Technical Specification Group Services and System Aspects ***TSGS#18(02)0692***
Meeting #18, New Orleans, USA, 9 - 12 December 2002

**Source:** **TSG-SA WG4**

**Title: CR to TS 26.173 - 014 Correction of ambiguous expression in the AMR-WB C-Code (Release 5)**

**Document for:** **Approval**

**Agenda Item:** **7.4.3**

The following CR, agreed at the TSG-SA WG4 meeting #23, is presented to TSG SA #18 for approval.

| Spec | CR | Rev | Phase | Subject | Cat | Vers | WG | Meeting | S4 doc |
|---|---|---|---|---|---|---|---|---|---|
| 26.173 | 014 | | Rel-5 | Correction of ambiguous expression in the AMR-WB C-Code | F | 5.4.0 | S4 | TSG-SA WG4#23 | S4-020533 |

**3GPP TSG-SA4 Meeting #23**
**Montréal, Canada, 30 Sept – 4 Oct 2002**

***Tdoc ⌘S4-020533***

*CR-Form-v7*

# CHANGE REQUEST

⌘ **26.173** **CR** **014** ⌘ **rev** ⌘ Current version: **5.4.0** ⌘

*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:*** | ⌘ | Ambiguous expressions in the AMR-WB C-Code |
| ***Source:*** | ⌘ | TSG SA WG4 |
| ***Work item code:*** | ⌘ | AMRWB |
| ***Date:*** | ⌘ | 10/12/2002 |
| ***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:*** | ⌘ | The C-code is ambiguous. ANSI C does not define how to evaluate the following kind of expression: *p0++ = shr(*p0, 1). The subexpression p0++ causes a side effect which leads to undefined behavior since p0 is also referenced elsewhere in the same expression. |
| ***Summary of change:*** | ⌘ | Ambiguous expressions are replaced by non-ambiguous expressions reflecting the intention of the author. |
| ***Consequences if not approved:*** | ⌘ | The reference C-code is ambiguous. Some compilers may produce incorrect binary code and test vectors may fail. |

| | | |
|---|---|---|
| ***Clauses affected:*** | ⌘ | c2t64fx.c and c4t64fx.c |

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

| | | |
|---|---|---|
| ***Other comments:*** | ⌘ | |

**How to create CRs using this form:**
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# 1. How the code is changed in the file *c4t64fx.c*

## 1.1 Before the change

Lines 488-490 read:

```
       for (j = (Word16) ((k + 1) % NB_TRACK); j < L_SUBFR; j += STEP)
                   {
                       *p0++ = mult(*p0, psign[j]);    move16();
                   }
```

## 1.2 After the change

Lines 488-490 read now:

```
       for (j = (Word16) ((k + 1) % NB_TRACK); j < L_SUBFR; j += STEP)
                   {
                       *p0 = mult(*p0, psign[j]);      move16();
                        p0++;
                   }
```

# 2. How the code is changed in the file *c2t64fx.c*

## 2.1 Before the change

Lines 150-155 read:

```
       for (i = 0; i < NB_POS; i++)
           {
               *p0++ = shr(*p0, 1);                move16();
               *p1++ = shr(*p1, 1);                move16();
           }
```

## 2.2 After the change

Lines 150-155 now read:

```
       for (i = 0; i < NB_POS; i++)
           {
               *p0 = shr(*p0, 1);                move16();
               p0++;
               *p1 = shr(*p1, 1);                move16();
               p1++;
           }
```

## 2.3 Before the change

Lines 211-215 read:

```
       for (j = 1; j < L_SUBFR; j += STEP)
          {
               *p0++ = mult(*p0, psign[j]);   move16();
          }
```

## 2.4 After the change

Lines 211-215 read:

```
       for (j = 1; j < L_SUBFR; j += STEP)
          {
               *p0 = mult(*p0, psign[j]);   move16();
               p0++;
          }
```