Technical Specification Group Services and System Aspects Meeting #18, New Orleans, USA, 9-12 December 2002

Source:	SA1
Title:	Release 6 CRs to 22.950 on Priority service feasibility study (Various subjects)
Document for:	Approval
Agenda Item:	7.1.3

SA Doc	Spec	CR	Rev	Phase	Cat	Subject	Old Vers	New Vers	SA1 Doc
SP-020667	22.950	001		Rel-6	D	CR to 22.950 on RAN-T changes	6.0.0	6.1.0	S1-022099
SP-020667	22.950	002		Rel-6	В	CR to 22.950 on Priority Trunk Queuing High Level Requirement	6.0.0	6.1.0	S1-022282
SP-020667	22.950	003		Rel-6	F	Changes to Emergency Calls Interactions	6.0.0	6.1.0	S1-022283
SP-020667	22.950	004		Rel-6	В	Coexistence of Priority Service and eMLPP in the same network	6.0.0	6.1.0	S1-022284
SP-020667	22.950	005		Rel-6	D	Priority Call Origination and Termination High Level Requirements Clarification	6.0.0	6.1.0	S1-022285

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Other comments: # Based on received Liaison Statements S1-021389 and S1-021425

Change in Clause 2

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.
- [1] 3GPP TR 41.001: "GSM Release specifications".
- [2] TS 21.905: "Vocabulary for 3GPP Specifications"
- [3] ETSI TS 100 921 version 7.0.1 (1999-07), Digital cellular telecommunications system (Phase 2+); Service accessibility (GSM 02.11 version 7.0.1 Release 1998)
- [4] 3GPP TS 22.011 version 3.5.0 (2001-06), 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Service accessibility (Release 1999)
- [5] 3GPP TS 22.011 version 4.4.0 (2001-06), 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Service accessibility (Release 4)
- [6] ETSI EN 300 924 version 7.0.1 (2000-01), Digital cellular telecommunications system (Phase 2+); enhanced Multi-Level Precedence and Pre-emption (eMLPP) – Stage 1 (GSM 02.67 version 7.0.1 Release 1998)
- [7] 3GPP TS 03.67 version 7.2.0 (2000-12), 3rd Generation Partnership Project; Technical Specification Group Core Network; Digital cellular telecommunications system (Phase 2+); enhanced Multi-Level Precedence and Pre-emption (eMLPP) – Stage 2 (Release 1998)
- [8] ETSI EN 300 927 version 7.0.1 (2000-01), Digital cellular telecommunications system (Phase 2+);
 enhanced Multi-Level Precedence and Pre-emption (eMLPP) Stage 3 (GSM 04.67 version 7.0.1 Release 1998)
- [9] 3G TS 22.067 version 3.0.1 (1999-10), 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; enhanced Multi-Level Precedence and Preemption (eMLPP) – Stage 1 (Release 1999)
- [10] 3GPP TS 23.067 version 3.3.0 (2001-06), 3rd Generation Partnership Project; Technical Specification Group Core Network; enhanced Multi-Level Precedence and Pre-emption (eMLPP) – Stage 2 (Release 1999)
- [11] 3GPP TS 24.067 version 3.3.0 (2001-06), 3rd Generation Partnership Project; Technical Specification Group Core Network; enhanced Multi-Level Precedence and Pre-emption (eMLPP) – Stage 3 (Release 1999)
- [12] 3G TS 22.067 version 4.0.0 (2000-01), 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; enhanced Multi-Level Precedence and Preemption (eMLPP) – Stage 1 (Release 4)
- [13] 3GPP TS 23.067 version 4.1.0 (2001-06), 3rd Generation Partnership Project; Technical Specification Group Core Network; enhanced Multi-Level Precedence and Pre-emption (eMLPP) – Stage 2 (Release 4)

[14]	3GPP TS 24.067 version 4.1.0 (2001-06), 3rd Generation Partnership Project; Technical Specification Group Core Network; enhanced Multi-Level Precedence and Pre-emption (eMLPP) – Stage 3 (Release 4)
[15]	GSM 11.11 v7.6.1, Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface; Release 1998
[16]	GSM 04.08 v7.13.0, Mobile Radio Interface Layer 3 Specification; Release 1998
[17]	3GPP TS 11.11 v8.5.0, Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface; Release 1999
[18]	3GPP TS 51.011 v4.1.0, Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface; Release 4
[19]	3GPP TS 08.08 v. 7.7.0, Mobile-services Switching Centre- Base Station System (MSC - BSS) interface Layer 3 specification; Release 1998
[20]	3GPP TS 08.08 v. 8.12.0, Mobile-services Switching Centre- Base Station System (MSC - BSS) interface Layer 3 specification; Release 1999
[21]	3GPP TS 08.08 v. 9.0.0, Mobile-services Switching Centre- Base Station System (MSC - BSS) interface Layer 3 specification; Release 4
[22]	3GPP TS 25.413 v. 3.9.0, UTRAN Iu interface RANAP signalling; Release 1999
[23]	3GPP TS 25.413 v. 4.2.0, UTRAN Iu interface RANAP signalling; Release 4
[24]	3GPP TS 24.008 v. 3.11.0, Mobile radio interface layer 3 specification; Core Network Protocols - Stage 3; Release 1999
[25]	3GPP TS 24.008 v. 4.4.0, Mobile radio interface layer 3 specification; Core Network Protocols - Stage 3; Release 4
-[26]	ITU Recommendation I.255.3, Multi-Level Precedence and Preemption Service (MLPP), 1990
[27]	ITU Recommendation Q.85, Stage 2 Description for Community of Interest Supplementary Services, Section 3 – Multi-Level Precedence and Preemption (MLPP) (rev. 1), 1992
[28]	ITU Recommendation Q.735, Stage 3 Description for Community of Interest Supplementary Services using SS No. 7, Section 3 – Multi-Level Precedence and Preemption (MLPP), 1993
[29]	GSM 11.14, Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface
[30]	3GPP TS 31.102, Characteristics of the USIM Application
[31]	3GPP TS 31.111, USIM Application Toolkit (USAT)
[32]	3GPP TS 25.321, Medium Access Control (MAC) protocol specification

3

End of Change in Clause 2

Change in Clause 6.3

6.3 Subscriber Identity Module (SIM) Specifications

Release 1998:

- GSM 11.11 v7.6.1, Specification of the Subscriber Identity Module Mobile Equipment (SIM ME) interface; Release 1998;
- GSM 04.08 v7.13.0, Mobile Radio Interface Layer 3 Specification; Release 1998;
- <u>GSM 11.14, Specification of the SIM Application Toolkit for the Subscriber Identity Module Mobile</u> <u>Equipment (SIM - ME) interface</u>

Release 1999:

- 3GPP TS 11.11 v8.5.0, Specification of the Subscriber Identity Module Mobile Equipment (SIM ME) interface; Release 1999;
- 3GPP TS 24.008 v. 3.11.0, Mobile radio interface layer 3 specification; Core Network Protocols Stage 3; Release 1999:
- GSM 11.14, Specification of the SIM Application Toolkit for the Subscriber Identity Module Mobile Equipment (SIM - ME) interface

Release 4:

- 3GPP TS 51.011 v4.1.0, Specification of the Subscriber Identity Module Mobile Equipment (SIM ME) interface; Release 4;
- 3GPP TS 24.008 v. 4.4.0, Mobile radio interface layer 3 specification; Core Network Protocols Stage 3; Release 4;

- 3GPP TS 31.102, Characteristics of the USIM Application;

- 3GPP TS 31.111, USIM Application Toolkit (USAT)

End of Change in Clause 6.3

End of CR

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Reason for char	Reason for change: # To include an additional capability for Priority Trunk Queuing to increase the											

Consequences if % not approved:	The additional capability will not be assessed.
Summary of change: [#]	Addition of a High Level Requirement for Priority Trunk Queuing and addition of the associated gap analysis.
Reason for change.	probability of call completion for Priority Service calls.

Clauses affected:	# 4.4, 4.13 (new), 5.4, 6.1.2, 6.2.2, 6.3.2, 6.4.2, 7				
Other specs affected:	YN%XXOther core specificationsXTest specificationsXO&M Specifications				
Other comments:	Chese changes are intended to clarify the difference in radio resource and trunk queuing, both of which are required in support of priority service				

Change in Clause 4.4

4.4 Priority <u>Radio Resource</u> Queuing

Priority Service assumes a signalling channel is always available.

When a Priority Service call encounters a "no radio available" condition in the call path involving an access or egress air-interface, or both, and,

- <u>at call origination</u>, and upon recognition of the Priority Service dialing pattern, the Priority Service call is queued in the cell serving the calling party and processed for the next available radio channel in that cell in accordance with the caller's priority level and call initiation time.
- <u>at call termination</u> upon recognition of a priority call indication in an incoming call, the Priority Service call is queued in the cell serving the called party and processed for the next available radio channel in that cell in accordance with the call's priority level and arrival time.

End of Change in Clause 4.4

Change in Clause 4.13

4.13 Priority Trunk Queuing

Priority Service shall be able to support queuing of Priority Service calls for trunk resources. Trunk queuing provides the capability to place a Priority Service call that has experienced a congestion condition for trunk resources (e.g., no circuit available) into a queue associated with a trunk group until a trunk becomes available or until a maximum trunk queuing time has expired. Priority Trunk Queuing applies to ISDN User Part (ISUP) and Multi-Frequency (MF) trunks.

End of Change in Clause 4.13

Change in Clause 5.4

5.4 Exception Procedures or Unsuccessful Outcome

At call origination, the following exceptions or unsuccessful outcomes can occur:

- 1 If the user invokes but is not subscribed to Priority Service, call setup is not allowed to proceed and the call is dropped.
- 2 If the user invokes and is subscribed to Priority Service but the user's mobile set times out while the call is undergoing Priority Service call queue processing, the user's mobile returns to the null state and the call is dropped.
- 3 If a user invokes and is subscribed to Priority Service, a radio channel is not available, and the queue for the cell is full, and the user's Priority Service priority is lower than all of the Priority Service calls in the queue, the call is dropped.
- 4 If a user invokes and is subscribed to Priority Service, and is queued for a radio channel, but the user loses coverage, the call is removed from the queue and is dropped.
- 5 If a user invokes and is subscribed to Priority Service, and is queued for a radio channel, but the maximum allowed call time in queue expires before a radio channel becomes available in the cell, the call is removed from the queue and is dropped.
- <u>6</u> If a user invokes and is subscribed to Priority Service, and is queued for a trunk resource, but the user loses coverage, the call is removed from the trunk queue and is dropped.
- 7 If a user invokes and is subscribed to Priority Service, and is queued for a trunk resource, but the maximum allowed call time in queue expires before a trunk resource becomes available in the cell, the call is removed from the trunk queue and is dropped.

At call termination the following exceptions or unsuccessful outcomes can occur:

- 1 If a radio channel is not available and the queue for the cell is full, but the calling party's priority is lower than all of the Priority Service calls in the queue, the call is not completed and the Service User is given an appropriate indication.
- 2 If the call is queued for a radio channel but the called party's mobile loses coverage, the call is removed from the queue and the Service User is given an appropriate indication.
- 3 If the call is queued for a radio channel but the maximum allowed call time in queue expires before a radio channel becomes available in the designated terminating cell, the call is removed from the queue and the Service User is given an appropriate indication.

End of Change in Clause 5.4

Change in Clause 6.1.2

Table 2: Service Accessibility Gap Analysis

Priority Service	Description	Service	Comments
Requirement Item		Accessibility	
		Support	
1 Priority Call	The user should receive priority access to voice or traffic	Supported	Using appropriate Access Class(es) to prevent
Origination	channels on call origination.		access attempts
2 Priority Call	The user should receive priority call termination.	Supported	Using appropriate Access Class(es) to prevent
Termination			response to pages
3 Priority Progression	The user should receive priority call treatment/progression	Not supported	
	through the mobile network(s). A priority call should be given		
	higher priority over normal calls in the originating mobile		
	network, to interconnected networks supporting priority		
	(including the PSTN) and in the terminating network.		
4 Priority Radio	When a Priority Service call encounters a "no radio available"	Not supported	
Resource Queuing	condition in the call path involving an access or egress air-		
ŭ	interface, or both, and,		
	at call origination, and upon recognition of the Priority Service		
	dialing pattern, the Priority Service call is queued in the cell		
	serving the calling party and processed for the next available		
	radio channel in that cell in accordance with the caller's		
	priority level and call initiation time.		
	at call termination upon recognition of a priority call indication		
	in an incoming call, the Priority Service call is gueued in the		
	cell serving the called party and processed for the next		
	available radio channel in that cell in accordance with the		
	call's priority level and arrival time.		
5 Priority Level	The subscriber should be assigned one of <i>n</i> priority levels.	Partially supported	Ten (0-9) randomly allocated Access Classes.
	Priority levels are defined as 1, 2, 3,,n, with 1 being the		Five (11-15) special classes. Enumeration of
	highest priority level and n being the lowest priority level.		special classes is not meant as a priority
			sequence. Priority Service priority levels could
			map to special Access Classes.
6 Invocation on	Priority Service is invoked only when requested and an idle	Not supported	
Demand	voice or traffic channel required for an origination request is		
	not available.		
7 Applicability to	Priority Service shall be applicable to voice and data	Supported	
Telecommunications	telecommunications services that require a voice or traffic		
Services	channel assignment.		
8 Authorization	A subscriber invoking Priority Service on call origination is	Supported	Access Classes stored in the SIM.
	authorized based on the caller's subscription. It should also		
	be possible for an additional second level of authentication		
	(e.g., by the use of PIN) to identify that the user is authorized		
	to make a priority call. In this case, authorization of the		

	subscriber may be realized by the usage of a PIN.		
9 Priority Service	Priority Service is manually requested by adding on the Priority	Not supported	
10 Roaming	Priority Service shall be supported during roaming when the roaming network supports Priority Service.	Partially supported	Access classes 0-9 pertain to <i>Home and Visited</i> <i>PLMNs.</i> Access classes 11 and 15 pertain to <i>Home</i> <i>PLMN only.</i> Access classes 12, 13, and 14 pertain to <i>Home</i> <i>and Visited PLMNs</i> <u>of home country only</u> .
11 Handover	Priority Service shall be supported during handover.	Not supported	
12 Priority Service charging data record	The system should record the following Priority Service charging data information, in addition to non-Priority Service CDR information: Priority Service invocation attempts, Call legs (origination and/or termination) on which Priority Service was used to gain access to the radio channel. Recording of appropriate Priority Service information.	Not supported	
<u>13 Priority Trunk</u> Queuing	Priority Service shall be able to support queuing of Priority Service calls for trunk resources.	Not supported	

6 Change in Clause 6.2.2

Table 5: eMLPP Gap Analysis

Priority Service Requirement Item	Description	eMLPP Support	Comments
1 Priority Call Origination	The user should receive priority access to voice or traffic channels on call origination.	Supported	Based on subscribed priority level
2 Priority Call Termination	The user should receive priority call termination.	Supported	Based on priority level of calling party
3 Priority Progression	The user should receive priority call treatment/progression through the mobile network(s). A priority call should be given higher priority over normal calls in the originating mobile network, to interconnected networks supporting priority (including the PSTN) and in the terminating network.	Supported	Requires interworking with ISDN MLPP
4 Priority <u>Radio Resource</u> Queuing	When a Priority Service call encounters a "no radio available" condition in the call path involving an access or egress air-interface, or both, and, <u>at call origination</u> , and upon recognition of the Priority Service dialing pattern, the Priority Service call is queued in the cell serving the calling party and processed for the next available radio channel in that cell in accordance with the caller's priority level and call initiation time. <u>at call termination</u> upon recognition of a priority call indication in an incoming call, the Priority Service call is queued in the cell serving the called party and processed for the next available radio channel in that cell in accordance with the call's priority level and arrival time.	Partially Supported	Priority levels with no pre-emption capability allocated shall only have queuing priority 22.067, ch 4. Note: BSS implementations should have internal functionality to handle signaling channels overload, however in case of complete congestion there may not be way to guarantee priority access to network, however due to large capacity of paging and random access channels the complete overload of signaling channels very rare and thus is not likely to be the bottle neck.
5 Priority Level	The subscriber should be assigned one of n priority levels. Priority levels are defined as 1, 2, 3,, n , with 1 being the highest priority level and n being the lowest priority level.	Partially supported	Seven priority levels (with five available for subscription). Priority Service priority levels could map to eMLPP priority levels.
6 Invocation on Demand	Priority Service is invoked only when requested and an idle voice or traffic channel required for an origination request is not available.	Supported	If the user has an eMLPP subscription, the call shall have the priority level selected by the user at set-up or the priority level predefined by the subscriber as default priority level by registration.
7 Applicability to Telecommunications Services	Priority Service shall be applicable to voice and data telecommunications services that require a voice or traffic channel assignment.	Supported	eMLPP is a supplementary service and shall be provided to a subscriber for all basic services subscribed to and for which eMLPP applies.
8 Authorization	A subscriber invoking Priority Service on call origination is authorized based on the caller's subscription. It should also be possible for an additional second level of authentication (e.g., by the use of PIN) to identify that the user is authorized to make a priority call. In this case, authorization of the subscriber may be realized by the usage of a PIN.	Supported	Priority level stored in the SIM.

9 Priority Service service	Priority Service is manually requested by adding on the Priority	Partially supported	The exact MMI proposed is not supported.
code	Service service code to the origination request.		The MMI supported by eMLPP is specified in
			22.030. The service code is 75.
10 Roaming	Priority Service shall be supported during roaming when the	Supported	eMLPP is applicable in case of roaming, if
	roaming network supports Priority Service.		supported by the related networks.
11 Handover	Priority Service shall be supported during handover.	Partially supported	When pre-emption applies, at handover to a
			congested cell, higher priority calls shall replace
			those of the lowest priority. The pre-empted user
			shall receive an indication for congestion as
12 Drigrity Sonvice observing	The system should record the following Drierity Service	Supported	TS 22.067 ab 5.11 The utilized precedence level
data record	charging data information in addition to non-Priority	Supported	shall be able to be extracted from the event
	Service CDR information:		records if different from the default precedence
	Priority Service invocation attempts.		level.
	Call legs (origination and/or termination) on which Priority		
	Service was used to gain access to the radio channel.		
	Recording of appropriate Priority Service information.		
13 Priority Trunk Queuing	Priority Service shall be able to support queuing of Priority	Not supported	eMLPP Stage 2, TS 23.067 ch 4, items c. and d.
	Service calls for trunk resources.		refer to "contention in gaining terrestrial
			resources," which may be interpreted as referring
			to Trunk Queuing. However, neither the Stage 1
			additional specification associated with trunk
			auditional specification associated with truth
			<u>queung.</u>
	End of Change in C	lause 6.2.2	

Change in Clause 6.3.2

Table 6: SIM Gap Analysis

Priority Service Requirement Item	Description	SIM Support	Comments
1 Priority Call Origination	The user should receive priority access to voice or traffic channels on call origination.	Supported	
2 Priority Call Termination	The user should receive priority call termination.	Supported	
3 Priority Progression	The user should receive priority call	Not supported	
	treatment/progression through the mobile network(s). A		
	priority call should be given higher priority over normal		
	calls in the originating mobile network, to interconnected		
	networks supporting priority (including the PSTN) and in		
	the terminating network.		
4 Priority Radio Resource	When a Priority Service call encounters a "no radio	Not supported	
Queuing	available" condition in the call path involving an access		
	or egress air-interface, or both, <u>and</u> ,		
	at call origination, and upon recognition of the Priority		
	Service dialing pattern, the Priority Service call is queued		
	in the cell serving the calling party and processed for the		
	next available radio channel in that cell in accordance		
	with the caller's priority level and call initiation time.		
	at call termination upon recognition of a priority call		
	indication in an incoming call, the Priority Service call is		
	queued in the cell serving the called party and processed		
	for the next available radio channel in that cell in		
5 Deizeite Laurel	accordance with the call's priority level and arrival time.	Deutielle europeete d	
5 Priority Level	I ne subscriber should be assigned one of <i>n</i> priority	Partially supported	Ten (0-9) randomly allocated Access Classes.
	levels. Priority levels are defined as 1, 2, 3,, <i>n</i> , with 1		Five (11-15) special classes. Enumeration of
	priority level		special classes is not meant as a phonty
	phonty level.		Access Classes
6 Invegation on Domand	Priority Service is invoked only when requested and an	Dartially Supported	Access Classes.
6 Invocation on Demand	idle voice or traffic chappel required for an origination	Farilally Supported	needs to make a priority call
	request is not available		needs to make a phonty call.
7 Applicability to	Priority Service shall be applicable to voice and data	Supported	
Telecommunications Services	telecommunications services that require a voice or	Supported	
	traffic channel assignment		
8 Authorization	A subscriber invoking Priority Service on call origination	Supported	Access Classes stored in the SIM
o / Mullonzulon	is authorized based on the caller's subscription. It should	Capponda	
	also be possible for an additional second level of		
	authentication (e.g., by the use of PIN) to identify that the		
	user is authorized to make a priority call UE. In this case.		
	authorization of the subscriber may be realized by the		

	usage of a PIN.							
9 Priority Service service	Priority Service is manually requested by adding on the	Not supported						
code	Priority Service service code to the origination request.							
10 Roaming	Priority Service shall be supported during roaming when the roaming network supports Priority Service.	Partially supported	Access classes 0-9 pertain to <i>Home and Visited</i> <i>PLMNs</i> . Access classes 11 and 15 pertain to <i>Home</i> <i>PLMN only</i> . Access classes 12, 13, and 14 pertain to <i>Home</i> <i>and Visited PLMNs <u>of home country only</u></i> .					
11 Handover	Priority Service shall be supported during handover.	Not supported						
12 Priority Service charging data record	The system should record the following Priority Service charging data information, in addition to non-Priority Service CDR information: Priority Service invocation attempts, Call legs (origination and/or termination) on which Priority Service was used to gain access to the radio channel. Recording of appropriate Priority Service information.	Not supported						
13 Priority Trunk Queuing	Priority Service shall be able to support queuing of	Not supported						
	Priority Service calls for trunk resources.							
End of Change in Clause 6.3.2								

Change in Clause 6.4.2

Table 7: Priority Information Element Gap Analysis

Priority Service Requirement Item	Description	PIE support	Comments
1 Priority Call Origination	The user should receive priority access to voice or traffic channels on call origination.	Supported	
2 Priority Call Termination	The user should receive priority call termination.	Supported	
3 Priority Progression	The user should receive priority call treatment/progression through the mobile network(s). A priority call should be given higher priority over normal calls in the originating mobile network, to interconnected networks supporting priority (including the PSTN) and in	Not supported/vendor specific	Vendor specific functionality is needed to set priorities for each leg. This may not be supported in all interfaces or some nodes on path may not have needed functionality.
4 Priority <u>Radio Resource</u> Queuing	the terminating network. When a Priority Service call encounters a "no radio available" condition in the call path involving an access or egress air-interface, or both, <u>and</u> , <u>at call origination</u> , and upon recognition of the Priority Service dialing pattern, the Priority Service call is queued in the cell serving the calling party and processed for the next available radio channel in that cell in accordance with the caller's priority level and call initiation time. <u>at call termination</u> upon recognition of a priority call indication in an incoming call, the Priority Service call is queued in the cell serving the called party and processed for the next available radio channel in that cell in accordance with the call's priority level and arrival time.	Supported	
5 Priority Level	The subscriber should be assigned one of n priority levels. Priority levels are defined as 1, 2, 3,, n , with 1 being the highest priority level and n being the lowest priority level.	Vendor specific	MMI used needs to be recognized by number analysis.
6 Invocation on Demand	Priority Service is invoked only when requested and an idle voice or traffic channel required for an origination request is not available.	Vendor specific	MMI used needs to be recognized by number analysis.
7 Applicability to Telecommunications Services	Priority Service shall be applicable to voice and data telecommunications services that require a voice or traffic channel assignment.	Supported	
8 Authorization	A subscriber invoking Priority Service on call origination is authorized based on the caller's subscription. It should also be possible for an additional second level of authentication (e.g., by the use of PIN) to identify that the user is authorized to make a priority call. In this case, authorization of the subscriber may be realized by the usage of a PIN.	Vendor specific	MSC has various information from HLR like Subscriber category, IMSI, etc. that can be used to identify subscription.

9 Priority Service service code	Priority Service is manually requested by adding on the Priority Service service code to the origination request.	Vendor specific	MMI used needs to be recognized by number analysis.			
10 Roaming	Priority Service shall be supported during roaming when	Not supported /				
	the roaming network supports Priority Service.	Vendor specific				
11 Handover	Priority Service shall be supported during handover.	Supported				
12 Priority Service charging data record	The system should record the following Priority Service charging data information, in addition to non-Priority Service CDR information: Priority Service invocation attempts, Call legs (origination and/or termination) on which Priority Service was used to gain access to the radio channel. Recording of appropriate Priority Service information.	Vendor specific				
<u>13 Priority Trunk Queuing</u>	Priority Service shall be able to support queuing of Priority Service calls for trunk resources.	Not supported				
End of Change in Clause 6.4.2						

Change in Clause 7

7 Conclusions

The objectives of this Feasibility Study for Priority Service were to:

- 1. outline the high-level technical requirements for Priority Service,
- 2. identify existing 3GPP capabilities related to Priority Service,
- 3. perform a gap analysis to determine the extent existing 3GPP specifications can support these Priority Services requirements.

The following high-level requirements were identified to support Priority Service:

- 1 Priority Call Origination,
- 2 Priority Call Termination,
- 3 Priority Progression,
- 4 Priority <u>Radio Resource</u> Queuing,
- 5 Priority Level,
- 6 Invocation on Demand,
- 7 Applicability to Telecommunications Services,
- 8 Authorization,
- 9 Priority Service service code,
- 10 Priority Service supported during roaming,
- 11 Priority Service supported during handover,
- 12 Priority Service charging data record.
- 13 Priority Trunk Queuing.

The following primary 3GPP capabilities were identified to support Priority Service:

- 1 Service Accessibility,
- 2 Enhanced Multi-Level Precedence and Pre-emption (eMLPP),
- 3 Subscriber Identity Module (SIM) Specifications,
- 4 Priority Information Element.

The following table summarizes the mapping of the high-level requirements to 3GPP Specifications:

High-level Requirement		Specifica	ntion	
	3G TS 22.011,	3G TS 22.067,	3G TS 11.11,	3G TS 08.08,
	Service	23.067, 24.067,	SIM	25.413, PIE
	Accessibility	eMLPP		
R.1 – Priority Call	(= Supported)	\checkmark		
Origination				
R.2 – Priority Call	\checkmark	\checkmark		
Termination				
R.3 – Priority Progression	NS (=Not		NS	NS or VS
	Supported)			(=vendor
				specific)
R.4 – Priority Radio	NS	PS (= Partially	NS	
Resource Queuing		Supported)		
R.5 – Priority Level	PS	PS	PS	VS
R.6 – Invocation on	NS	\checkmark	PS	VS
Demand				
R.7 – Applicability to		\checkmark	\checkmark	
Telecommunications				
Services				
R.8 – Authorization		\checkmark		VS
R.9 – Priority Service	NS	PS	NS	VS
service code				
R.10 – Roaming	PS	\checkmark	PS	NS/VS
R.11 – Handover	NS	PS	NS	
R.12 – Priority Service	NS	\checkmark	NS	VS
charging data record				
R.13 – Priority Trunk	NS	NS	<u>NS</u>	<u>NS</u>
Queuing				

Table 8: Mapping of High-level Priority Service Requirements to 3GPP Specifications

Based on the analysis in this Feasibility Study, most of the high-level requirements for Priority Service can be supported through the use of Access Control, eMLPP, A/Iu Priority element, and SIM-based capabilities. The "authorization by PIN" requirement could be supported by a handset-based solution and not a network-based solution.

End of Change in Clause 7

End of CR

								CR-Form-v7		
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For HELP on using this form, see bottom of this page or look at the pop-up text over the # symbols.										
Proposed change affects: UICC apps# ME Radio Access Network Core Network										
Title:	Changes	to Emerg	gency Calls	Interactio	ons					
Source:	€ <mark>SA1 (No</mark> r	rtel Netwo	orks)							
Work item code: a	PRIOR-F	S					Date:	€ <mark>24</mark>	/10/2002	
Category: ୨	€ F Use <u>one</u> of F (cou A (co B (ad C (fur D (ed Detailed ex be found in	the follow rection) rresponds dition of fe nctional mod itorial mod planations 3GPP <u>TR</u>	ing categorie to a correctio ature), polification of lification) of the above <u>21.900</u> .	es: on in an ea feature) e categorie	erlier re	eleas	Release: 8 Use <u>one</u> 0 2 e) R96 R97 R98 R99 Rel-4 Rel-5 Rel-6	f Carlor (GSI) (Rela (Rela (Rela (Rela (Rela (Rela (Rela (Rela	el-6 ollowing rele M Phase 2) ease 1996) ease 1997) ease 1998) ease 1999) ease 4) ease 5) ease 6)	eases:
Reason for chanc		larify the	requiremen	t related	to prie	ority	service and	emer		

Reason for change: ೫	I o clarify the requirement related to priority service and emergency calls interactions.							
Summary of change: #	Correction to the emergency calls feature interactions requirement, and minor editorial change to the call forwarding text.							
Consequences if % not approved:	Incorrect requirement.							
Clauses affected: #	5.5							
Other specs # affected:	Y N X Other core specifications # X Test specifications # X O&M Specifications #							
Other comments: #								

Change in Clause 5.5

5.5 Features Interactions

Call Waiting

Priority Service call users will not receive an incoming call indication while the call is being queued.

Call forwarding and call re-direction

<u>Service</u> Users will not be allowed to invoke Priority Service calls through call forwarding or re-direction. (E.g., "*SC + termination address" as a forwarded-to number, or Priority Service invocation through other re-direction services, such as IN DP12 Redirection etc.)

Call Origination Restrictions

Priority Service shall override Call origination Restrictions for Barring of Outgoing Calls (BAOC), Barring of outgoing International Calls (BOIC) and Barring of Outgoing International Calls except to Home PLMN Country (BOIC-exHC), as a network option. Note: This may be necessary only for the PIN-based solution.

eMLPP (USA regional requirement)

Priority Service call attempt shall override any eMLPP priority levels that may be received from eMLPP capable mobile phones. That is Priority Service users shall be able to only invoke their assigned priority level. If a Priority Service user has an eMLPP capable phone and attempts to use an eMLPP priority level in addition to Priority Service *SC dialing, the eMLPP priority level request will be ignored by the network.

Prepaid service

Priority Service applies only to post-paid calls. Users shall not be allowed to subscribe to Priority Service and Prepaid.

Emergency Calls (USA regional requirement)

There is no interaction between Priority Service and emergency calls. If $SC \pm [emergency call number]$ is dialed the call fails will receive radio traffic channel priority access treatment based on the service user's priority level. If a non-service user dials SC + [emergency call number], the call is denied.

End of Change in Clause 5.5

End of CR

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Source: ೫	SA1 (Nor	<mark>tel Netwo</mark>	<mark>rks)</mark>							
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Reason for chang	e: ₩ To ir eML	nclude a h PP in the	igh level re same netw	equiremen ork.	t for th	ne co	existence of	Priori	ity Service	e and
Summary of chan	ge:	tion of a h	nigh level re	equiremen	t for tl	he co	existence of	Prior	ity Service	e and

	eMLPP in the same network.
Consequences if not approved:	# The additional capability will not be assessed.
Clauses affected:	¥ 4.14 (new), 6.1.2, 6.2.2, 6.3.2, 6.4.2, 7
Other specs affected:	Y N X Other core specifications % X Test specifications % X O&M Specifications
Other comments:	¥

Clause 4.14 (new)

2

4.14 Coexistence with eMLPP

As a service provider option, it shall be possible to offer Priority Service and eMLPP within the same network, but not to the same user.

End of Clause 4.14

Change in Clause 6.1.2

Table 2: Service Accessibility Gap Analysis

Priority Service	Description	Service	Comments
Requirement item		Support	
1 Priority Call Origination	The user should receive priority access to voice or traffic channels on call origination.	Supported	Using appropriate Access Class(es) to prevent access attempts
2 Priority Call Termination	The user should receive priority call termination.	Supported	Using appropriate Access Class(es) to prevent response to pages
3 Priority Progression	The user should receive priority call treatment/progression through the mobile network(s). A priority call should be given higher priority over normal calls in the originating mobile network, to interconnected networks supporting priority (including the PSTN) and in the terminating network.	Not supported	
4 Priority Queuing	When a Priority Service call encounters a "no radio available" condition in the call path involving an access or egress air- interface, or both, <u>and</u> , <u>at call origination</u> , and upon recognition of the Priority Service dialing pattern, the Priority Service call is queued in the cell serving the calling party and processed for the next available radio channel in that cell in accordance with the caller's priority level and call initiation time. <u>at call termination</u> upon recognition of a priority call indication in an incoming call, the Priority Service call is queued in the cell serving the called party and processed for the next available radio channel in that cell in accordance with the call's priority level and call initiation time.	Not supported	
5 Priority Level	The subscriber should be assigned one of n priority levels. Priority levels are defined as 1, 2, 3,, n , with 1 being the highest priority level and n being the lowest priority level.	Partially supported	Ten (0-9) randomly allocated Access Classes. Five (11-15) special classes. Enumeration of special classes is not meant as a priority sequence. Priority Service priority levels could map to special Access Classes.
6 Invocation on Demand	Priority Service is invoked only when requested and an idle voice or traffic channel required for an origination request is not available.	Not supported	
7 Applicability to Telecommunications Services	Priority Service shall be applicable to voice and data telecommunications services that require a voice or traffic channel assignment.	Supported	
8 Authorization	A subscriber invoking Priority Service on call origination is authorized based on the caller's subscription. It should also be possible for an additional second level of authentication (e.g., by the use of PIN) to identify that the user is authorized to make a priority call. In this case, authorization of the	Supported	Access Classes stored in the SIM.

	subscriber may be realized by the usage of a PIN.		
9 Priority Service service code	Priority Service is manually requested by adding on the Priority Service service code to the origination request.	Not supported	
10 Roaming	Priority Service shall be supported during roaming when the roaming network supports Priority Service.	Partially supported	Access classes 0-9 pertain to <i>Home and Visited</i> <i>PLMNs</i> . Access classes 11 and 15 pertain to <i>Home</i> <i>PLMN only</i> . Access classes 12, 13, and 14 pertain to <i>Home</i> <i>and Visited PLMNs</i> <u>of home country only</u> .
11 Handover	Priority Service shall be supported during handover.	Not supported	
12 Priority Service charging data record	The system should record the following Priority Service charging data information, in addition to non-Priority Service CDR information: Priority Service invocation attempts, Call legs (origination and/or termination) on which Priority Service was used to gain access to the radio channel. Recording of appropriate Priority Service information.	Not supported	
<u>14 Coexistence with</u> <u>eMLPP</u>	As a service provider option, it shall be possible to offer Priority Service and eMLPP within the same network, but not to the same user.	Not supported	

End of Change in Clause 6.1.2

⁵ Change in Clause 6.2.2

Table 5: eMLPP Gap Analysis

Priority Service Requirement Item	Description	eMLPP Support	Comments
1 Priority Call Origination	The user should receive priority access to voice or traffic channels on call origination.	Supported	Based on subscribed priority level
2 Priority Call Termination	The user should receive priority call termination.	Supported	Based on priority level of calling party
3 Priority Progression	The user should receive priority call treatment/progression through the mobile network(s). A priority call should be given higher priority over normal calls in the originating mobile network, to interconnected networks supporting priority (including the PSTN) and in the terminating network.	Supported	Requires interworking with ISDN MLPP
4 Priority Queuing	When a Priority Service call encounters a "no radio available" condition in the call path involving an access or egress air-interface, or both, and, at call origination, and upon recognition of the Priority Service dialing pattern, the Priority Service call is queued in the cell serving the calling party and processed for the next available radio channel in that cell in accordance with the caller's priority level and call initiation time. at call termination upon recognition of a priority call indication in an incoming call, the Priority Service call is queued in the cell serving the called party and processed for the next available radio channel in that cell in accordance with the call's priority level and arrival time.	Partially Supported	Priority levels with no pre-emption capability allocated shall only have queuing priority 22.067, ch 4. Note: BSS implementations should have internal functionality to handle signaling channels overload, however in case of complete congestion there may not be way to guarantee priority access to network, however due to large capacity of paging and random access channels the complete overload of signaling channels very rare and thus is not likely to be the bottle neck.
5 Priority Level	The subscriber should be assigned one of n priority levels. Priority levels are defined as 1, 2, 3,, n , with 1 being the highest priority level and n being the lowest priority level.	Partially supported	Seven priority levels (with five available for subscription). Priority Service priority levels could map to eMLPP priority levels.
6 Invocation on Demand	Priority Service is invoked only when requested and an idle voice or traffic channel required for an origination request is not available.	Supported	If the user has an eMLPP subscription, the call shall have the priority level selected by the user at set-up or the priority level predefined by the subscriber as default priority level by registration.
7 Applicability to Telecommunications Services	Priority Service shall be applicable to voice and data telecommunications services that require a voice or traffic channel assignment.	Supported	eMLPP is a supplementary service and shall be provided to a subscriber for all basic services subscribed to and for which eMLPP applies.
8 Authorization	A subscriber invoking Priority Service on call origination is authorized based on the caller's subscription. It should also be possible for an additional second level of authentication (e.g., by the use of PIN) to identify that the user is authorized to make a priority call. In this case, authorization of the subscriber may be realized by the usage of a PIN.	Supported	Priority level stored in the SIM.

9 Priority Service service code	Priority Service is manually requested by adding on the Priority Service service code to the origination request.	Partially supported	The exact MMI proposed is not supported. The MMI supported by eMLPP is specified in 22.030. The service code is 75.		
10 Roaming	Priority Service shall be supported during roaming when the roaming network supports Priority Service.	Supported	eMLPP is applicable in case of roaming, if supported by the related networks.		
11 Handover	Priority Service shall be supported during handover.	Partially supported	When pre-emption applies, at handover to a congested cell, higher priority calls shall replace those of the lowest priority. The pre-empted user shall receive an indication for congestion as defined in GSM 02.40.		
12 Priority Service charging	The system should record the following Priority Service	Supported	TS 22.067 ch 5.11. The utilized precedence level		
data record	charging data information, in addition to non-Priority		shall be able to be extracted from the event		
	Service CDR information:		records if different from the default precedence		
	Call legs (origination and/or termination) on which Priority		level.		
	Service was used to gain access to the radio channel.				
	Recording of appropriate Priority Service information.				
14 Coexistence with eMLPP	As a service provider option, it shall be possible to offer	Not supported			
	Priority Service and eMLPP within the same network, but				
	not to the same user.				
End of Change in Clause 6.2.2					

Change in Clause 6.3.2

Table 6: SIM Gap Analysis

Priority Service Requirement Item	Description	SIM Support	Comments
1 Priority Call Origination	The user should receive priority access to voice or traffic channels on call origination.	Supported	
2 Priority Call Termination	The user should receive priority call termination.	Supported	
3 Priority Progression	The user should receive priority call	Not supported	
, , ,	treatment/progression through the mobile network(s). A		
	priority call should be given higher priority over normal		
	calls in the originating mobile network, to interconnected		
	networks supporting priority (including the PSTN) and in		
	the terminating network.		
4 Priority Queuing	When a Priority Service call encounters a "no radio	Not supported	
	available" condition in the call path involving an access		
	or egress air-interface, or both, <u>and</u> ,		
	at call origination, and upon recognition of the Priority		
	Service dialing pattern, the Priority Service call is queued		
	in the cell serving the calling party and processed for the		
	next available radio channel in that cell in accordance		
	with the caller's priority level and call initiation time.		
	at call termination upon recognition of a priority call		
	indication in an incoming call, the Priority Service call is		
	queued in the cell serving the called party and processed		
	for the next available radio channel in that cell in		
5 Drienity Level	The subscriber should be assigned one of a priority	Dentially as manufact	Ten (0.0) rendemly allocated Access Classes
5 Priority Level	I ne subscriber should be assigned one of <i>n</i> priority	Partially supported	Ten (0-9) randomly allocated Access Classes.
	levels. Priority levels are defined as 1, 2, 3,, <i>n</i> , with 1		Five (11-15) special classes. Enumeration of
	priority level		special classes is not mean as a phonty
	phonty level.		Access Classes
6 Invegation on Domand	Priority Service is invoked only when requested and an	Dartially Supported	The upper cap insert a special SIM when he/she
6 Invocation on Demand	idle voice or traffic chappel required for an origination	Farilally Supported	needs to make a priority call
	request is not available		needs to make a pronty can.
7 Applicability to	Priority Service shall be applicable to voice and data	Supported	
Telecommunications Services	telecommunications services that require a voice or	oupponed	
	traffic channel assignment		
8 Authorization	A subscriber invoking Priority Service on call origination	Supported	Access Classes stored in the SIM
o / Mullonzulon	is authorized based on the caller's subscription. It should	Cappontoa	
	also be possible for an additional second level of		
	authentication (e.g., by the use of PIN) to identify that the		
	user is authorized to make a priority call UE. In this case.		
	authorization of the subscriber may be realized by the		

9 Priority Service service	Priority Service is manually requested by adding on the Priority Service service code to the origination request.	Not supported			
code	Priority Service service code to the origination request.				
COUC					
10 Roaming	Priority Service shall be supported during roaming when the roaming network supports Priority Service.	Partially supported	Access classes 0-9 pertain to <i>Home and Visited</i> <i>PLMNs</i> . Access classes 11 and 15 pertain to <i>Home</i> <i>PLMN only</i> . Access classes 12, 13, and 14 pertain to <i>Home</i> <i>and Visited PLMNs</i> <u>of home country only</u> .		
11 Handover	Priority Service shall be supported during handover.	Not supported			
12 Priority Service charging data record 14 Coexistence with eMLPP	The system should record the following Priority Service charging data information, in addition to non-Priority Service CDR information: Priority Service invocation attempts, Call legs (origination and/or termination) on which Priority Service was used to gain access to the radio channel. Recording of appropriate Priority Service information. <u>As a service provider option, it shall be possible to offer</u> <u>Priority Service and eMLPP within the same network, but not to the same user.</u>	Not supported			
End of Change in Clause 6.3.2					

Change in Clause 6.4.2

Table 7: Priority Information Element Gap Analysis

Priority Service Requirement Item	Description	PIE support	Comments
1 Priority Call Origination	The user should receive priority access to voice or traffic channels on call origination.	Supported	
2 Priority Call Termination	The user should receive priority call termination.	Supported	
3 Priority Progression	The user should receive priority call	Not	Vendor specific functionality is needed to set
	treatment/progression through the mobile network(s). A	supported/vendor	priorities for each leg. This may not be supported
	priority call should be given higher priority over normal	specific	in all interfaces or some nodes on path may not
	calls in the originating mobile network, to interconnected		have needed functionality.
	networks supporting priority (including the PSTN) and in		
	the terminating network.		
4 Priority Queuing	When a Priority Service call encounters a "no radio	Supported	
	available" condition in the call path involving an access		
	or egress air-interface, or both, <u>and</u> ,		
	at call origination, and upon recognition of the Priority		
	Service dialing pattern, the Priority Service call is queued		
	in the cell serving the calling party and processed for the		
	next available radio channel in that cell in accordance		
	with the caller's priority level and call initiation time.		
	at call termination upon recognition of a priority call		
	Indication in an incoming call, the Priority Service call is		
	for the payt evoluble radio channel in that call in		
	for the next available radio channel in that cell in		
5 Priority Level	The subscriber should be assigned one of <i>n</i> priority	Vendor specific	MMI used peeds to be recognized by number
	levels. Priority levels are defined as 1, 2, 3, <i>n</i> , with 1	Vendor Specific	analysis
	being the highest priority level and n being the lowest		
	priority level.		
6 Invocation on Demand	Priority Service is invoked only when requested and an	Vendor specific	MMI used needs to be recognized by number
	idle voice or traffic channel required for an origination		analysis.
	request is not available.		,
7 Applicability to	Priority Service shall be applicable to voice and data	Supported	
Telecommunications Services	telecommunications services that require a voice or		
	traffic channel assignment.		
8 Authorization	A subscriber invoking Priority Service on call origination	Vendor specific	MSC has various information from HLR like
	is authorized based on the caller's subscription. It should		Subscriber category, IMSI, etc. that can be used
	also be possible for an additional second level of		to identify subscription.
	authentication (e.g., by the use of PIN) to identify that the		
	user is authorized to make a priority call. In this case,		
	authorization of the subscriber may be realized by the		
	usage of a PIN.	1	

9 Priority Service service	Priority Service is manually requested by adding on the	Vendor specific	MMI used needs to be recognized by number			
10 Roaming	Priority Service shall be supported during roaming when the roaming network supports Priority Service.	Not supported / Vendor specific				
11 Handover	Priority Service shall be supported during handover.	Supported				
12 Priority Service charging data record	The system should record the following Priority Service charging data information, in addition to non-Priority Service CDR information: Priority Service invocation attempts, Call legs (origination and/or termination) on which Priority Service was used to gain access to the radio channel. Recording of appropriate Priority Service information.	Vendor specific				
14 Coexistence with eMLPP	As a service provider option, it shall be possible to offer Priority Service and eMLPP within the same network, but not to the same user.	Not supported				
End of Change in Clause 6.4.2						

Change in Clause 7

7 Conclusions

The objectives of this Feasibility Study for Priority Service were to:

- 1. outline the high-level technical requirements for Priority Service,
- 2. identify existing 3GPP capabilities related to Priority Service,
- 3. perform a gap analysis to determine the extent existing 3GPP specifications can support these Priority Services requirements.

The following high-level requirements were identified to support Priority Service:

- 1 Priority Call Origination,
- 2 Priority Call Termination,
- 3 Priority Progression,
- 4 Priority Queuing,
- 5 Priority Level,
- 6 Invocation on Demand,
- 7 Applicability to Telecommunications Services,
- 8 Authorization,
- 9 Priority Service service code,
- 10 Priority Service supported during roaming,
- 11 Priority Service supported during handover,
- 12 Priority Service charging data record.-
- 14 Coexistence with eMLPP

The following primary 3GPP capabilities were identified to support Priority Service:

- 1 Service Accessibility,
- 2 Enhanced Multi-Level Precedence and Pre-emption (eMLPP),
- 3 Subscriber Identity Module (SIM) Specifications,
- 4 Priority Information Element.

The following table summarizes the mapping of the high-level requirements to 3GPP Specifications:

High-level Requirement	Specification					
	3G TS 22.011,	3G TS 22.067,	3G TS 11.11,	3G TS 08.08,		
	Service	23.067, 24.067,	SIM	25.413, PIE		
	Accessibility	eMLPP				
R.1 – Priority Call Origination	(= Supported)	\checkmark	\checkmark	\checkmark		
R.2 – Priority Call	\checkmark		\checkmark			
Termination						
R.3 – Priority Progression	NS (=Not		NS	NS or VS		
	Supported)			(=vendor		
				specific)		
R.4 – Priority Queuing	NS	PS (= Partially	NS	\checkmark		
		Supported)				
R.5 – Priority Level	PS	PS	PS	VS		
R.6 – Invocation on	NS		PS	VS		
Demand						
R.7 – Applicability to	\checkmark					
Telecommunications						
Services						
R.8 – Authorization	\checkmark		\checkmark	VS		
R.9 – Priority Service	NS	PS	NS	VS		
service code						
R.10 – Roaming	PS		PS	NS/VS		
R.11 –Handover	NS	PS	NS	\checkmark		
R.12 – Priority Service	NS		NS	VS		
charging data record						
R.14 - Coexistence with	NS	NS	NS	NS		
eMLPP						

Table 8: Mapping of High-level Priority Service Requirements to 3GPP Specifications

End of CR

Other comments: #

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Reason for change: * To clarify the high level requirement given in priority call origination and termination sections.										

Summary of change: ≋	Clarification text added to section 4.1 priority call origination and section 4.2 priority call termination to indicate that the call is given priority treatment only if the call has been setup using priority service dialling procedure (i.e, SC + termination address). Also, Tables 2, 5, 6, & 7 are updated accordingly.				
Consequences if % not approved:	Unclear requirements.				
Clauses affected: #	4.1, 4.2, 6.1.2, 6.2.2, 6.3.2, 6.4.2.				
Other specs % affected:	Y N X Other core specifications # X Test specifications # X O&M Specifications •				

Change in Clause 4.1

4.1 Priority Call Origination

<u>A call shall receive priority treatment</u> The Priority Service user shall receive (priority access to voice or traffic channels) on the origination side, call origination when the call is setup by a Service User using the priority service dialling procedure described in section 4.9.

End of Change in Clause 4.1

Change in Clause 4.2

4.2 Priority Call Termination

<u>A call shall receive priority treatment</u> The Priority Service user shall receive (priority access to voice or traffic channels) on the terminating side, call termination when the call is setup by a Service User using the priority service dialling procedure described in section 4.9</u>.

End of Change in Clause 4.2

4.9 Priority Service Service Code

Priority Service is manually requested by adding on the Priority Service service code (SC) to the origination request, as



Change in Clause 6.1.2

3

Priority Service Description Service Comments **Requirement Item** Accessibility Support Priority Call A call shall receive priority treatment (priority access to Using appropriate Access Class(es) to prevent Supported Origination voice or traffic channels) on the originating side, when the access attempts call is setup by a Service User using the priority service dialling procedure described in section 4.9. The user should receive priority access to voice or traffic channels on call origination. 2 Priority Call A call shall receive priority treatment (priority access to Supported Using appropriate Access Class(es) to prevent Termination voice or traffic channels) on the terminating side, when the response to pages call is setup by a Service User using the priority service dialling procedure described in section 4.9. The user should receive priority call termination. 3 Priority Progression The user should receive priority call treatment/progression Not supported through the mobile network(s). A priority call should be given higher priority over normal calls in the originating mobile network, to interconnected networks supporting priority (including the PSTN) and in the terminating network. 4 Priority Queuing When a Priority Service call encounters a "no radio available" Not supported condition in the call path involving an access or egress airinterface, or both, and, at call origination, and upon recognition of the Priority Service dialing pattern, the Priority Service call is queued in the cell serving the calling party and processed for the next available radio channel in that cell in accordance with the caller's priority level and call initiation time. at call termination upon recognition of a priority call indication in an incoming call, the Priority Service call is gueued in the cell serving the called party and processed for the next available radio channel in that cell in accordance with the call's priority level and arrival time. 5 Priority Level The subscriber should be assigned one of *n* priority levels. Partially supported Ten (0-9) randomly allocated Access Classes. Priority levels are defined as 1, 2, 3,...,n, with 1 being the Five (11-15) special classes. Enumeration of highest priority level and n being the lowest priority level... special classes is not meant as a priority

Table 2: Service Accessibility Gap Analysis

			sequence. Priority Service priority levels could map to special Access Classes.
6 Invocation on Demand	Priority Service is invoked only when requested and an idle voice or traffic channel required for an origination request is not available.	Not supported	
7 Applicability to Telecommunications Services	Priority Service shall be applicable to voice and data telecommunications services that require a voice or traffic channel assignment.	Supported	
8 Authorization	A subscriber invoking Priority Service on call origination is authorized based on the caller's subscription. It should also be possible for an additional second level of authentication (e.g., by the use of PIN) to identify that the user is authorized to make a priority call. In this case, authorization of the subscriber may be realized by the usage of a PIN.	Supported	Access Classes stored in the SIM.
9 Priority Service service code	Priority Service is manually requested by adding on the Priority Service service code to the origination request.	Not supported	
10 Roaming	Priority Service shall be supported during roaming when the roaming network supports Priority Service.	Partially supported	Access classes 0-9 pertain to <i>Home and Visited</i> <i>PLMNs</i> . Access classes 11 and 15 pertain to <i>Home</i> <i>PLMN only</i> . Access classes 12, 13, and 14 pertain to <i>Home</i> <i>and Visited PLMNs</i> <u>of home country only</u> .
11 Handover	Priority Service shall be supported during handover.	Not supported	
12 Priority Service charging data record	The system should record the following Priority Service charging data information, in addition to non-Priority Service CDR information: Priority Service invocation attempts, Call legs (origination and/or termination) on which Priority Service was used to gain access to the radio channel. Recording of appropriate Priority Service information.	Not supported	

End of Change in Clause 6.1.2

Change in Clause 6.2.2

Table 5: eMLPP Gap Analysis

	Priority Service Requirement Item	Description	eMLPP Support	Comments
	1 Priority Call Origination	A call shall receive priority treatment (priority access to voice or traffic channels) on the originating side, when the call is setup by a Service User using the priority service dialling procedure described in section 4.9. The user should receive priority access to voice or traffic channels on call origination.	Supported	Based on subscribed priority level
Ì	2 Priority Call Termination	A call shall receive priority treatment (priority access to voice or traffic channels) on the terminating side, when the call is setup by a Service User using the priority service dialling procedure described in section 4.9. The user should receive priority call termination.	Supported	Based on priority level of calling party
•	3 Priority Progression	The user should receive priority call treatment/progression through the mobile network(s). A priority call should be given higher priority over normal calls in the originating mobile network, to interconnected networks supporting priority (including the PSTN) and in the terminating network.	Supported	Requires interworking with ISDN MLPP
	4 Priority Queuing	When a Priority Service call encounters a "no radio available" condition in the call path involving an access or egress air-interface, or both, <u>and</u> , <u>at call origination</u> , and upon recognition of the Priority Service dialing pattern, the Priority Service call is queued in the cell serving the calling party and processed for the next available radio channel in that cell in accordance with the caller's priority level and call initiation time. <u>at call termination</u> upon recognition of a priority call indication in an incoming call, the Priority Service call is queued in the cell serving the called party and processed for the next available radio channel in that cell in accordance with the call's priority level and arrival time.	Partially Supported	Priority levels with no pre-emption capability allocated shall only have queuing priority 22.067, ch 4. Note: BSS implementations should have internal functionality to handle signaling channels overload, however in case of complete congestion there may not be way to guarantee priority access to network, however due to large capacity of paging and random access channels the complete overload of signaling channels very rare and thus is not likely to be the bottle neck.
	5 Priority Level	The subscriber should be assigned one of n priority levels. Priority levels are defined as 1, 2, 3,, n , with 1 being the highest priority level and n being the lowest priority level.	Partially supported	Seven priority levels (with five available for subscription). Priority Service priority levels could map to eMLPP priority levels.
	6 Invocation on Demand	Priority Service is invoked only when requested and an idle voice or traffic channel required for an origination request is not available.	Supported	If the user has an eMLPP subscription, the call shall have the priority level selected by the user at set-up or the priority level predefined by the subscriber as default priority level by registration.

7 Applicability to	Priority Service shall be applicable to voice and data	Supported	eMLPP is a supplementary service and shall be		
Telecommunications	telecommunications services that require a voice or traffic		provided to a subscriber for all basic services		
Services	channel assignment.		subscribed to and for which eMLPP applies.		
8 Authorization	A subscriber invoking Priority Service on call origination is authorized based on the caller's subscription. It should also be possible for an additional second level of authentication (e.g., by the use of PIN) to identify that the user is authorized to make a priority call. In this case, authorization of the subscriber may be realized by the usage of a PIN.	Supported	Priority level stored in the SIM.		
9 Priority Service service	Priority Service is manually requested by adding on the Priority	Partially supported	The exact MMI proposed is not supported.		
code	Service service code to the origination request.		The MMI supported by eMLPP is specified in		
			22.030. The service code is 75.		
10 Roaming	Priority Service shall be supported during roaming when the	Supported	eMLPP is applicable in case of roaming, if		
	roaming network supports Priority Service.		supported by the related networks.		
11 Handover	Priority Service shall be supported during handover.	Partially supported	When pre-emption applies, at handover to a congested cell, higher priority calls shall replace those of the lowest priority. The pre-empted user shall receive an indication for congestion as defined in GSM 02.40.		
12 Priority Service charging	The system should record the following Priority Service	Supported	TS 22.067 ch 5.11. The utilized precedence level		
data record	charging data information, in addition to non-Priority		shall be able to be extracted from the event		
	Service CDR information:		records if different from the default precedence		
	Priority Service invocation attempts,		level.		
	Call legs (origination and/or termination) on which Priority				
	Service was used to gain access to the radio channel.				
	Recording of appropriate Priority Service information.				
End of Change in Clause 6.2.2					

Change in Clause 6.3.2

Table 6: SIM Gap Analysis

	Priority Service Requirement Item	Description	SIM Support	Comments
1	Priority Call Origination	A call shall receive priority treatment (priority access to	Supported	
	, ,	voice or traffic channels) on the originating side, when		
		the call is setup by a Service User using the priority		
		service dialling procedure described in section 4.9.		
		The user should receive priority access to voice or traffic		
2	Priority Coll Termination	Channels on call origination.	Supported	
2	Phoney Call Termination	<u>A call shall receive priority treatment (priority access to</u>	Supported	
		voice or traffic channels) on the terminating side, when		
		the call is setup by a Service User using the priority		
		service dialling procedure described in section 4.9.		
		The user should receive priority call termination.		
3	Priority Progression	The user should receive priority call	Not supported	
		treatment/progression through the mobile network(s). A		
		priority call should be given higher priority over normal		
		calls in the originating mobile network, to interconnected		
		networks supporting priority (including the PSTN) and in		
		the terminating network.		
4	Priority Queuing	When a Priority Service call encounters a "no radio	Not supported	
		available" condition in the call path involving an access		
		or egress air-interface, or both, <u>and</u> ,		
		at call origination, and upon recognition of the Priority		
		Service dialing pattern, the Priority Service call is queued		
		In the cell serving the calling party and processed for the		
		next available radio channel in that cell in accordance		
		at call termination upon recognition of a priority call		
		at call termination upon recognition of a phonty call indication in an incoming call, the Priority Service call is		
		queued in the cell serving the called party and processed		
		for the next available radio channel in that cell in		
		accordance with the call's priority level and arrival time		
5	Priority Level	The subscriber should be assigned one of <i>n</i> priority	Partially supported	Ten (0-9) randomly allocated Access Classes.
Ĩ	,	levels. Priority levels are defined as $1, 2, 3,, n$, with 1		Five (11-15) special classes. Enumeration of
		being the highest priority level and n being the lowest		special classes is not meant as a priority
		priority level.		sequence. PS priority levels could map to special
				Access Classes.
6	Invocation on Demand	Priority Service is invoked only when requested and an	Partially Supported	The user can insert a special SIM when he/she
		idle voice or traffic channel required for an origination		needs to make a priority call.

	request is not available.					
7 Applicability to	Priority Service shall be applicable to voice and data	Supported				
Telecommunications Services	telecommunications services that require a voice or					
	traffic channel assignment.					
8 Authorization	A subscriber invoking Priority Service on call origination	Supported	Access Classes stored in the SIM.			
	is authorized based on the caller's subscription. It should					
	also be possible for an additional second level of					
	authentication (e.g., by the use of PIN) to identify that the					
	user is authorized to make a priority call UE. In this case,					
	authorization of the subscriber may be realized by the					
0 Priority Service convice	Usage of a Fill.	Not ourported				
9 FIGHTy Service service	Priority Service service code to the origination request	Not supported				
10 Roaming	Priority Service shall be supported during roaming when the	Partially supported	Access classes 0-9 pertain to Home and Visited			
To Roaming	roaming network supports Priority Service.	r artially supported	PLMNs.			
			Access classes 11 and 15 pertain to Home			
			PLMN only.			
			Access classes 12, 13, and 14 pertain to Home			
			and Visited PLMNs of home country only.			
11 Handover	Priority Service shall be supported during handover.	Not supported				
12 Priority Service charging	The system should record the following Priority Service	Not supported				
data record	charging data information, in addition to non-Priority					
	Service CDR information:					
	Priority Service invocation attempts,					
	Call legs (origination and/or termination) on which					
	Priority Service was used to gain access to the radio					
	Channel.					
	Recording of appropriate Priority Service information.					
End of Change in Clause 6.3.2						

Change in Clause 6.4.2

Table 7: Priority Information Element Gap Analysis

	Priority Service Requirement Item	Description	PIE support	Comments
	1 Priority Call Origination	A call shall receive priority treatment (priority access to voice or traffic channels) on the originating side, when	Supported	
		the call is setup by a Service User using the priority		
		service dialling procedure described in section 4.9.		
		The user should receive priority access to voice or traffic channels on call origination		
i -	2 Priority Call Termination	A call shall receive priority treatment (priority access to	Supported	
		voice or traffic channels) on the terminating side, when		
		the call is setup by a Service User using the priority		
		service dialling procedure described in section 4.9.		
Ц		The user should receive priority call termination.		
	3 Priority Progression	The user should receive priority call	Not	Vendor specific functionality is needed to set
		priority call chauld be given higher priority over permal	supported/vendor	in all interfaces or some nodes on noth may not
		calls in the originating mobile network to interconnected	specific	have needed functionality
		networks supporting priority (including the PSTN) and in		have needed functionality.
		the terminating network.		
	4 Priority Queuing	When a Priority Service call encounters a "no radio	Supported	
		available" condition in the call path involving an access		
		or egress air-interface, or both, and,		
		at call origination, and upon recognition of the Priority		
		Service dialing pattern, the Priority Service call is queued		
		In the cell serving the calling party and processed for the		
		next available radio channel in that cell in accordance		
		at call termination upon recognition of a priority call		
		indication in an incoming call the Priority Service call is		
		gueued in the cell serving the called party and processed		
		for the next available radio channel in that cell in		
		accordance with the call's priority level and arrival time.		
	5 Priority Level	The subscriber should be assigned one of <i>n</i> priority	Vendor specific	MMI used needs to be recognized by number
		levels. Priority levels are defined as $1, 2, 3,, n$, with 1		analysis.
		being the highest priority level and n being the lowest priority level.		
	6 Invocation on Demand	Priority Service is invoked only when requested and an	Vendor specific	MMI used needs to be recognized by number
		idle voice or traffic channel required for an origination		analysis.
		request is not available.		

7 Applicability to	Priority Service shall be applicable to voice and data	Supported	
Telecommunications Services	telecommunications services that require a voice or	Capponoa	
	traffic channel assignment		
8 Authorization	A subscriber invoking Priority Service on call origination is authorized based on the caller's subscription. It should also be possible for an additional second level of authentication (e.g., by the use of PIN) to identify that the user is authorized to make a priority call. In this case, authorization of the subscriber may be realized by the usage of a PIN.	Vendor specific	MSC has various information from HLR like Subscriber category, IMSI, etc. that can be used to identify subscription.
9 Priority Service service	Priority Service is manually requested by adding on the	Vendor specific	MMI used needs to be recognized by number
code	Priority Service service code to the origination request.	•	analysis.
10 Roaming	Priority Service shall be supported during roaming when	Not supported /	
_	the roaming network supports Priority Service.	Vendor specific	
11 Handover	Priority Service shall be supported during handover.	Supported	
12 Priority Service charging	The system should record the following Priority Service	Vendor specific	
data record	charging data information, in addition to non-Priority	-	
	Service CDR information:		
	Priority Service invocation attempts,		
	Call legs (origination and/or termination) on which		
	Priority Service was used to gain access to the radio		
	channel.		
	Recording of appropriate Priority Service information.		

End of Change in Clause 6.4.2

End of CR