3GPP TSG-RAN Meeting #15
Jeju, Korea, 5 – 8, March, 2002

RP-020051

Title: **Agreed CRs (R99 and Rel-4 Category A) to TS 25.223**

Source: **TSG-RAN WG1**

Agenda item: **7.1.3**

No.	Spec	CR	Rev	R1 T-doc	Subject	Release	Cat	Workitem	V_old	V_new
1	25.223	024	1	R1-02-0340	Removal of quantisation of bj gain factor when calculated from a reference TFC	R99	F	TEI	3.7.0	3.8.0
2	25.223	025	1	R1-02-0340	Removal of quantisation of bj gain factor when calculated from a reference TFC	Rel-4	A	TEI	4.3.0	4.4.0
3	25.223	027	-	R1-02-0341	Channelisation code-specific multiplier operation under autonomous SF change	R99	F	TEI	3.7.0	3.8.0
4	25.223	028	-	R1-02-0341	Channelisation code-specific multiplier operation under autonomous SF change	Rel-4	A	TEI	4.3.0	4.4.0
5	25.223	029	-	R1-02-0342	Alignment of gamma(i) gains of 25.223 with SIR target of WG2 25.331	R99	F	TEI	3.7.0	3.8.0
6	25.223	030	-	R1-02-0342	Alignment of gamma(i) gains of 25.223 with SIR target of WG2 25.331	Rel-4	A	TEI	4.3.0	4.4.0

3GPP TSG RAN Meeting #15
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R1-02-0340

CR-Form-v5

CHANGE REQUEST

⌘ **25.223** **CR** **024** ⌘ **rev** **1** ⌘ Current version: **3.7.0** ⌘

*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:	⌘	Removal of quantisation of β_j gain factor when calculated from a reference TFC.
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI
Date:	⌘	13-02-2002
Category:	⌘	**F**
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:	⌘	Quantisation of β_i for 3.84Mcps TDD has been inherited from FDD, where it is employed for reasons of simplified transmitter complexity implementation. This is not applicable for 3.84Mcps TDD transmitter implementation. Uplink power control does not function correctly under quantisation of β_i due to inaccurate transmit power adjustments being made on TFC transitions.
Summary of change:	⌘	Quantisation of β_i is not performed in the case that β_i has been calculated from a reference TFC.
Consequences if not approved:	⌘	UL power control will not function correctly under conditions in which the UE frequently selects different TFCs from within the set of allowed TFCs. **Isolated Impact Analysis** ▪ Correction to a function where the specification was erroneous. ▪ This change has isolated impact.

Clauses affected:	⌘	6.6.1.		
Other specs affected:	⌘	☒ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	TS 25.224
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.

6.6.1 Combination of physical channels in uplink

Figure 4 illustrates the principle of combination of two different physical uplink channels within one timeslot. The DPCHs to be combined belong to same CCTrCH, did undergo spreading as described in sections before and are thus represented by complex-valued sequences. First, the amplitude of all DPCHs is adjusted according to UL open loop power control as described in [10]. Each DPCH is then separately weighted by a weight factor γ_i and combined using complex addition. After combination of Physical Channels the gain factor β_j is applied, depending on the actual TFC as described in [10].

In case of different CCTrCH, principle shown in Figure 4 applies to each CCTrCH separately.

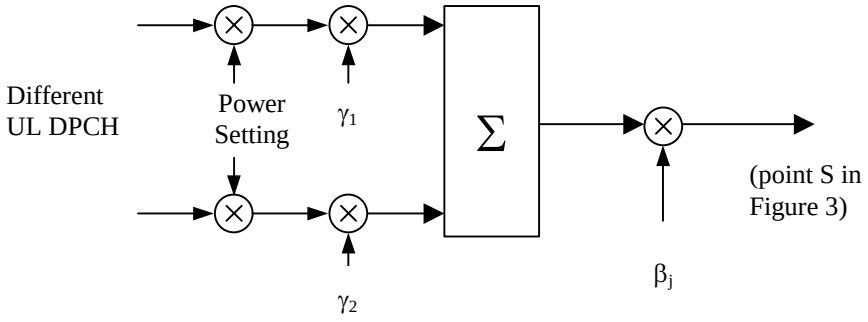

Figure 4: Combination of different physical channels in uplink

The values of weight factors γ_i are depending on the spreading factor SF of the corresponding DPCH:

SF of DPCH$_i$	γ_i
16	1
8	$\sqrt{2}$
4	2
2	$2\sqrt{2}$
1	4

In the case that β_j (corresponding to the *j*–th TFC) has been explicitly signalled to the UE, the possible values that β_j can assume are listed in the table below. In the case that β_j has been calculated by the UE from a reference TFC, β_j shall not be restricted to the quantised values.

~~The possible values for gain factors β_j (corresponding to *j*–th TFC) are listed in table below:~~

Signalling value for β_j	Quantized value β_j
15	16/8
14	15/8
13	14/8
12	13/8
11	12/8
10	11/8
9	10/8
8	9/8
7	8/8
6	7/8
5	6/8
4	5/8
3	4/8
2	3/8
1	2/8
0	1/8

3GPP TSG RAN Meeting #15
Jeju, Korea, 5 – 8, March, 2002

R1-02-0340

CR-Form-v5

CHANGE REQUEST

⌘ **25.223** **CR** **025** ⌘ **rev** **1** ⌘ Current version: **4.3.0** ⌘

*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:	⌘	Removal of quantisation of β_j gain factor when calculated from a reference TFC.
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI
Date:	⌘	13-02-2002
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
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D *(editorial modification)*
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REL-5 (Release 5)

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Consequences if not approved:	⌘	UL power control will not function correctly under conditions in which the UE frequently selects different TFCs from within the set of allowed TFCs. **Isolated Impact Analysis** ▪ Correction to a function where the specification was erroneous. ▪ This change has isolated impact.

Clauses affected:	⌘	7.6.1.		
Other specs affected:	⌘	☒ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	TS 25.224
Other comments:	⌘			

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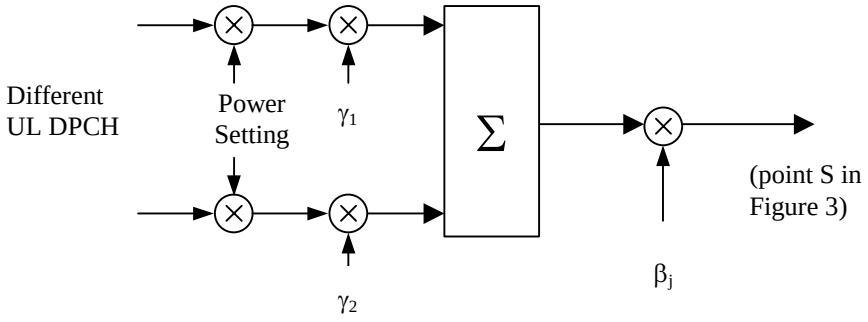

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16	1
8	$\sqrt{2}$
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In the case that β_j (corresponding to the *j*–th TFC) has been explicitly signalled to the UE, the possible values that β_j can assume are listed in the table below. In the case that β_j has been calculated by the UE from a reference TFC, β_j shall not be restricted to the quantised values.

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5	6/8
4	5/8
3	4/8
2	3/8
1	2/8
0	1/8

3GPP TSG RAN Meeting #15
Jeju, Korea, 5 – 8, March, 2002

R1-02-0341

CR-Form-v5

CHANGE REQUEST

⌘ **25.223** **CR** **027** ⌘ **rev** **-** ⌘ Current version: **3.7.0** ⌘

*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:	⌘	Channelisation code-specific multiplier operation under autonomous SF change
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI
Date:	⌘	14-02-2002
Category:	⌘	**F**
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)*
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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:	⌘	When a UE autonomously changes spreading factor on the UL, the SF of these channels may be derived via TFCI. However, the channelisation code specific multiplier also changes, the result being that the phase rotation of the TFCI is unknown.
Summary of change:	⌘	The channelisation code and SF of the initial allocation prior to SF change shall always be used to derive the channelisation code specific multiplier.
Consequences if not approved:	⌘	TFCI cannot be used to detect UE SF change. This can prevent correct decoding of TFCI itself. **Isolated Impact Analysis** ▪ This CR corrects a function in the specification that was erroneous. ▪ This CR has isolated impact.

Clauses affected:	⌘	6.3
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.

6.3 Channelisation Code Specific Multiplier

Associated with each channelisation code is a multiplier $w_{Q_k}^{(k)}$ taking values from the set $\left\{e^{j\pi/2\cdot p_k}\right\}$, where p_k is a permutation of the integer set {0, ..., Q_k -1} and Q_k denotes the spreading factor. The multiplier is applied to the data sequence modulating each channelisation code. The values of the multiplier for each channelisation code are given in the table below:

k	$w_{Q=1}^{(k)}$	$w_{Q=2}^{(k)}$	$w_{Q=4}^{(k)}$	$w_{Q=8}^{(k)}$	$w_{Q=16}^{(k)}$
1	1	1	-j	1	-1
2		+j	1	+j	-j
3			+j	+j	1
4			-1	-1	1
5				-j	+j
6				-1	-1
7				-j	-1
8				1	1
9					-j
10					+j
11					1
12					+j
13					-j
14					-j
15					+j
16					-1

If the UE autonomously changes the SF, as described in [7], it shall always use the multiplier associated with the channelisation code allocated by higher layers.

3GPP TSG RAN Meeting #15
Jeju, Korea, 5 – 8, March, 2002

R1-02-0341

CR-Form-v5

CHANGE REQUEST

⌘ **25.223** **CR** **028** ⌘ **rev** **-** ⌘ Current version: **4.3.0** ⌘

*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:	⌘	Channelisation code-specific multiplier operation under autonomous SF change
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI
Date:	⌘	14-02-2002
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
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B *(addition of feature),*
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Reason for change:	⌘	When a UE autonomously changes spreading factor on the UL, the SF of these channels may be derived via TFCI. However, the channelisation code specific multiplier also changes, the result being that the phase rotation of the TFCI is unknown.
Summary of change:	⌘	The channelisation code and SF of the initial allocation prior to SF change shall always be used to derive the channelisation code specific multiplier.
Consequences if not approved:	⌘	TFCI cannot be used to detect UE SF change. This can prevent correct decoding of TFCI itself. **Isolated Impact Analysis** ▪ This CR corrects a function in the specification that was erroneous. ▪ This CR has isolated impact.

Clauses affected:	⌘	7.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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k	$w_{Q=1}^{(k)}$	$w_{Q=2}^{(k)}$	$w_{Q=4}^{(k)}$	$w_{Q=8}^{(k)}$	$w_{Q=16}^{(k)}$
1	1	1	-j	1	-1
2		+j	1	+j	-j
3			+j	+j	1
4			-1	-1	1
5				-j	+j
6				-1	-1
7				-j	-1
8				1	1
9					-j
10					+j
11					1
12					+j
13					-j
14					-j
15					+j
16					-1

If the UE autonomously changes the SF, as described in [7], it shall always use the multiplier associated with the channelisation code allocated by higher layers.

3GPP TSG RAN Meeting #15
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R1-02-0342

CR-Form-v5

CHANGE REQUEST

⌘ **25.223** **CR** **029** ⌘ **rev** **-** ⌘ Current version: **3.7.0** ⌘

*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:	⌘	Alignment of gamma(i) gains of 25.223 with SIR target of WG2 25.331
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI
Date:	⌘	30-01-2002
Category:	⌘	**F**
Release:	⌘	R99

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R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
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Reason for change:	⌘	SIR target used for uplink power control in RRC protocol specification 25.331 is not aligned with the gamma(i) physical channel gains applied by layer 1 as a function of the physical channel spreading factor. This results in an incorrect UE transmit power.
Summary of change:	⌘	All gamma(i) gains are reduced by a factor of 4, resulting in a transmit power reduction factor of 16. This is then aligned with the SIR target value used in 25.331, and the uplink physical channel SIR measurements of 25.225 which refer to SIR = (RSCP/Interference)xSF.
Consequences if not approved:	⌘	Correct functioning of uplink power control for TDD is prohibited. **Isolated Impact Analysis** ▪ Correction to a function where the specification was erroneous. ▪ This change has isolated impact.

Clauses affected:	⌘	6.6.1.		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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Figure 4 illustrates the principle of combination of two different physical uplink channels within one timeslot. The DPCHs to be combined belong to same CCTrCH, did undergo spreading as described in sections before and are thus represented by complex-valued sequences. First, the amplitude of all DPCHs is adjusted according to UL open loop power control as described in [10]. Each DPCH is then separately weighted by a weight factor γ_i and combined using complex addition. After combination of Physical Channels the gain factor β_j is applied, depending on the actual TFC as described in [10].

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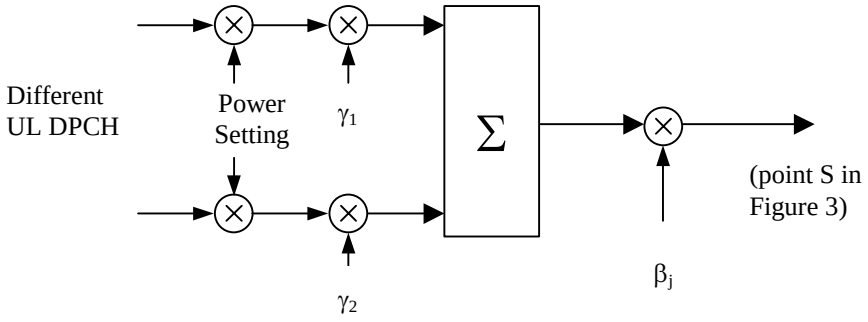

Figure 4: Combination of different physical channels in uplink

The values of weight factors γ_i are depending on the spreading factor SF of the corresponding DPCH:

SF of DPCH$_i$	γ_i
16	$1/4$
8	$\sqrt{2}/4$
4	$1/2$
2	$\sqrt{2}/2$
1	1

The possible values for gain factors β_j (corresponding to *j*–th TFC) are listed in table below:

Signalling value for β_j	**Quantized value β_j**
15	16/8
14	15/8
13	14/8
12	13/8
11	12/8
10	11/8
9	10/8
8	9/8
7	8/8
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5	6/8
4	5/8
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R1-02-0342

CR-Form-v5

CHANGE REQUEST

⌘ **25.223** **CR** **030** ⌘ **rev** **-** ⌘ Current version: **4.3.0** ⌘

*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:	⌘	Alignment of gamma(i) gains of 25.223 with SIR target of WG2 25.331
Source:	⌘	TSG RAN WG1
Work item code:	⌘	TEI
Date:	⌘	30-01-2002
Category:	⌘	**A**
Release:	⌘	REL-4

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Consequences if not approved:	⌘	Correct functioning of uplink power control for TDD is prohibited. **Isolated Impact Analysis** ▪ Correction to a function where the specification was erroneous. ▪ This change has isolated impact.

Clauses affected:	⌘	7.6.1.
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Other comments:	⌘	

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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://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.

7.6.1 Combination of physical channels in uplink

Figure 4 illustrates the principle of combination of two different physical uplink channels within one timeslot. The DPCHs to be combined belong to same CCTrCH, did undergo spreading as described in sections before and are thus represented by complex-valued sequences. First, the amplitude of all DPCHs is adjusted according to UL open loop power control as described in [10]. Each DPCH is then separately weighted by a weight factor γ_i and combined using complex addition. After combination of Physical Channels the gain factor β_j is applied, depending on the actual TFC as described in [10].

In case of different CCTrCH, principle shown in Figure 4 applies to each CCTrCH separately.

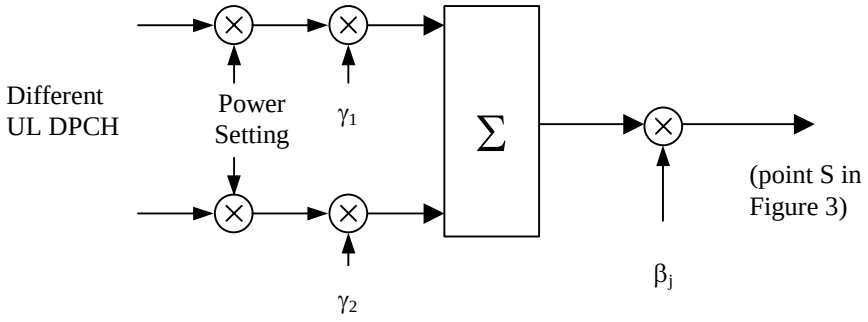

Figure 4: Combination of different physical channels in uplink

The values of weight factors γ_i are depending on the spreading factor SF of the corresponding DPCH:

SF of DPCH$_i$	γ_i
16	$1/4$
8	$\sqrt{2}/4$
4	$1/2$
2	$\sqrt{2}/2$
1	1

The possible values for gain factors β_j (corresponding to *j*–th TFC) are listed in table below:

Signalling value for β_j	**Quantized value β_j**
15	16/8
14	15/8
13	14/8
12	13/8
11	12/8
10	11/8
9	10/8
8	9/8
7	8/8
6	7/8
5	6/8
4	5/8
3	4/8
2	3/8
1	2/8
0	1/8