Technical Specification Group Services and System Aspects
Meeting #7, Madrid, Spain, 15-17 March 2000

TSGS#7(00)0053

Source: **TSG SA1**

Title: **CR to 22.001 on procedure for call progress indications**

Document for: **Approval**

Agenda Item: **5.1.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
SP-000053		22.001	003		R99	Procedure for call progress indications	C	3.1.1	3.2.0

TSG-SA Working Group 1 meeting #7

Sophia Antipolis, 09 Feb – 11 Feb 2000

TSG S1 (00) 0133

Agenda:

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

02.001 **CR** **003**

Current Version: 3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG SA#7 *list TSG meeting no. here ↑*

for approval [X]
for information [ ]

(only one box should be marked with an X)

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: *(at least one should be marked with an X)* USIM [ ] ME [X] UTRAN [ ] Core Network [X]

Source: TSG SA1 **Date:** 14th February 00

Subject: Procedure for call progress indications

3G Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	X
D	Editorial modification	

Reason for change: On the annex F, The requirement of procedure for call progress indications is not covered all over the world. Therefore, procedure for call progress indications shall•be changed to informative from normative

Clauses affected: Annex F

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other 2G core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

Annex F(~~normative~~ Informative): Procedures for call progress indications

F.1 General

Indications of call progress, such as ringing, engaged, unobtainable, and no radio channel, may in principle be verbal message, tones, displayed text or graphical symbols. Which combination of these applies may depend on the message, the UE and selection by the user or PLMN operator. However, verbal announcements will generally be reserved for situations which are peculiar to a mobile network, where users may be unfamiliar with any tone chosen to indicate conditions such as "call diversion" or "subscriber not available".
It may also be desirable to add comfort indications (e.g. tones, noise, music, clicks) while a call is being connected, since silence may cause an unfamiliar user to believe that nothing is happening.
Generally, on data calls, and on the data part of alternate speech/data or speech-followed-by-data calls, PLMN generated network tones and announcements should be muted.

F.2 Supervisory tones

F.2.1 General

Supervisory Tones, indicating primarily ringing, engaged and unobtainable numbers, may be generated by both the PLMN and PSTN.
Except for ring tone, all tones indicating call progress to a user shall be generated in the UE, on the basis of signals from the network where available, and are according to the standard defined in the present document.
Tones sent to a caller to a UE will be generated in the network, generally local to the caller, and will be to the standard of his local exchange, except for mobile to mobile calls, where the tones will be generated in the calling UE. For mobile terminated calls, the ring tone will be generated in the called MSC (except OACSU).

F.2.2 Method

In the interests of early release of the traffic channel on failure to succeed in setting up a (mobile originated) call, where possible supervisory tones should be indicated over signalling channels. The UE will then generate the required tones. However, if the network generates an in-band announcement this will be indicated to the UE. In this case the UE shall connect the user to the announcement until instructed to release the call, either by the user or by the network. An alternate procedure may apply for UE able to generate appropriate announcements internally.
The ring tone will be sent over the traffic channel, since this channel must be available for traffic immediately it is answered (exception: Off Air Call Set Up). The Ring Tone is therefore generated by the PLMN or PSTN supporting the called phone.
On failed mobile terminated call attempts, the called MSC will either signal to the caller, if this is possible, or else will generate the required supervisory tones.
"Alert" is not a supervisory tone. The indication is signalled, and the UE may generate any form of indication to the user that the UE is being called.

F.2.3 Standard tones

UE generated tones will be generally in accordance with CEPT (GSM), ~~or~~ ANSI T1.607 (PCS 1900), or Japan recommendations, where appropriate, and are listed in table 1. Any network originated tones will be according to PLMN or PSTN choice.

F.2.4 Applicability

This method will apply in all cases where signalling is capable of indicating the supervisory tone required. However, for connection to certain fixed networks where this signalling is not possible, fixed network tones will be carried over the traffic channel.
User equipment may employ any suitable technique to indicate supervisory information. However, if tones are employed, they shall be in accordance with the present document. The use of these tones in the MSC is preferred.

NOTE 1: The tones and/or announcement to the calling party should not be provided if the Information transfer capability is set to UDI.

NOTE 2: For a call with information transfer capability set to 3.1 kHz, the use of tones and/or announcement may cause the expiry of an awaiting answer timer in a modem or fax machine.

F.2.5 Comfort tones

If desired by the PLMN operator, the network may optionally introduce "comfort tones" while the call is being connected, during what would otherwise be silence. This would be overridden by indication of a supervisory tone, an announcement or by traffic. PLMNs may offer this feature optionally to incoming or outgoing callers.
The "comfort tones" may take the form of tones, clicks, noise, music or any other suitable form, provided that they cannot be confused with other indications that might be expected.
This feature is intended to indicate to the user that his call is progressing, to prevent him terminating the call prematurely.

Table 1: Supervisory tones in UEs

Tone		Frequency			Tolerance		Type		
		CEPT	ANSI	Japan	CEPTA NSI	Japan	CEPT	ANSI	Japan
1	Dial tone (optional)	425Hz	350Hz added to 440 Hz	400Hz	15Hz	20Hz	Continuous	Continuous	Continuous
2 *	Subscriber Busy (Called Number)	425Hz	480Hz added to 620 Hz	400Hz	15Hz	20Hz	Tone on 500ms Silence 500ms	Tone on 500ms Silence 500ms	Tone on 500ms Silence 500ms
3 *	Congestion	425Hz	480Hz added to 620 Hz	Optional	15Hz	Optional	Tone on 200ms Silence 200ms	Tone on 250ms Silence 250ms	Optional
4	Radio Path Acknowledgement (Mobile Originated only) (optional)	425Hz	425Hz	400Hz	15Hz	20Hz	Single tone 200ms	Single tone 200ms	Tone on 1 Sec Silence 2 Sec
5	{Radio Path Not Available {Call Dropped – Mobile originated only	425Hz	425Hz	Optional	15Hz	Optional	200ms} On/off 200ms} for 3 burst	200ms} On/off 200ms} for 3 burst	Optional
6 *	Error/Special Information} Number Unobtainable } Authentication Failure }	950Hz 1400Hz 1800Hz	950Hz 1400Hz 1800Hz	Optional	50Hz 50Hz 50Hz	Optional	{Triple Tone {Tones on 330ms {Silence 1.0s	Triple Tone {Tones on 330ms {Silence 1.0s	Optional
7	Call Waiting Tone (CEPT)	425 Hz (tolerance 15Hz), on for 200ms, off for 600ms on for 200ms, off for 3s, on for 200ms, off for 600ms on for 200ms. This tone is superimposed on the audio traffic received by the called user. Alternate tones are *acceptable* but not preferred.							
7	Call Waiting Tone (ANSI)	440 Hz, on for 300 ms, 9.7s off followed by (440 Hz, on for 100 ms off for 100 ms, on for 100 ms, 9.7s off and repeated as necessary) This tone is superimposed on the audio traffic received by the called user.							
7	Call Waiting Tone (Japan)	Optional							
Definition of these and other tones, together with advice on announcements, may be found in CEPT T/CS 20-15 and in T/SF 23.									
* The duration of these tones is an implementation option. However, in each case, the UE should be returned immediately to the idle state, and will be able to originate/receive calls, which will override these tones.									
Ringing Tone (Alternative National options permitted)		425Hz	440Hz added to 480Hz	Optional	15Hz	Optional	Tone on 1s Silence 4s	Tone on 2s Silence 4s	Optional
For application of Call Control Cause Information Elements to these tones, see F.4.									

F.3 Recorded announcements

In present networks, both fixed and cellular, the language of recorded announcements and displayed information is invariably that of the country of origin. However, this is generally undesirable in a multi-lingual environment such as is encountered on a global network with international roaming. It is therefore probably desirable to minimise the number of such announcements.
Advanced UEs may be designed which have the ability to generate announcements in the form desired by the user, e.g.

in the language preferred by the user. In this case, it becomes necessary to block any verbal announcements sent from the network towards the UE, to avoid clashes with those generated by the UE. The UE may be allowed to block in-band announcements in case appropriate announcements according to the Cause Information Elements (F.3) can be generated. The default setting of the UE shall be "non blocking", which could be set by MMI command to "blocking". Announcements generated by the PLMN and sent to callers to that PLMN will generally be in the language of the PLMN. However, on some fixed networks it will be possible for the message to be signalled back to the caller's local exchange, which will then generate the announcement in its local language.

F.4 Application of call control cause information elements to supervisory tones

The Cause Information Elements are listed and defined in GSM 04.08 [13]. This annex lists these elements and indicates which supervisory tone should be generated in response. It should be noted that some conditions (e.g. radio path not available, dropped call) may be deduced by the UE, rather than signalled explicitly over the air interface. All causes not listed below should result in the generation of tone 6. In case of multiple calls a tone should only be generated if it does not disturb an ongoing active call. "-" indicates no tone required.

Cause CC		Tone (see table 1)
16	Normal Clearing	1
17	User Busy	2
22	Number Changed	-
30	Response to STATUS ENQUIRY	-
31	Normal, unspecified	-
34	No circuit/channel available	3
41	Temporary Failure	3
42	Switching Equipment Congestion	3
44	Requested circuit/channel not available	3
49	Quality of Service Unavailable	3
58	Bearer Capability not available	3