-UD contains only the SM "0"B
TP-SRI	no Status Report returned "0"B
TP-OA	an international number coded E.164 (see test method description)
TP-PID	binary 01000xxx, xxx represents n resp. m (see test method description)
TP-DCS	default alphabet "00000000"B
TP-SCTS	the time when the message was submitted according to GSM 03.40
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters) (see test method description)

34.2.8 Test of the reply path scheme

34.2.8.1 Definition and applicability

This test applies to MSs which support

- reply procedures (the class of MSs for which this is mandatory is described in GSM 03.40, annex 4)
- displaying of received Short Messages and
- submitting Short Messages.

Steps b) and d) are only executed for MSs which support storing of Short messages.

34.2.8.2 Conformance requirement

When a replying MS receives an original mobile terminated short message it has:

originating SME = TP-Originating Address in the SMS-DELIVER TPDU;

original SC = RP-Originating Address in the RP-MT-DATA.

When submitting the reply mobile originated short message, the replying MS should use parameters as follows:

TP-Destination Address in SMS-SUBMIT TPDU = originating SME;

RP-Destination Address in RP-MO-DATA = original SC.

Reference(s)

GSM 03.40 annex 4, sect. 5, 6.

34.2.8.3 Test purpose

This procedure verifies that the MS is able to send a Reply Short Message back to the correct originating SME even if in the meantime it receives another Short Message.

34.2.8.4 Test method

Initial conditions

System Simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in the idle updated state.

The MS message store shall be empty.

Related PICS/PIXIT Statements

Support for Short message MT/PP.

Support for Short message MO/PP.

Description of the basic procedures to display a mobile terminated short message.

Description of the basic procedures to send a mobile originated short message.

The value of timer TC1M.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) the SS delivers a Short Message as specified in section 34.2.1, step b) with TP-Reply-Path set to 1.

b) step a) is repeated but with:

- different TP-Originating-Address for the originating SME;
- different RP-Originating-Address for the original SC and
- different message contents TP-User-Data.

c) one of the two Short Messages is displayed (e.g. by means of the MMI) and the Reply Short Message is submitted (e.g. by means of the MMI).

d) step c) is repeated for the other Short Message.

Maximum Duration of Test

-

Expected Sequence

Step	Direction	Message	Comments
1	SS -> MS	PAGING REQUEST	
2	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
3	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
4	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
5	SS -> MS	AUTHENTICATION REQUEST	
6	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
7	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
8	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
9	SS		SS starts ciphering.
10	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
11	MS -> SS	UA (SAPI=3)	
12	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-RP set to 1
13	MS -> SS	CP-ACK	Sent within TC1M after step 12
14	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
14A	SS -> MS	CP-ACK	
15	SS -> MS	CHANNEL RELEASE	
16	SS -> MS	PAGING REQUEST	
17	MS -> SS	CHANNEL REQUEST	Establishment cause is "Answer to paging"
18	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
19	MS -> SS	PAGING RESPONSE	Message is contained in SABM.
20	SS -> MS	AUTHENTICATION REQUEST	
21	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
22	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
23	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
24	SS		SS starts ciphering.
25	SS -> MS	SABM (SAPI=3)	SS establishes SAPI 3
26	MS -> SS	UA (SAPI=3)	
27	SS -> MS	CP-DATA	Contains RP-DATA RPDU (SMS DELIVER TPDU) TP-OA, RP-OA and TP-UD different from step 12
28	MS -> SS	CP-ACK	Sent within TC1M after step 12
29	MS -> SS	CP-DATA	Contains RP-ACK RPDU.
29A	SS -> MS	CP-ACK	
30	SS -> MS	CHANNEL RELEASE	
31	MS		One of the two Short Messages is displayed and the Reply Short Message is submitted.
32	MS -> SS	CHANNEL REQUEST	
33	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
34	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM.
35	SS -> MS	AUTHENTICATION REQUEST	
36	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
37	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
38	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
39	SS		SS starts ciphering.
40	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
41	SS -> MS	UA (SAPI=3)	
42	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the message displayed TP-DA = TP-OA corresponding to the message displayed
43	SS -> MS	CP-ACK	Sent within TC1M after step 42

44	SS -> MS	CP-DATA	Contains RP-ACK RPDU
45	SS		Waits max 25 seconds for CP-ACK
46	MS -> SS	CP-ACK	
47	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
48	MS		The other Short Message is displayed and the Reply Short Message is submitted.
49	MS -> SS	CHANNEL REQUEST	
50	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
51	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM.
52	SS -> MS	AUTHENTICATION REQUEST	
53	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
54	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
55	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
56	SS		SS starts ciphering.
57	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3
58	SS -> MS	UA (SAPI=3)	
59	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU) RP-DA = RP-OA corresponding to the Message displayed TP-DA = TP-OA corresponding to the message displayed
60	SS -> MS	CP-ACK	Sent within TC1M after step 59
61	SS -> MS	CP-DATA	Contains RP-ACK RPDU
62	SS		Waits max 25 seconds for CP-ACK
63	MS -> SS	CP-ACK	
64	SS -> MS	CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

SMS-DELIVER TPDU

Information element	Comment Value
TP-MTI	SMS-DELIVER "00"B
TP-MMS	no more messages are waiting in SC "1"B
TP-RP	Reply Path exists "1"B
TP-UDHI	TP-UD contains only the SM "0"B
TP-SRI	no Status Report returned "0"B
TP-OA	an international number coded E.164 (see test method description)
TP-PID	default "00000000"B
TP-DCS	default alphabet "00000000"B
TP-SCTS	the time when the message was submitted according to GSM 03.40
TP-UDL	160
TP-UD (140 octets)	text of message (160 characters) (see test method description)

34.2.9 Multiple SMS mobile originated

34.2.9.1 MS in idle mode

This test applies to MS supporting the ability of sending multiple short messages on the same RR connection when there is no call in progress.

34.2.9.1.1 Conformance requirements

When the MS chooses to use the same RR connection to send another short message or a memory available notification, then:

- the MS shall transmit a CM SERVICE REQUEST for the new CM connection before the final CP-ACK (e.g. the one that acknowledges the CP-DATA that carried the RP-ACK) for the old MM connection is transmitted;

- before transmission of the first CP-DATA on the new MM connection, the MS shall transmit the CP-ACK for the old MM connection;

- the Transaction Identifier used on the new MM connection shall be different to that used on the old MM connection; and

- the MS shall not initiate establishment of the new MM connection before the final CP-DATA (e.g. the one carrying the RP-ACK) has been received.

Reference

GSM 03.40; 3.1
GSM 04.11; 5.4
GSM 04.13; 5.6

34.2.9.1.2 Test purpose

To verify that the MS is able to correctly send multiple short messages on the same RR connection when using an SDCCH.

34.2.9.1.3 Method of test

Initial conditions

System simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in "Idle, updated" state.

The SMS message storage shall be empty.

Related PICS/PIXIT statements

Support for multiple short message MO/PP on the same RR connection
Description of how to enter multiple SMS
Description of the basic procedures to display a mobile originated short message
Whether SMS messages are stored in the SIM and/or the ME.

Foreseen final state of MS

Idle, updated

Test procedure

a) The MS shall be set up to send 3 short messages as multiple SM to the SS. The SS responds to the channel request message by allocating an SDCCH. The SS answers correctly to the SABM on SAPI 0 and then performs the authentication and ciphering procedures.

b) The SS responds with a UA frame SAPI-3 to the MS.

c) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the MS with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU. The Transaction Identifier used on this MM connection is ‘x’.

d) the MS shall transmit a CM SERVICE REQUEST for the new CM connection (for the second short message) before the final CP-ACK (the one that acknowledges the CP-DATA that carried the RP-ACK before) for the old MM connection is transmitted. The MS shall not initiate establishment of the new MM connection before the final CP-DATA (i.e. the one carrying the RP-ACK for the first short message) has been received. Before transmission of the first CP-DATA on the new MM connection, the MS shall transmit the CP-ACK for the old MM connection. The Transaction Identifier used on the new MM connection shall be y, where y <> x (see procedure c)).

e) The SS waits a maximum of 5 seconds after receiving the CM SERVICE REQUEST for the CP-ACK message from the MS.

f) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the MS with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU.

g) the MS shall transmit a CM SERVICE REQUEST for the new CM connection (for the third short message) before the final CP-ACK (the one that acknowledges the CP-DATA that carried the RP-ACK before) for the old MM connection is transmitted. Before transmission of the first CP-DATA on the new MM connection, the MS shall transmit the CP-ACK for the old MM connection. The Transaction Identifier used on the new MM connection shall be z, where z <> y (see procedure d)). The MS shall not initiate establishment of the new MM connection before the final CP-DATA (i.e. the one carrying the RP-ACK for the second short message) has been received.

h) The SS waits a maximum of 5 seconds after receiving the CM SERVICE REQUEST for the CP-ACK message from the MS.

i) The SS responds to the CP-DATA containing RP-DATA RPDU (SMS SUBMIT TPDU) from the MS with a CP-ACK message followed by a CP-DATA message containing the correct RP-ACK RPDU.

j) The SS waits a maximum of 5 seconds after sending CP-DATA for the CP-ACK message from the MS.

k) The SS sends a Channel Release message to the MS.

Maximum duration of test

5 min.

Expected sequence

Step	Direction	Message	Comments
1	MS -> SS	CHANNEL REQUEST	Establishment cause is “Other procedures which can be completed with an SDCCH” NECI = 0
2	SS -> MS	IMMEDIATE ASSIGNMENT	SS assigns an SDCCH
3	MS -> SS	CM SERVICE REQUEST	Message is contained in SABM on SAPI 0. CM service type set to "Short message transfer"
4	SS -> MS	AUTHENTICATION REQUEST	
5	MS -> SS	AUTHENTICATION RESPONSE	SRES specifies correct value.
6	SS -> MS	CIPHERING MODE COMMAND	SS starts deciphering after sending the message.
7	MS -> SS	CIPHERING MODE COMPLETE	Shall be sent enciphered. All following messages shall be sent enciphered.
8	SS		SS starts ciphering.
9	MS -> SS	SABM (SAPI=3)	MS establishes SAPI 3 on DCCH
10	SS -> MS	UA (SAPI=3)	
11	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 11, 12, 13 and 15 shall be x.
12	SS -> MS	CP-ACK	
13	SS -> MS	CP-DATA	Contains RP-ACK RPDU
14	MS -> SS	CM SERVICE REQUEST	CM service type set to "Short message transfer".
15	MS -> SS	CP-ACK	Shall be sent within 5 seconds of step 14
16	SS -> MS	CM SERVICE ACCEPT	
17	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 17, 18, 19 and 21 shall be y where y <> x (see step 11).
18	SS -> MS	CP-ACK	
19	SS -> MS	CP-DATA	Contains RP-ACK RPDU
20	MS -> SS	CM SERVICE REQUEST	CM service type set to "Short message transfer".
21	MS -> SS	CP-ACK	Shall be sent within 5 seconds of step 20
22	SS -> MS	CM SERVICE ACCEPT	
23	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 23, 24, 25 and 26 shall be z, where z <> y (see step 17).
24	SS -> MS	CP-ACK	
25	SS -> MS	CP-DATA	Contains RP-ACK RPDU
26	MS -> SS	CP-ACK	Shall be sent within 5 seconds of step 25
27	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
28	MS -> SS	DISC (SAPI=0)	MS shall respond to channel release with a layer 2 DISC frame with SAPI 0

Specific message contents:

SMS SUBMIT TPDU

Information element	Comment Value
TP-MTI	SMS SUBMIT '01'B
TP-VPF	not checked
TP-RP	no reply path '0'B
TP-UDHI	not checked
TP-SRR	not checked
TP-MR	not checked
TP-RD	not checked
TP-DA	not checked (an E164 number)
TP-PID	default '00000000'B
TP-DCS	default alphabet '00000000'B
TP-VP	not checked
TP-UDL	as applicable
TP-UD (140 octets max.)	maximum number of characters (text of message) as defined by the manufacturer (see PICS/PIXIT)

34.2.9.2 MS in active mode

This test applies to MS supporting the ability of sending concatenated multiple short messages when there is a call in progress.

34.2.9.2.1 Conformance requirements

When the MS chooses to use the same RR connection to send another short message or a memory available notification, then:

- the MS shall transmit a CM SERVICE REQUEST for the new CM connection before the final CP-ACK (e.g. the one that acknowledges the CP-DATA that carried the RP-ACK) for the old MM connection is transmitted;

- before transmission of the first CP-DATA on the new MM connection, the MS shall transmit the CP-ACK for the old MM connection;

- the Transaction Identifier used on the new MM connection shall be different to that used on the old MM connection; and

- the MS shall not initiate establishment of the new MM connection before the final CP-DATA (e.g. the one carrying the RP-ACK) has been received.

Reference

GSM 03.40; 3.1
GSM 04.11; 5.4
GSM 04.13; 5.6

34.2.9.2.2 Test purpose

To verify that the MS is able to correctly concatenate multiple short messages on the same RR connection when sent parallel to a call.

34.2.9.2.3 Method of test

Initial conditions

System simulator:

1 cell, default parameters.

Mobile Station:

The MS shall be in "Idle, updated" state.

The SMS message storage shall be empty.

Related PICS/PIXIT statements

Support for multiple short message MO/PP on the same RR connection
Description of how to enter multiple SMS
Description of the basic procedures to display a mobile originated short message
Support for state U10 of call control
Whether SMS messages are stored in the SIM and/or the ME.

Foreseen final state of MS

Idle, updated

Test procedure

a) A data or speech call is established on a TCH with the SS and the state U10 of call control is entered. The MS is set up to send 3 short messages as multiple SM to the SS. After the reception of the CM SERVICE REQUEST, the SS sends a CM SERVICE ACCEPT message. The SS responds with a UA frame SAPI-3 to the SABM with SAPI-3 received from the MS.

b) Steps c) to k) of the test procedure in section 34.2.9.1.3 are repeated.

Maximum duration of test

5 min.

Expected Sequence

Step	Direction	Message	Comments
1	SS		A data or speech call is established on a TCH and the state U10 of call control is entered.
2	MS		The MS is set up to send 3 short messages as multiple SM
3	MS -> SS	CM SERVICE REQUEST	Sent in a layer 2 frame on the FACCH. CM service type set to "short message transfer"
4	SS -> MS	CM SERVICE ACCEPT	
5	MS -> SS	SABM (SAPI=3)	Sent on SACCH associated with the TCH
6	SS -> MS	UA (SAPI=3)	
7	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 7, 8, 9 and 11 shall be x.
8	SS -> MS	CP-ACK	
9	SS -> MS	CP-DATA	Contains RP-ACK RPDU
10	MS -> SS	CM SERVICE REQUEST	Sent in a layer 2 frame on the FACCH. CM service type set to "short message transfer"
11	MS -> SS	CP-ACK	Shall be sent within 5 seconds of step 10
12	SS -> MS	CM SERVICE ACCEPT	
13	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 13, 14, 15 and 17 shall be y where y <> x (see step 7).
14	SS -> MS	CP-ACK	
15	SS -> MS	CP-DATA	Contains RP-ACK RPDU
16	MS -> SS	CM SERVICE REQUEST	Sent in a layer 2 frame on the FACCH. CM service type set to "short message transfer"
17	MS -> SS	CP-ACK	Shall be sent within 5 seconds of step 16
18	SS -> MS	CM SERVICE ACCEPT	
19	MS -> SS	CP-DATA	Contains RP-DATA RPDU (SMS SUBMIT TPDU). The Transaction Identifier used in steps 19, 20, 21 and 22 shall be z, where z <> y (see step 13).
20	SS -> MS	CP-ACK	
21	SS -> MS	CP-DATA	Contains RP-ACK RPDU
22	MS -> SS	CP-ACK	Shall be sent within 5 seconds of step 21
23	SS -> MS	CHANNEL RELEASE	The main signalling link is released.
24	MS -> SS	DISC (SAPI = 0)	MS shall respond to channel release with a layer 2 DISC frame with SAPI 0.

Specific Message Contents:

SMS SUBMIT TPDU

Information element	Comment Value
TP-MTI	SMS SUBMIT '01'B
TP-VPF	not checked
TP-RP	no reply path '0'B
TP-UDHI	not checked
TP-SRR	not checked
TP-MR	not checked
TP-RD	not checked
TP-DA	not checked (an E164 number)
TP-PID	default '00000000'B
TP-DCS	default alphabet '00000000'B
TP-VP	not checked
TP-UDL	as applicable
TP-UD (140 octets max.)	maximum number of characters (text of message) as defined by the manufacturer (see PICS/PIXIT)

34.3 Short message service cell broadcast

This test applies to all MSs.

34.3.1 Conformance requirements

If the MS supports SMS-CB, it is responsible for recombination of the four blocks received via the radio path into a single block which constitutes the cell broadcast short message.

In idle mode, the MS listens to the BCCH and to the paging sub-channel for the paging group it belongs to. The MS is required to receive and analyse the paging messages and immediate assignment messages sent on the paging subchannel corresponding to its paging subgroup.

Reference

GSM 03.41; 8.

GSM 04.08; 3.2.1, 3.3.2.1.

34.3.2 Test purpose

This test verifies that an MS supporting SMS-CB is able to receive SMS-CB messages.

This test verifies that an MS is able to respond to a paging requested during the transmission of a cell broadcast short message.

34.3.3 Test method

Initial conditions

System Simulator:

1 cell, default parameters, except BS_PA_MFRMS = 2.

The SS provides a BCCH/CCCH to support the MS in idle mode.

Periodic location updating is disabled.

Mobile Station:

The MS shall be in the idle updated state.

Related PICS/PIXIT Statements

Support for short message transmission cell broadcast.

Description of the basic procedures to display a cell broadcasted short message.

Foreseen Final State of MS

Idle, updated.

Test Procedure

a) Three Cell Broadcast (CB) messages are sent by the SS on the CBCH with serial numbers 0,1,1.

b) Step a) is repeated, but the SS pages the MS during the transmission of the second CB message. This shall be achieved by paging the MS immediately after the first block of the CB message has been sent. The SS shall ensure that the page is transmitted on the radio interface prior to the transmission of the 4th block of the CB message.

NOTE: The use of BS_PA_MFRMS = 2 ensures that this can be achieved irrespective of the IMSI.

The MS shall respond to the page.

Maximum Duration of Test

-

Expected Sequence

Since the SMS-CB messages are sent continuously, a table is not applicable in this test.

Specific Message Contents:

Cell broadcast test message content

Information element	Comment Value
Serial Number	
- Geographical scope	"00"B
- Message code	see test procedure "0000000000"B or "0000000001"B
- Update number	as applicable
Message identifier	"0"B
Data Coding Scheme	Default alphabet, English "00000001"B
Page parameter	"0001 0001"B
Contents of message	93 user characters using 93 different characters of default 7 bit coded alphabet

SYSTEM INFORMATION TYPE 4

As default except:

Information element	Value/remark
CBCH Channel Description	
- Channel type and TDMA offset	SDDCH/4 + SACCH/C4 or CBCH (SDDCH/4)
- Timeslot number	time slot zero
- Training sequence code	5 (same as BCC)
- Hopping channel	Single RF channel
-Channel selector	Channel number 20 (for GSM 900 MS) Channel number 590 (for DCS 1 800 MS)
CBCH Mobile Allocation	Not included

34.4 Default message contents:

CP-DATA (including RP-DATA SS->MS)

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	any value from the set {0, ..., 6}
TI flag	0
Message type	00000001
CP-User data	
length indicator	
RP-DATA	max 248 octets
RP-Message Type	001 (RP-DATA SS->MS)
RP-Message Reference	see GSM 04.11 8.2.3
RP-Originator Address	see GSM 04.11 8.2.5.1
RP-Destination Address	length indicator set to 0
RP-User Data	
length indicator	
TP-DATA	max 233 octets

CP-DATA (including RP-DATA MS->SS)

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	any value from the set {0, ..., 6}
TI flag	0
Message type	00000001
CP-User data	
length indicator	
RP-DATA	max 248 octets
RP-Message Type	000 (RP-DATA MS->SS)
RP-Message Reference	see GSM 04.11 8.2.3
RP-Originator Address	length indicator set to 0
RP-Destination Address	see GSM 04.11 8.2.5.2
RP-User Data	
length indicator	
TP-DATA	max 233 octets

CP-DATA (including RP-ACK MS->SS)

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	
TI flag	
Message type	00000001
CP-User data	
length indicator	
RP-ACK	
RP-Message Type	010 (RP-ACK MS->SS)
RP-Message Reference	see GSM 04.11 8.2.3

CP-DATA (including RP-ACK SS->MS)

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	
TI flag	
Message type	00000001
CP-User data	
length indicator	
RP-ACK	
RP-Message Type	011 (RP-ACK SS->MS)
RP-Message Reference	see GSM 04.11 8.2.3

CP-DATA (including RP-ERROR MS->SS)

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	
TI flag	
Message type	00000001
CP-User data	
length indicator	
RP-ERROR	
RP-Message Type	100 (RP-ERROR MS->SS)
RP-Message Reference	see GSM 04.11 8.2.3
RP-Cause	see GSM 04.11 8.2.5.4
RP_User Data	see GSM 04.11 8.2.5.3 : optional, may be present or not
Length indicator	
TP-Data	max 233 octets

CP-DATA (including RP-ERROR SS->MS)

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	
TI flag	
Message type	00000001
CP-User data	
length indicator	
RP-ERROR	
RP-Message Type	101 (RP-ERROR SS->MS)
RP-Message Reference	see GSM 04.11 8.2.3
RP Cause	see GSM 04.11 8.2.5.4
RP User Data	see GSM 04.11 8.2.5.3 : optional, may be present or not
Length indicator	
TP-Data	max 233 octets

CP-DATA (including RP-SMMA MS->SS)

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	
TI flag	
Message type	00000001
CP-User data	
length indicator	
RP-SMMA	
RP-Message Type	110 (RP-SMMA MS->SS)
RP-Message Reference	see GSM 04.11 8.2.3

CP-ACK

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	
TI flag	
Message type	00000100

CP-ERROR

Protocol Discriminator	SMS messages ("1001"B)
Transaction Identifier	
TI value	
TI flag	
Message type	00010000
CP-Cause	
Cause value	see GSM 04.11 8.1.4.2