Technical Specification Group Services and System Aspects **TSGS#23(04)0197**
Meeting #23, Phoenix, Arizona (USA)
15-18 March 2004

Source: **TSG-SA WG4**

Title: **CR 26.073 019 Correction of AMR DTX functionality (Release 5)**

Document for: **Approval**

Agenda Item: **7.4.3**

The following CR, agreed at the TSG-SA WG4 meeting #30, is presented to TSG SA #23 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.073	019		Rel-5	Correction of AMR DTX functionality	F	5.2.0	S4	TSG-SA WG4#30	S4-030752

3GPP TSG-SA4 Meeting #29
Malaga, Spain, 23-27 Feb 2004

Tdoc ⌘S4-030752

CR-Form-v7

CHANGE REQUEST

⌘ **26.073** **CR** **019** ⌘**rev** **-** ⌘ Current version: **5.2.0** ⌘

*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 [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Correction of AMR DTX functionality
Source:	⌘	TSG SA WG4
Work item code:	⌘	AMR
Date:	⌘	16/03/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

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:	⌘	AMR codec can produce annoying output during DTX-operation.
Summary of change:	⌘	The current AMR DTX logic overrides the DTX hangover period when the average energy of the silence or background noise before the short active tone is close to zero. The proposed correction removes this overriding. With certain short tones, the current DTX logic may produce SID frames right after the VAD algorithm has detected silence without DTX hangover period. In this case, the SID parameters (avaraged LPC and signal gain) are calculated during the tone (active signal, speech). Therefore, the comfort noise representation does not represent the true background noise or silence. The problem occurs with short tones when the signal energy is close to zero between the tones. In addition, the tone length needs to be shorter than the DTX_ELAPSED_FRAMES_THRESH, i.e. 30 frames.
Consequences if not approved:	⌘	AMR codec output can produce annoying output with certaing signals when DTX is used.

Clauses affected:	⌘	File *dtx_enc.c* is affected

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

Other comments:	⌘	Example of DTX functionality. Input signal is processed with AMR encoder using mode 12.2 with DTX on. Following figures shows decoder v 5.2.0 output using the orignal v 5.2.0 encoder and the new encoder having corrected DTX functionality. Similar performance is achieved with all AMR modes.

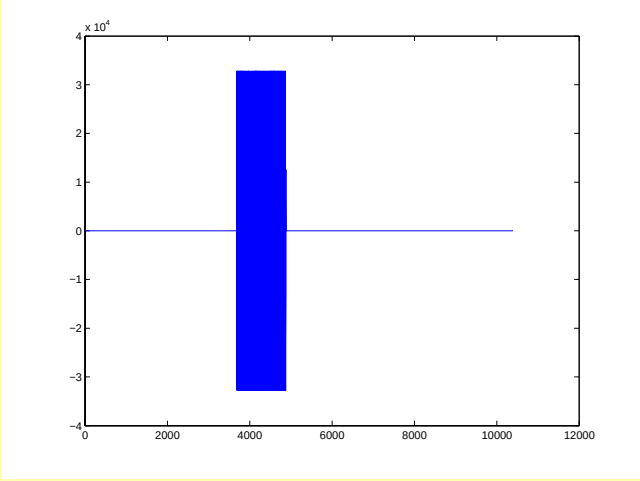

Figure 1 Input signal

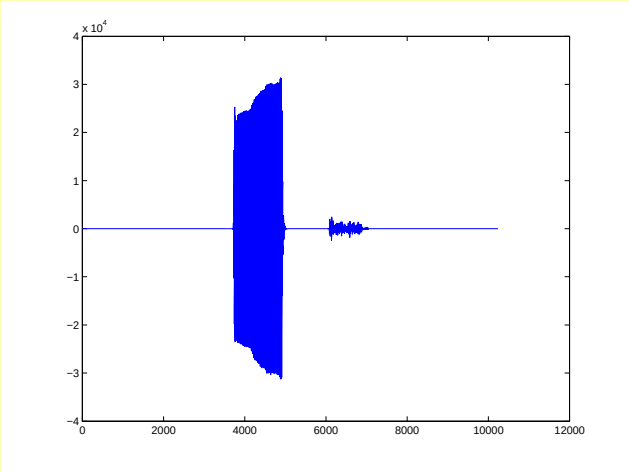

Figure 2 Decoder output with with the original v 5.2.0 encoder

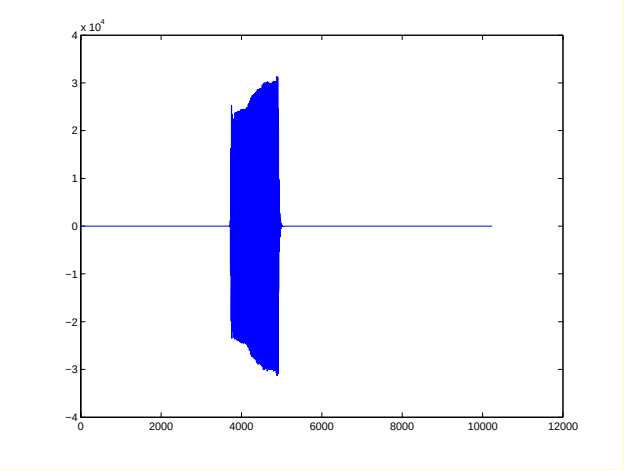

Figure 3 Decoder output with the new corrected DTX

Note that the proposed change does not affect the AMR test vectors in specification TS 26.074.

Changes to the C-code:

1. How the code is changed in the file *dtx_enc.c*

Lines 163 – 167 before the change:

```
/* VOX mode computation of SID parameters */
   test (); test ();
   if ((computeSidFlag != 0)  ||
        (st->log_en_index == 0))
   {
```

Lines 163 – 167 after the change:

```
/* VOX mode computation of SID parameters */
   test (); test ();
   if ((computeSidFlag != 0))

   {
```