Technical Specification Group Services and System Aspects
Meeting #14, Kyoto, Japan, 17-20 December 2001

TSGS#14(01)0696

Source: **TSG-SA WG4**

Title: CRs to TS 06.73 and TS 26.073 on Correction of RX-DTX handling of NO_DATA frames in AMR decoder (R98, R99, and Rel-4)

Document for: **Approval**

Agenda Item: **7.4.3**

The following CRs, agreed at the TSG-SA WG4 meeting #19, are presented to TSG SA #14 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
06.73	A28		R98	Correction of RX-DTX handling of NO_DATA frames in AMR decoder	F	7.5.0	S4	TSG-SA WG4#19	S4-010668
26.073	013		R99	Correction of RX-DTX handling of NO_DATA frames in AMR decoder	A	3.2.0	S4	TSG-SA WG4#19	S4-010669
26.073	014		REL-4	Correction of RX-DTX handling of NO_DATA frames in AMR decoder	A	4.0.0	S4	TSG-SA WG4#19	S4-010670

3GPP TSG-SA WG4 Meeting #19
December 3-7, 2001; Tokyo, Japan

Tdoc S4 (01)0668

CR-Form-v5

CHANGE REQUEST

⌘ **06.73** **CR** **A28** ⌘**rev** **-** ⌘ Current version: **7.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	CR to TS 06.73 A28 on Correction of RX-DTX handling of NO_DATA frames in AMR decoder
Source:	⌘	TSG SA WG4
Work item code:	⌘	AMR
Date:	⌘	Dec. 17, 2001
Category:	⌘	**F**
Release:	⌘	R98

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)

Reason for change:	⌘	NO_DATA frames do not update the decoder SID-states correctly.
Summary of change:	⌘	The file dtx_dec.c has to be changed in 5 code lines
Consequences if not approved:	⌘	When the frame type NO_DATA is used to signal frame erasures, the comfort noise performance in frame error conditions is significantly worse than possible

Clauses affected:	⌘			
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	As the change merely affects error concealment functionality, it does not impact the speech codec test vectors. A detailed motivation for the CR is given in Tdoc S4-010633: “Correction of RX-DTX handling of NO_DATA frames in AMR decoder”		

1. How the code is changed

1.1 File `dtx_dec.c`, function `rx_dtx_handler`

1.1.1 Before the change (lines 792…809)

```
   /* update the SPE-SPD DTX hangover synchronization */
   /* to know when SPE has added dtx hangover         */
   st->decAnaElapsedCount = add(st->decAnaElapsedCount, 1);        move16();
   st->dtxHangoverAdded = 0;                                       move16();

   test(); test(); test(); test(); test();
   if ((sub(frame_type, RX_SID_FIRST) == 0)  ||
       (sub(frame_type, RX_SID_UPDATE) == 0) ||
       (sub(frame_type, RX_SID_BAD) == 0)    ||
       (sub(frame_type, RX_ONSET) == 0)      ||
       (sub(frame_type, RX_NO_DATA) == 0))
   {
      encState = DTX;                                              move16();
   }
   else
   {
      encState = SPEECH;                                           move16();
   }
```

1.1.2 After the change

```
   /* update the SPE-SPD DTX hangover synchronization */
   /* to know when SPE has added dtx hangover         */
   st->decAnaElapsedCount = add(st->decAnaElapsedCount, 1);        move16();
   st->dtxHangoverAdded = 0;                                       move16();

   test(); test(); test(); test(); test();
   if ((sub(frame_type, RX_SID_FIRST) == 0)  ||
       (sub(frame_type, RX_SID_UPDATE) == 0) ||
       (sub(frame_type, RX_SID_BAD) == 0)    ||
       (sub(frame_type, RX_ONSET) == 0)      ||
       (sub(frame_type, RX_NO_DATA) == 0))
   {
      encState = DTX;                                              move16();

      /*
         In frame errors simulations RX_NO_DATA may occasionally mean that
         a speech packet was probably sent by the encoder,
         the assumed _encoder_ state should be SPEECH in such cases.
      */
      test(); logic16();
      if((sub(frame_type, RX_NO_DATA) == 0) &&
         (sub(newState, SPEECH) == 0))
      {
         encState = SPEECH;                                       move16();
      }

   }
   else
   {
      encState = SPEECH;                                           move16();
   }
```

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CR-Form-v5

CHANGE REQUEST

⌘ **26.073** **CR** **013** ⌘**rev** **-** ⌘ Current version: **3.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE **X** Radio Access Network **X** Core Network ☐

Title:	⌘	CR to TS 26.073-013 on Correction of RX-DTX handling of NO_DATA frames in AMR decoder
Source:	⌘	TSG SA WG4
Work item code:	⌘	AMR
Date:	⌘	Dec. 17, 2001
Category:	⌘	**A**
Release:	⌘	R99

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)

Reason for change:	⌘	NO_DATA frames do not update the decoder SID-states correctly.
Summary of change:	⌘	The file dtx_dec.c has to be changed in 5 code lines
Consequences if not approved:	⌘	When the frame type NO_DATA is used to signal frame erasures, the comfort noise performance in frame error conditions is significantly worse than possible

Clauses affected:	⌘			
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	As the change merely affects error concealment functionality, it does not impact the speech codec test vectors. A detailed motivation for the CR is given in Tdoc S4-010633: “Correction of RX-DTX handling of NO_DATA frames in AMR decoder”		

1. How the code is changed

1.1 File `dtx_dec.c`, function `rx_dtx_handler`

1.1.1 Before the change (lines 792…809)

```
   /* update the SPE-SPD DTX hangover synchronization */
   /* to know when SPE has added dtx hangover         */
   st->decAnaElapsedCount = add(st->decAnaElapsedCount, 1);        move16();
   st->dtxHangoverAdded = 0;                                       move16();

   test(); test(); test(); test(); test();
   if ((sub(frame_type, RX_SID_FIRST) == 0)  ||
       (sub(frame_type, RX_SID_UPDATE) == 0) ||
       (sub(frame_type, RX_SID_BAD) == 0)    ||
       (sub(frame_type, RX_ONSET) == 0)      ||
       (sub(frame_type, RX_NO_DATA) == 0))
   {
      encState = DTX;                                              move16();
   }
   else
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      encState = SPEECH;                                           move16();
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```

1.1.2 After the change

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   /* update the SPE-SPD DTX hangover synchronization */
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   st->decAnaElapsedCount = add(st->decAnaElapsedCount, 1);        move16();
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   {
      encState = DTX;                                              move16();

      /*
         In frame errors simulations RX_NO_DATA may occasionally mean that
         a speech packet was probably sent by the encoder,
         the assumed _encoder_ state should be SPEECH in such cases.
      */
      test(); logic16();
      if((sub(frame_type, RX_NO_DATA) == 0) &&
         (sub(newState, SPEECH) == 0))
      {
         encState = SPEECH;                                       move16();
      }

   }
   else
   {
      encState = SPEECH;                                           move16();
   }
```

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CR-Form-v5

CHANGE REQUEST

⌘ **26.073** **CR** **014** ⌘**rev** **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☒ Radio Access Network ☒ Core Network ☐

Title:	⌘	CR to TS 26.073-014 on Correction of RX-DTX handling of NO_DATA frames in AMR decoder
Source:	⌘	TSG SA WG4
Work item code:	⌘	AMR
Date:	⌘	Dec. 17, 2001
Category:	⌘	**A**
Release:	⌘	Rel-4

Use one of the following categories:
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       (sub(frame_type, RX_ONSET) == 0)      ||
       (sub(frame_type, RX_NO_DATA) == 0))
   {
      encState = DTX;                                              move16();
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       (sub(frame_type, RX_ONSET) == 0)      ||
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         the assumed _encoder_ state should be SPEECH in such cases.
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      {
         encState = SPEECH;                                       move16();
      }

   }
   else
   {
      encState = SPEECH;                                           move16();
   }
```