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

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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	B	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	B	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

TSG-SA WG1 #18 **S1-022099**
Busan, Korea, 11-15th November 2002 **Agenda Item: 10.7**

CR-Form-v7

CHANGE REQUEST

⌘ **22.950** **CR** **001** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Changes to accommodate comments from RAN WG2 and T WG3
Source:	⌘	SA1 (Telcordia Technologies)
Work item code:	⌘	PRIOR-FS
Date:	⌘	23/10/2002
Category:	⌘	**D**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To accommodate comments received from RAN WG2 and T WG3
Summary of change:	⌘	Addition of references to SIM Application Toolkit and Access Service Classes (ASC) to support Priority Service.
Consequences if not approved:	⌘	Incomplete set of references and capabilities.

Clauses affected:	⌘	2, 6.3

Other specs affected: ⌘

Y	N	
	X	Other core specifications
	X	Test specifications
	X	O&M Specifications

⌘

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 Pre-emption (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 Pre-emption (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

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;
- GSM 11.14, Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface

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

TSG-SA WG1 #18 **S1-022282**
Busan, Korea, 11-15th November 2002 **Agenda Item: 10.7**

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CHANGE REQUEST

⌘ **22.950** **CR** **002** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Changes to accommodate additional High Level Requirement for Priority Trunk Queuing
Source:	⌘	SA1 (Telcordia Technologies)
Work item code:	⌘	PRIOR-FS
Date:	⌘	12/11/2002
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	To include an additional capability for Priority Trunk Queuing to increase the probability of call completion for Priority Service calls.
Summary of change:	⌘	Addition of a High Level Requirement for Priority Trunk Queuing and addition of the associated gap analysis.
Consequences if not approved:	⌘	The additional capability will not be assessed.

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: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	These 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 Radio Resource 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,

- 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.

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.

6 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 Requirement Item	Description	Service Accessibility Support	Comments
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 Radio Resource 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.	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 ***Home and Visited 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 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 Priority Service calls for trunk resources.	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	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 Radio Resource 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 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.	Supported	TS 22.067 ch 5.11.The utilized precedence level shall be able to be extracted from the event records if different from the default precedence level.
13 Priority Trunk Queuing	Priority Service shall be able to support queuing of Priority Service calls for trunk resources.	Not supported	eMLPP Stage 2, TS 23.067 ch 4, items c. and d. refer to “contention in gaining terrestrial resources,” which may be interpreted as referring to Trunk Queuing. However, neither the Stage 1 (TS 22.067) nor the Stage 3 (TS 24.067) has any additional specification associated with trunk queuing.

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 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 Radio Resource 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.	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. PS 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.	Partially Supported	The user can insert a special SIM when he/she needs to make a priority call.
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 UE. In this case, authorization of the subscriber may be realized by the	Supported	Access Classes stored in the SIM.

	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 ***Home and Visited 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 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 Priority Service calls for trunk resources.	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 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/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 Radio Resource 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.	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 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	
13 Priority Trunk Queuing	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 Radio Resource 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:

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

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

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

TSG-SA WG1 #18 **S1-022283**
Busan, Korea, 11-15th November 2002 **Agenda Item: 10.8**

CR-Form-v7

CHANGE REQUEST

⌘ **22.950** **CR** **003** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Changes to Emergency Calls Interactions
Source:	⌘	SA1 (Nortel Networks)
Work item code:	⌘	PRIOR-FS
Date:	⌘	24/10/2002
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To 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

		Y	N		
Other specs affected:	⌘		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
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 + [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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CR-Form-v7

CHANGE REQUEST

⌘ **22.950** **CR** **004** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Coexistence of Priority Service and eMLPP in the same network.
Source:	⌘	SA1 (Nortel Networks)
Work item code:	⌘	PRIOR-FS
Date:	⌘	24/10/2002
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	To include a high level requirement for the coexistence of Priority Service and eMLPP in the same network.
Summary of change:	⌘	Addition of a high level requirement for the coexistence of Priority Service 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

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

Clause 4.14 (new)

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 Requirement Item	Description	Service Accessibility Support	Comments
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, 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.	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 ***Home and Visited 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 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	
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 6.1.2

Change in Clause 6.2.2

Table 5: eMLPP Gap Analysis

Priority Service Requirement Item	Description	eMLPP Support	Comments
1 Priority Call Origination	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 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.	Supported	TS 22.067 ch 5.11.The utilized precedence level shall be able to be extracted from the event records if different from the default precedence level.
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 6.2.2

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 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, 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.	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. PS 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.	Partially Supported	The user can insert a special SIM when he/she needs to make a priority call.
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 UE. In this case, authorization of the subscriber may be realized by the	Supported	Access Classes stored in the SIM.

	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 ***Home and Visited 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 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	
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 6.3.2

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 the terminating network.	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 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.	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 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:

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

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

End of CR

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Busan, Korea, 11-15th November 2002 **Agenda Item: 10.8**

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CHANGE REQUEST

⌘ **22.950** **CR** **005** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Priority Call Origination and Termination High Level Requirements Clarification
Source:	⌘	SA1 (Nortel Networks)
Work item code:	⌘	PRIOR-FS
Date:	⌘	24/10/2002
Category:	⌘	**D**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

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.

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

Change in Clause 4.1

4.1 Priority Call Origination

A call shall receive priority treatment ~~The Priority Service user shall receive~~ (priority access to voice or traffic channels) on the originating 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

A call shall receive priority treatment ~~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.

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

☐ SC + termination address + SEND

Change in Clause 6.1.2

Table 2: Service Accessibility Gap Analysis

Priority Service Requirement Item	Description	Service Accessibility 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	Using appropriate Access Class(es) to prevent access attempts
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	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, 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.	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 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 ***Home and Visited 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 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
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, 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 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.	Supported	TS 22.067 ch 5.11.The utilized precedence level shall be able to be extracted from the event records if different from the default precedence level.

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 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	
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	
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, 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.	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. PS 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	Partially Supported	The user can insert a special SIM when he/she needs to make a priority call.

	request is not available.		
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 UE. 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 ***Home and Visited PLMNs***. Access classes 11 and 15 pertain to ***Home PLMN only***. Access classes 12, 13, and 14 pertain to ***Home and Visited PLMNs <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 6.3.2

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 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	
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	
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/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 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.	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 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	

End of Change in Clause 6.4.2

End of CR