ETSI TS 122 087 V17.0.0 (2022-04)

**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
User-to-User Signalling (UUS);
Service description;
Stage 1
(3GPP TS 22.087 version 17.0.0 Release 17)**

Reference
RTS/TSGS-0122087vh00

Keywords
LTE, GSM, UMTS, UUS, SUPPLEMENTARY SERVICE, STAGE 1

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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Version x.y.z

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1 Scope

The User-to-User Signalling (UUS) supplementary service allows a mobile subscriber to send/receive a limited amount of information to/from another PLMN or ISDN subscriber over the signalling channel in association with a call to the other subscriber.

2 References

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

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

[1] 3GPP TS 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.004: "General on supplementary services.

[3] 3GPP TS 22.030: "Man-Machine Interface (MMI) of the Mobile Station (MS).

[4] 3GPP TS 22.135: "Multicall stage 1".

3 Definitions and Abbreviations

3.1 Definitions

For the purposes of this TS, the following definitions apply:

User-to-User Information (UUI): The information transferred by using the UUS supplementary service.

UUS service: The UUS services (Service 1, 2 and 3) are components of the UUS supplementary service. If the UUS supplementary service is provided to a subscriber, she can handle the UUS services independently within a call.

Served subscriber: The subscriber who has a provision of the UUS supplementary service and who activates the UUS supplementary service. For service 1 and 2 the served subscriber is always the calling subscriber, for service 3 either the calling or the called subscriber can be the served subscriber.

Remote party: For service 1 and 2 the remote party is the called party of a call to which the UUS supplementary service is activated by the served subscriber. For service 3 the remote party can be either the called or the calling party of an established call to whom the use of the UUS supplementary service is requested by the served subscriber.

3.2 Abbreviations

For the purposes of this TS the following abbreviations apply.

UUS User-to-User Signalling

UUI User-to-User Information

Further GSM related abbreviations are listed in TS 21.905 [1].

4 Description

4.1 Description

The UUS supplementary service allows the served subscriber to send/receive a limited amount of subscriber generated information to/from another user in association with a call to the user. This information shall be passed transparently (i.e. without modification of contents) through the network. Normally, the network shall not interpret or act upon this information.

The served subscriber can send and receive UUI in different phases of the call depending on the service(s) to which the subscriber subscribes. These services are:

Service 1: UUI can be sent and received during the origination and termination of a call, with UUI embedded within call control messages. The service 1 can be activated implicit by inserting UUI when set-up a call or explicit with an appropriate procedure.

Service 2: UUI can be sent and received after the served subscriber has received an indication that the remote party is being informed of the call and prior to the establishment of the connection. UUI sent by the served subscriber prior to receiving the acceptance of the call by the remote party, may as a network option be delivered to the remote party after the call has been established. The service 2 shall be activated explicitly.

Service 3: User-to-user-information can be sent and received only while the connection is established. The service 3 shall be activated explicitly.

Service 1, service 2 and service 3 shall allow the transmission of UUI with the maximum length of 128 octets per message.

4.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in TS 22.004 [2].

5 Normal procedures with successful outcome

5.1 Provision

The UUS supplementary service shall be provided to the served subscriber after pre-arrangement with the service provider. The remote party needs no subscription of the UUS supplementary service.

NOTE: The remote party is able to send UUI without provision of the UUS supplementary service when the service is activated against her by the served subscriber.

As a service provider option, one or any combination of the following shall be provided:

- service 1 (implicitly requested andexplicitly requested);
- service 2;
- service 3.

5.2 Withdrawal

The UUS supplementary service and several UUS services shall be withdrawn by the service provider upon the subscriber's request or for service providers reasons.

The supplementary service UUS shall be withdrawn if all UUS services provided to the served subscriber are withdrawn.

5.3 Registration and Erasure

not applicable.

5.4 Activation and Deactivation

The UUS supplementary service shall be activated by the service provider as a result of provision and deactivated as a result of withdrawal.

5.5 Invocation

The UUS supplementary service is invoked if at least one UUS service is activated by the served subscriber.

5.6 Interrogation

not applicable.

5.7 Handling of UUS services

5.7.1 Activation

UUS service is activated when:

- activation is implicitly requested (for service 1); or
- activation is explicitly requested (for service 1, service 2 and service 3) and is accepted by the remote party.

Depending on the served subscriber subscription to the UUS supplementary service and the provision of the UUS services by the service provider, service 1 implicit, service 1 explicit, service 2 and service 3 can be activated individually or in combination. Service 1 implicit and service 1 explicit cannot be simultaneously active.

Once an UUS service is activated the network shall accept UUI from either subscriber in the call, according to the service that has been activated.

The network shall confirm the explicit activation of a UUS service (service 1, 2 and 3) to the served subscriber. This confirmation shall be preceded by an end-to-end check by the network for service availability.

The network shall interrogate the remote party and check for the availability of the UUS service on the remote party's side. The mobile station shall confirm the requested services if it is able to handle the UUS service. The remote party shall not have the possibility to confirm or reject the request for the UUS service on a per call basis. No response from the remote party shall be taken by the network as a rejection of the request for the UUS service.

NOTE: Nevertheless the remote party may restrict the use of a UUS service by pre-programming of the mobile station to reject incoming UUS activation requests.

The network shall explicitly indicate to the calling mobile subscriber whether or not the requested service has been successfully activated.

5.7.1.1 Service 1

UUS service 1 shall be activated by the calling mobile subscriber when originating a call if UUI transfer is desired in either direction.

Service 1 is automatically deactivated when the call is terminated.

Service 1 can be activated by means of an implicit activation request or an explicit activation request.

Implicit activation:

Service 1 is implicitly activated when UUI is included when originating a call.

When service 1 is implicitly activated, service 1 is active for the call, i.e. the remote party is not required to send a response to the implicit activation request. However, the remote party can include UUI in the call response.

Explicit activation:

The UUS service 1 shall be activated explicitly by using of the procedure defined in TS 22.030 [3].

The served mobile subscriber shall be given an explicit response (acceptance or rejection) to an explicit activation request. An explicit activation request can include UUI.

When service 1 is explicitly requested, the remote party can include UUI when accepting the activation request for the UUS supplementary service.

5.7.1.2 Service 2

The UUS service 2 shall be activated by using of the procedure defined in TS 22.030 [3].

Service 2 shall be activated by the served subscriber when originating a call, if UUI transfer is desired in either direction.

Service 2 shall be explicitly requested. The served mobile subscriber shall be given an explicit response (acceptance or rejection) to an explicit activation request.

Service 2 is automatically deactivated when the called subscriber is no longer being informed of the call, i.e. if the call is established or released.

5.7.1.3 Service 3

The served subscriber can explicit request the activation of service 3 when a call is originated or after the connection has been established by using the procedure defined in TS 22.030 [3]. The request for the UUS service 3 shall be accepted from the remote party in order to activate the UUS supplementary service. The served user shall be given an explicit response (acceptance or rejection) to the explicit activation request.

Service 3 is automatically deactivated when the call is no longer established.

5.7.1.4 "UUS required" request

When a call is originated, the calling subscriber can specify whether the requested UUS service(s) is (are) required for the call, i.e. if the call should be completed or not if UUI cannot be passed. If the "UUI-required" indication is given by the subscriber, the call shall not be completed if UUI cannot be passed to the called subscriber. If the "UUI-not-required" indication is given by the subscriber, the call will be completed even if UUI cannot be passed. If service 1 is implicitly requested or if service 3 is requested during the call, it cannot be requested as "UUI-required".

5.7.2 Invocation and operation

If activated by the served subscriber a UUS service shall be invoked when UUI is sent by either subscriber to the network.

When a subscriber sends UUI the network shall not confirm its delivery to the subscriber.

For service 2 and 3, when sending a UUI message, the subscriber can indicate that the subscriber will send further UUI associated with this UUI message. This indication shall be given to the receiving subscriber.

When sending a UUI message, the subscriber may indicate the use of particular user protocol associated with the UUI message. This indication shall be given to the receiving subscriber. The identification of, and the use of, user protocols is outside of this standard.

5.7.2.1 Service 1

A PLMN subscriber can transfer UUI when originating a call. When service 1 has been activated, either subscriber can include UUI when accepting, rejecting, or terminating a call.

NOTE: It is possible for a calling subscriber to invoke the UUS service 1 with a call set-up and terminate the call before the connection is established.

5.7.2.2 Service 2

Any time between activation of service 2 and connection is established, either subscriber can transfer up to 2 UUI messages in each direction to the other subscriber involved in the call.

5.7.2.3 Service 3

After service 3 has been activated, either subscriber can transfer UUI to the other subscriber on the call after the connection has been established.

NOTE: The amount of UUI messages that can be transferred with service 3 shall be defined.

5.7.2.4 Charging requirements

The served subscriber shall be charged according to the number of UUI messages transferred in either direction. When charging for UUI the destination (e.g. international calls, diverted calls) of the related call shall not be considered.

It shall be possible to charge for the invocation of the UUS supplementary service even if there are no other call charges.

6 Exceptional procedures or unsuccessful outcome

6.1 Provision and Withdrawal

No exceptional procedures.

6.2 Registration and Erasure

not applicable.

6.3 Handling of UUS services

6.3.1 Activation

If the network cannot accept an implicit request for the activation of UUS service 1, no notification shall be given to the subscriber.

In all other cases, if the network cannot accept a request for the activation of a UUS service, the network shall reject the activation. In addition, the network shall indicate which of service 1, service 2 and/or service 3 have been rejected. For the rejection of the activation request the following reasons may be possible:

- service not subscribed to;
- necessary signalling connectivity does not exist between sending and receiving subscribers;
- conflicting situation with other supplementary service (e.g. CUG, incoming call barring);
- service is already active;
- network congestion.

6.3.2 Invocation

The subscriber may not be able to interpret incoming UUI. In such situations, the user can discard this information without disrupting normal call handling. No specific signalling is provided by the network to accommodate this situation.

Under circumstances of network congestion or failure, the network may discard services 2 and 3 UUI.

7 Interactions with other supplementary services

7.1 Call forwarding unconditional

No impact

NOTE: UUI or an activation request for a UUS service will be forwarded with the call even in the case the forwarding subscriber has no subscription of the relevant UUS service.

7.2 Call forwarding on mobile subscriber busy

If call forwarding on mobile subscriber busy is invoked as a result of a network determined user busy condition (NDUB) of the called subscriber, any UUI and UUS request accompanies the call set-up request shall be forwarded with the call

If call forwarding on mobile subscriber busy is invoked as a result of an user determined user busy condition (UDUB) the following cases shall be distinguished:

- If the UDUB condition is met before alerting any UUI and UUS request accompanies the call set-up request shall be forwarded with the call.
- If the UDUB condition is met after alerting the interactions as defined for call forwarding on no reply shall apply.

UUI included in a UDUB request by the forwarding subscriber shall be ignored by the network.

NOTE: UUI or an activation request for a UUS service will be forwarded with the call even in the case the forwarding subscriber has no subscription of the relevant UUS service.

7.3 Call forwarding on no reply

Service 1:

If UUS service 1 is implicitly requested to the forwarding subscriber the UUI shall be transferred to the forwarded-to party after the invocation of CFNRy.

If UUS service 1 is explicitly requested with the option "UUS required“ to a called subscriber who has CFNRy active and operative and the no-reply condition timer expires, the call shall be released.

If UUS service 1 is explicitly requested with the option "UUS not required“ to a called subscriber who has CFNRy active and operative, CFNRy shall be invoked. If the called subscriber has confirmed the UUS service 1 request prior to the invocation of CFNRy, the UUI and the UUS request shall be transferred to the forwarded-to party. Otherwise the UUI and the UUS request shall not be forwarded with the call.

Service 2:

If UUS service 2 is requested with the option "UUS not required“ to a called subscriber who has CFNRy active and operative, CFNRy shall be invoked but no UUS activation request will be given to the forwarded-to subscriber.

If UUS service 2 is requested with the option "UUS required“ to a called subscriber who has CFNRy active and operative, CFNRy shall not be invoked.

Service 3:

Any activation request for UUS service 3 that accompanies the call set-up request shall be forwarded with the call.

NOTE: UUI or an activation request for a UUS service will be forwarded with the call even in the case the forwarding subscriber has no subscription of the relevant UUS service.

7.4 Call forwarding on mobile subscriber not reachable

No impact

NOTE: UUI or an activation request for a UUS service will be forwarded with the call even in the case the forwarding subscriber has no subscription of the relevant UUS service.

7.5 Call waiting

UUI for the operation of UUS service 1 included in the call request shall be delivered with the call waiting indication to the called subscriber.

There are no interactions with service 2 and service 3.

7.6 Call hold

A subscriber who has invoked the Call Hold supplementary service may send or receive UUI to/from both the active and the held party. If the served subscriber has an active and a held call the mobile station shall indicate which party has sent a received UUI message.

7.7 Completion of calls to busy subscribers

Requests for the activation of a UUS service contained in the original call request shall be stored with the request for the invocation of the CCBS supplementary service.

The network shall also store any UUI containing in the original call request and use this stored UUI in the CCBS call.

7.8 Explicit call transfer

When calls are transferred as a result of invocation of the explicit call transfer supplementary service, UUS services activated on either of the calls prior to the invocation of the explicit call transfer supplementary service shall be automatically deactivated by the network.

No specific notification shall be sent to the involved subscribers when the UUS services are no longer activated.

The subscribers involved in the transferred call may request the activation of service 3 again, if required.

7.9 Multi party service

During a MPTY the MPTY-Manager can send and receive UUI to/from each remote party separately. The mobile station of the multi party manager shall indicate from which remote party a received UUI message was sent.

UUI shall not be transferred between remote parties.

7.10 Advice of charge

No impact.

NOTE: The Advice of Charge services may not provide any information concerning charges for the use of the UUS supplementary service.

7.11 Barring of outgoing calls

no impact

7.12 Barring of outgoing international calls

no impact

7.13 Barring of outgoing international calls except those directed to the home PLMN country

no impact

7.14 Barring of incoming calls

no impact.

7.15 Barring of incoming calls when roaming outside the home PLMN country

no impact.

7.16 Call Deflection

If Call Deflection is invoked before alerting the same interactions as for Call forwarding on mobile subscriber busy shall apply.

If Call Deflection is invoked after alerting the same interactions as for Call forwarding on no reply shall apply.

8 Interactions with other network features

8.1 Support of Optimal Routeing

The invocation of Optimal Routeing in case of late call forwarding shall have no impact on the interactions of UUS with the call forwarding supplementary services as defined in section 7.

8.2 Multicall

See TS 22.135 [4].

9 Interworking considerations

The UUS supplementary service can be delivered only when both subscribers' networks provide a means of conveying the UUI.

Some networks may support the transmission of UUI with a maximum length of only 32 octets per message for service 1. In the interworking case only the first 32 octets of UUI with more than 32 octets per message shall be transferred. No notification about the limitation of the UUI shall be given to any subscriber.

Annex A (informative): Deviations of the 3GPP UUS supplementary service from the ISDN service

The ISDN service UUS allows as a network option the transfer of UUI with a maximum length of 32 octets for service 1. This option shall not be supported in PLMNs. However there is the possibility that networks using the phase 1 or phase 2 standard can support the UUS service 1 implicitly requested with 32 octets. These networks shall apply the rules defined in the section 8, Interworking considerations.

In the 3GPP specification some charging requirement are defined. These requirements shall allow network operators to charge their subscribers for the use of and to prevent misuse of the UUS supplementary service.

Because of the different handling of busy states in ISDN the interactions with call forwarding on mobile subscriber busy are different.

The network option to allow forwarding of UUS requests and UUI only if the forwarding subscriber has the subscription of the relevant UUS service is not supported.

The general principle of CCBS to retain all information of the original call set-up and reusing this information for the CCBS call shall also be valid for the UUS supplementary service. Therefore the UUI contained in the original call set-up shall be stored in network and reused in the CCBS call.

Annex B:
Change history

Change history											
TSG SA#	**SA Doc.**	**SA1 Doc**	**Spec**	**CR**	**Rev**	**Rel**	**Cat**	**Subject/Comment**	**Old**	**New**	**WI**
Jun 1999			GSM 02.87					Transferred to 3GPP SA1	7.1.0		
SA#04			22.087			R99		Transferred to 3GPP SA1		3.0.0	
SP-05	SP-99479	S1-99634	22.087	001		R99	D	Editorial changes for alignment	3.0.0	3.0.1	Editorial changes
SP-05	SP-99450	S1-99788	22.087	002		R99	B	Multicall (This CR was wrongly marked as 22.086 and should be to 22.087)	3.0.1	3.1.0	Multicall
SP-11	SP-010065	S1-010258	22.087			Rel-4		Transferred to 3GPP Release 4	3.1.0	4.0.0	
SP-16	SP-020267	S1-021043	22.087			Rel-5		Updated from Rel-4 to Rel5	4.0.0	5.0.0	
SP-26	SP-040744	S1-040997	22.087			Rel-6		Updated from Rel-5 to Rel-6	5.0.0	6.0.0	
SP-36			22.087			Rel-7		Updated from Rel-6 to Rel-7	6.0.0	7.0.0	
SP-42	-	-				Rel-8		Updated from Rel-7 to Rel-8	7.0.0	8.0.0	
SP-46	-	-	-	-	-	-	-	Updated to Rel-9 by MCC	8.0.0	9.0.0	
2011-03	-	-	-	-	-	-	-	Update to Rel-10 version (MCC)	9.0.0	10.0.0	
2012-09	-	-	-	-	-	-	-	Updated to Rel-11 by MCC	10.0.0	11.0.0	
2014-10	-	-	-	-	-	-	-	Update to Rel-12 version (MCC)	11.0.0	12.0.0	
2015-12	-	-	-	-	-	-	-	Updated to Rel-13 by MCC	12.0.0	13.0.0	
2017-03	-	-	-	-	-	-	-	Updated to Rel-14 by MCC	13.0.0	14.0.0	
2018-06	-	-	-	-	-	-	-	Updated to Rel-15 by MCC	14.0.0	15.0.0	
SA#88e	-	-	-	-	-	-	-	Updated to Rel-16 by MCC	15.0.0	16.0.0	
2022-03	-	-	-	-	-	-	-	Updated to Rel-17 by MCC	16.0.0	17.0.0	

History

Document history		
V17.0.0	April 2022	Publication