Source: **TSG-SA WG4**

Title: **CRs to TS 26.173 on AMR-WB Fixed codebook initialisation (Release 5)**

Document for: **Approval**

Agenda Item: **7.4.3**

The following CRs, agreed at the TSG-SA WG4 meeting #17, are presented to TSG SA #12 for approval.

Spec	CR	Rev	Phase	Subject	Cat	Vers	WG	Meeting	S4 doc
26.173	001	1	REL-5	Unnecessary printing in Az_isp-function	F	5.0.0	S4	TSG-SA WG4#17	S4-010365R
26.173	002	1	REL-5	Overflow in isp_az.c	F	5.0.0	S4	TSG-SA WG4#17	S4-010366R
26.173	003	1	REL-5	Error in the ISF extrapolation in 6.60 kbit/s mode	F	5.0.0	S4	TSG-SA WG4#17	S4-010367R
26.173	004	1	REL-5	14-bit masking to decoder	F	5.0.0	S4	TSG-SA WG4#17	S4-010368R
26.173	005	1	REL-5	Correction of the homing function	F	5.0.0	S4	TSG-SA WG4#17	S4-010369R
26.173	006	1	REL-5	Fixed codebook initialisation	F	5.0.0	S4	TSG-SA WG4#17	S4-010377R

⌘ *CR-Form-v3*

CHANGE REQUEST

⌘ **26.173** CR **001** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

*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 **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	Unnecessary printing in Az_isp-function	
Source: ⌘	TSG-SA WG4	
Work item code: ⌘	AMRWB	***Date:*** ⌘ 8-June-2001
Category: ⌘	**F**	***Release:*** ⌘ REL-5

Use one of the following categories:
F *(essential 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: ⌘	Unnecessary printing in Az_isp-function.
Summary of change: ⌘	Unnecessary printf-function is removed.
Consequences if not approved: ⌘	AMR-WB codec prints unnecessary error message.

Clauses affected: ⌘	Files: az_isp.c
Other specs affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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. Background

There is still one unnecessary print-function call in the C-code. It was inserted in the development phase for debugging purposes and it is therefore not valid anymore.

When the AMR-WB encoder does not find enough roots from Az, az_isp-function prints "!!Not M roots found in Az_isp()!!!". This happens very rarely and in these instances, the previous ISP vector is used..

2. How the code is changed in file *az_isp.c*

2.1 Before the change (lines 194…198)

```
for (i = 0; i < M; i++)
{
    isp[i] = old_isp[i];        move16();
}
printf("\n !!Not M roots found in Az_isp()!!!\n");
```

2.2 After the change

```
for (i = 0; i < M; i++)
{
    isp[i] = old_isp[i];        move16();
}
```

⌘ *CR-Form-v3*

CHANGE REQUEST

⌘   **26.173** CR **002**   ⌘ rev **1** ⌘   Current version: **5.0.0** ⌘

*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 **X**   Radio Access Network ☐   Core Network **X**

Title: ⌘	Overflow in isp_az.c

Source: ⌘	TSG-SA WG4

Work item code: ⌘	AMRWB	***Date:*** ⌘ 8-June-2001

Category: ⌘	**F**	***Release:*** ⌘ REL-5

Use one of the following categories:	*Use one of the following releases:*
F *(essential correction)*	*2* *(GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*	*R96* *(Release 1996)*
B *(Addition of feature),*	*R97* *(Release 1997)*
C *(Functional modification of feature)*	*R98* *(Release 1998)*
D *(Editorial modification)*	*R99* *(Release 1999)*
Detailed explanations of the above categories can	*REL-4* *(Release 4)*
be found in 3GPP TR 21.900.	*REL-5* *(Release 5)*

Reason for change: ⌘	Overflow may occur in Get_isp_pol-routine

Summary of change: ⌘	Computation order for two arithmetic operations is changed.

Consequences if not approved: ⌘	Unstable LP filter can be generated.

Clauses affected: ⌘	Files: isp_az.c

Other specs affected: ⌘	☐ Other core specifications ⌘	
	☐ Test specifications	
	☐ O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

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http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

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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. Background

In some very rare instances, overflow can occur with the current computation order. However, overflow has never been detected in speech signals. After the correction, overflows do not occur anymore. This correction does not change the output of the test vectors, but for some signals the correction prevents overflows.

2. How the code is changed in file *isp_az.c*

2.1 Before the change (lines 160…167)

```
for (j = 1; j < i; j++, f--)
{
    L_Extract(f[-1], &hi, &lo);
    t0 = Mpy_32_16(hi, lo, *isp);  /* t0 = f[-1] * isp    */
    t0 = L_shl(t0, 1);
    *f = L_add(*f, f[-2]);         move32();  /* *f += f[-2]       */
    *f = L_sub(*f, t0);            move32();  /* *f -= t0          */
}
```

2.2 After the change

```
for (j = 1; j < i; j++, f--)
{
    L_Extract(f[-1], &hi, &lo);
    t0 = Mpy_32_16(hi, lo, *isp);  /* t0 = f[-1] * isp    */
    t0 = L_shl(t0, 1);
    *f = L_sub(*f, t0);            move32();  /* *f -= t0          */
    *f = L_add(*f, f[-2]);         move32();  /* *f += f[-2]       */
}
```

2.3 Before the change (lines 192…199)

```
for (j = 1; j < i; j++, f--)
{
    L_Extract(f[-1], &hi, &lo);
    t0 = Mpy_32_16(hi, lo, *isp);  /* t0 = f[-1] * isp    */
    t0 = L_shl(t0, 1);
    *f = L_add(*f, f[-2]);         move32();  /* *f += f[-2]       */
    *f = L_sub(*f, t0);            move32();  /* *f -= t0          */
}
```

2.4 After the change

```
for (j = 1; j < i; j++, f--)
{
    L_Extract(f[-1], &hi, &lo);
    t0 = Mpy_32_16(hi, lo, *isp);  /* t0 = f[-1] * isp    */
    t0 = L_shl(t0, 1);
    *f = L_sub(*f, t0);            move32();  /* *f -= t0          */
    *f = L_add(*f, f[-2]);         move32();  /* *f += f[-2]       */
}
```

CR-Form-v3

CHANGE REQUEST

⌘ **26.173 CR 003** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

*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 **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	Error in the ISF extrapolation in 6.60 kbit/s mode	
Source: ⌘	TSG-SA WG4	
Work item code: ⌘	AMRWB	***Date:*** ⌘ 8-June-2001
Category: ⌘	**F**	***Release:*** ⌘ REL-5

Use one of the following categories:
F *(essential 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: ⌘	One operation is missing from the ISF extrapolation-function.
Summary of change: ⌘	A multiplication operation is added into isf_extrapolation-function
Consequences if not approved: ⌘	The ISF extrapolation in 6.60 kbit/s mode never selects one value in the algorithm.

Clauses affected: ⌘	Files: isf_extrapolation.c
Other specs affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	

How to create CRs using this form:

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http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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. Background

The ISF extrapolation in 6.60 kbit/s mode never selects one value in the algorithm because of an error in the c-code. IsfCorr[2] is calculated incorrectly and when maximum of IsfCorr[0..2] is taken, index 2 of the vector is never selected.

After the correction it is possible to select all the values in the IsfCorr as a maximum and ISF extrapolation works correctly.

2. How the code is changed in file *isf_extrapolation.c*

2.1 Before the change (lines 77…84)

```
for (i = 7; i < (M - 2); i++)

    {

        tmp2 = sub(IsfDiff[i], mean);

        tmp3 = sub(IsfDiff[i - 4], mean);

        L_Extract(L_tmp, &hi, &lo);

        L_tmp = Mpy_32(hi, lo, hi, lo);

        IsfCorr[2] = L_add(IsfCorr[2], L_tmp);  move32();

    }
```

2.2 After the change

```
for (i = 7; i < (M - 2); i++)

    {

        tmp2 = sub(IsfDiff[i], mean);

        tmp3 = sub(IsfDiff[i - 4], mean);

        L_tmp = L_mult(tmp2, tmp3);

        L_Extract(L_tmp, &hi, &lo);

        L_tmp = Mpy_32(hi, lo, hi, lo);

        IsfCorr[2] = L_add(IsfCorr[2], L_tmp);  move32();

    }
```

CR-Form-v3

CHANGE REQUEST

⌘	**26.173** CR **004**	⌘ rev **1** ⌘	Current version: **5.0.0** ⌘

*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 **X**   Radio Access Network ☐   Core Network **X**

Title: ⌘	14-bit masking to decoder		
Source: ⌘	TSG-SA WG4		
Work item code: ⌘	AMRWB	***Date:*** ⌘	8-June-2001
Category: ⌘	**F**	***Release:*** ⌘	REL-5

Use <u>one</u> of the following categories:	Use <u>one</u> of the following releases:
F *(essential correction)*	*2 (GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*	*R96 (Release 1996)*
B *(Addition of feature),*	*R97 (Release 1997)*
C *(Functional modification of feature)*	*R98 (Release 1998)*
D *(Editorial modification)*	*R99 (Release 1999)*
Detailed explanations of the above categories can	*REL-4 (Release 4)*
be found in 3GPP TR 21.900.	*REL-5 (Release 5)*

Reason for change: ⌘	Encoder and decoder should include 14-bit masking but it is missing from the decoder output.
Summary of change: ⌘	14-bit masking is inserted into decoder.
Consequences if not approved: ⌘	14-bit masking is missing from the decoder output and the decoder will produce 16-bit output samples.

Clauses affected: ⌘	Files: decoder.c		
Other specs affected: ⌘	☐ Other core specifications ⌘		
	☐ Test specifications		
	☐ O&M Specifications		
Other comments: ⌘			

How to create CRs using this form:
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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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. Background

The AMR-WB encoder input does have a 14-bit masking but it is missing from the decoder output. Currently the codec is taking in 14-bit samples and producing 16-bit output samples.

2. How the code is changed in file *decoder.c*

2.1 Before the change (line 135)

```
fwrite(synth, sizeof(Word16), L_FRAME16k, f_synth);
```

2.2 After the change

```
for (i = 0; i < L_FRAME16k; i++)    /* Delete the 2 LSBs (14-bit output) */
{
    synth[i] = (Word16) (synth[i] & 0xfffC);       logic16(); move16();
}

fwrite(synth, sizeof(Word16), L_FRAME16k, f_synth);
```

CR-Form-v3

CHANGE REQUEST

| ⌘ | **26.173** CR **005** | ⌘ | rev | **1** | ⌘ | Current version: | **5.0.0** | ⌘ |

*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 **X**   Radio Access Network ☐   Core Network **X**

Title: ⌘	Correction of the homing function	
Source: ⌘	TSG-SA WG4	
Work item code: ⌘	AMRWB	***Date:*** ⌘ 8-June-2001
Category: ⌘	**F**	***Release:*** ⌘ REL-5

Use one of the following categories:	*Use one of the following releases:*
F *(essential correction)*	*2 (GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*	*R96 (Release 1996)*
B *(Addition of feature),*	*R97 (Release 1997)*
C *(Functional modification of feature)*	*R98 (Release 1998)*
D *(Editorial modification)*	*R99 (Release 1999)*
Detailed explanations of the above categories can	*REL-4 (Release 4)*
be found in 3GPP TR 21.900.	*REL-5 (Release 5)*

Reason for change: ⌘	Pointer is shifted incorrectly in the homing function.
Summary of change: ⌘	Shifting of a pointer is corrected. This changes also homing tables.
Consequences if not approved: ⌘	Possibility of not detecting homing frames

Clauses affected: ⌘	Files: homing.c, homing.tab in C-code and table 9 in the specification document.
Other specs affected: ⌘	☐ Other core specifications ⌘
	☐ Test specifications
	☐ O&M Specifications
Other comments: ⌘	

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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. Background

The pointer for the homing tables was shifted incorrectly. The homing tables have to be also corrected.. This CR corrects the shifting as well as the homing tables.

2. How the code is changed in file *homing.c*

2.1 Before the change (lines 43...51)

```
/* convert the received serial bits */
tmp = sub(nparms, 15);
while (sub(tmp, j) > 0)
{
    param[i] = Serial_parm(15, &prms);
    prms += 15;
    j = add(j, 15);
    i = add(i, 1);
}
```

2.2 After the change

```
/* convert the received serial bits */
tmp = sub(nparms, 15);
while (sub(tmp, j) > 0)
{
    param[i] = Serial_parm(15, &prms);
    j = add(j, 15);
    i = add(i, 1);
}
```

3. How the code is changed in file *homing.tab*

3.1 Before the change (lines 26...112)

```
static const Word16 dfh_M7k[PRMN_7k] ={
25351, 4331, 515, 15620,
20992, 0, 0, 0, 0};

static const Word16 dfh_M9k[PRMN_9k] ={
25351, 14010, 26489, 30912,
5254, 3459, 0, 0,
0, 0, 0, 0};

static const Word16 dfh_M12k[PRMN_12k] ={
25351, 14010, 29177, 18070,
19971, 3968, 32492, 8430,
13280, 0, 0, 0,
0, 0, 0, 0,
0};

static const Word16 dfh_M14k[PRMN_14k] ={
25351, 14010, 1912, 16326,
25140, 16384, 502, 15167,
1772, 11512, 0, 0,
0, 0, 0, 0,
0, 0, 0};

static const Word16 dfh_M16k[PRMN_16k] ={
25351, 14010, 1912, 30593,
14594, 19990, 864, 4635,
20446, 27456, 21310, 0,
0, 0, 0, 0,
0, 0, 0, 0,
0, 0};

static const Word16 dfh_M18k[PRMN_18k] ={
25351, 14010, 19995, 14446,
6159, 7329, 20752, 4228,
19488, 24383, 364, 20124,
0, 0, 0, 0,
```

```
0, 0, 0, 0,
0, 0, 0, 0,
0};

static const Word16 dfh_M20k[PRMN_20k] ={
25351, 14010, 3567, 560,
32536, 20534, 5139, 16384,
26161, 18755, 20444, 22173,
12623, 0, 0, 0,
0, 0, 0, 0,
0, 0, 0, 0,
0, 0, 0};

static const Word16 dfh_M23k[PRMN_23k] ={
25351, 14010, 2912, 28827,
15347, 28610, 9853, 1316,
30720, 786, 32259, 13279,
14336, 29152, 23302, 20352,
0, 0, 0, 0,
0, 0, 0, 0,
0, 0, 0, 0,
0, 0, 0};

static const Word16 dfh_M24k[PRMN_24k] ={
25351, 14010, 1601, 16734,
7923, 15017, 5450, 5477,
5760, 2187, 1534, 12142,
30894, 13419, 13141, 2376,
0, 0, 0, 0,
0, 0, 0, 0,
0, 0, 0, 0,
0, 0, 0, 0};
```

3.2 After the change

```
static const Word16 dfh_M7k[PRMN_7k] =
{
  3168, 29954, 29213, 16121,
   64, 13440, 30624, 16430,
 19008
};

static const Word16 dfh_M9k[PRMN_9k] =
{
   3168, 31665,  9943, 9123,
  15599,  4358, 20248, 2048,
  17040, 27787, 16816, 13888
};

static const Word16 dfh_M12k[PRMN_12k] =
{
  3168, 31665,  9943,  9128,
  3647,  8129, 30930, 27926,
 18880, 12319,   496,  1042,
  4061, 20446, 25629, 28069,
 13948
};

static const Word16 dfh_M14k[PRMN_14k] =
{
    3168, 31665,  9943,  9131,
   24815,   655, 26616, 26764,
    7238, 19136,  6144,    88,
   4158, 25733, 30567, 30494,
   221, 20321, 17823
};

static const Word16 dfh_M16k[PRMN_16k] =
{
    3168, 31665,  9943,  9131,
```

```
    24815,    700,   3824,   7271,
    26400,   9528,   6594,  26112,
      108,   2068,  12867,  16317,
    23035,  24632,   7528,   1752,
     6759,  24576
};

static const Word16 dfh_M18k[PRMN_18k] =
{
     3168,  31665,   9943,   9135,
    14787,  14423,  30477,  24927,
    25345,  30154,    916,   5728,
    18978,   2048,    528,  16449,
     2436,   3581,  23527,  29479,
     8237,  16810,  27091,  19052,
        0
};

static const Word16 dfh_M20k[PRMN_20k] =
{
     3168,  31665,   9943,   9129,
     8637,  31807,  24646,    736,
    28643,   2977,   2566,  25564,
    12930,  13960,   2048,    834,
     3270,   4100,  26920,  16237,
    31227,  17667,  15059,  20589,
    30249,  29123, 0
};

static const Word16 dfh_M23k[PRMN_23k] =
{
     3168,  31665,   9943,   9132,
    16748,   3202,  28179,  16317,
    30590,  15857,  19960,   8818,
    21711,  21538,   4260,  16690,
    20224,   3666,   4194,   9497,
    16320,  15388,   5755,  31551,
    14080,   3574,  15932,     50,
    23392,  26053,  31216
};

static const Word16 dfh_M24k[PRMN_24k] =
{
     3168,  31665,   9943,   9134,
    24776,   5857,  18475,  28535,
    29662,  14321,  18261,   4396,
    29353,  10003,  17068,  20504,
      720,      0,   8465,  12581,
    28863,  24774,   9709,  26043,
     7957,  27649,  13965,  15236,
    18026,  22047,  16681,   3968
};
```

4. How 3GPP TS 26.173 V5.0.0 is changed

2.1 Before the change

Table 9: Table values for the decoder homing frame in 15-bit-long format for different modes

Mode	Value (MSB=b0)
0	25351, 4331, 515, 15620, 20992, 0, 0, 0, 0
1	25351, 14010, 26489, 30912, 5254, 3459, 0, 0, 0, 0, 0, 0
2	25351, 14010, 29177, 18070, 19971, 3968, 32492, 8430, 13280, 0, 0, 0, 0, 0, 0, 0, 0
3	25351, 14010, 1912, 16326, 25140, 16384, 502, 15167, 1772, 11512, 0, 0, 0, 0, 0, 0, 0, 0, 0
4	25351, 14010, 1912, 30593, 14594, 19990, 864, 4635, 20446, 27456, 21310, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
5	25351, 14010, 19995, 14446, 6159, 7329, 20752, 4228, 19488, 24383, 364, 20124, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
6	25351, 14010, 3567, 560, 32536, 20534, 5139, 16384, 26161, 18755, 20444, 22173,12623, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
7	25351, 14010, 2912, 28827, 15347, 28610, 9853, 1316, 30720, 786, 32259, 13279,14336, 29152, 23302, 20352, 0, 0, 0, 0, 0, 0, 0, 0,0, 0, 0, 0, 0, 0, 0
8	025351, 14010, 1601, 16734, 7923, 15017, 5450, 5477, 5760, 2187, 1534, 12142, 30894, 13419, 13141, 2376, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

2.2 After the change

Table 9: Table values for the decoder homing frame in 15-bit-long format for different modes

Mode	Value (MSB=b0)
0	3168, 29954, 29213, 16121, 64, 13440, 30624, 16430, 19008
1	3168, 31665, 9943, 9123, 15599, 4358, 20248, 2048, 17040, 27787, 16816, 13888
2	3168, 31665, 9943, 9128, 3647, 8129, 30930, 27926, 18880, 12319, 496, 1042, 4061, 20446, 25629, 28069, 13948
3	3168, 31665, 9943, 9131, 24815, 655, 26616, 26764, 7238, 19136, 6144, 88, 4158, 25733, 30567, 30494, 221, 20321, 17823
4	3168, 31665, 9943, 9131, 24815, 700, 3824, 7271, 26400, 9528, 6594, 26112, 108, 2068, 12867, 16317, 23035, 24632, 7528, 1752, 6759, 24576
5	3168, 31665, 9943, 9135, 14787, 14423, 30477, 24927, 25345, 30154, 916, 5728, 18978, 2048, 528, 16449, 2436, 3581, 23527, 29479, 8237, 16810, 27091, 19052, 0
6	3168, 31665, 9943, 9129, 8637, 31807, 24646, 736, 28643, 2977, 2566, 25564, 12930, 13960, 2048, 834, 3270, 4100, 26920, 16237, 31227, 17667, 15059, 20589, 30249, 29123, 0
7	3168, 31665, 9943, 9132, 16748, 3202, 28179, 16317, 30590, 15857, 19960, 8818, 21711, 21538, 4260, 16690, 20224, 3666, 4194, 9497, 16320, 15388, 5755, 31551, 14080, 3574, 15932, 50, 23392, 26053, 31216
8	3168, 31665, 9943, 9134, 24776, 5857, 18475, 28535, 29662, 14321, 18261, 4396, 29353, 10003, 17068, 20504, 720, 0, 8465, 12581, 28863, 24774, 9709, 26043, 7957, 27649, 13965, 15236, 18026, 22047, 16681, 3968

<div style="text-align: right">CR-Form-v3</div>

CHANGE REQUEST

| ⌘ | **26.173** CR **006** | ⌘ rev **1** | ⌘ | Current version: | **5.0.0** | ⌘ |

*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 **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	Fixed codebook initialisation	
Source: ⌘	TSG-SA WG4	
Work item code: ⌘	AMRWB	***Date:*** ⌘ 8-June-2001
Category: ⌘ **F**		***Release:*** ⌘ REL-5

Use <u>one</u> of the following categories:
F *(essential 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 <u>one</u> 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: ⌘	Fixed codebook initialisation
Summary of change: ⌘	Fixed codebook indices are initialised
Consequences if not approved: ⌘	In rare occasions uninitialised fixed codebook indices can be used..

Clauses affected: ⌘	Files: c4t64fx.c
Other specs affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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. Background

The fixed codebook search routine does not initialise the codebook indices. Therefore, in rare occasions uninitialised fixed codebook indices can be used.

2. How the code is changed in file *c4t64fx.c*

2.1 Before the change (lines 192…200)

```
default:
    nbiter = 0;
    alp = 0;
    nb_pulse = 0;
}

/*-------------------------------------------------------------*
 * Find sign for each pulse position.                          *
 *-------------------------------------------------------------*/
```

2.2 After the change

```
default:
    nbiter = 0;
    alp = 0;
    nb_pulse = 0;
}

for (i = 0; i < nb_pulse; i++)
{
    codvec[i] = i;              move16();
}

/*-------------------------------------------------------------*
 * Find sign for each pulse position.                          *
 *-------------------------------------------------------------*/
```