TSG-RAN Meeting #14   *RP-010737*
Kyoto, Japan, 11 – 14, December, 2001

Title: **Agreed CRs (R99 and Rel-4 Category A) to TS 25.212**

Source: **TSG-RAN WG1**

Agenda item: 8.1.3

No.	Spec	CR	Rev	R1 T-doc	Subject	Release	Cat	W/I Code	V_old	V_new
1	25.212	117	-	R1-01-1121	Clarification of compressed mode	R99	F	TEI	3.7.0	3.8.0
2	25.212	118	-	R1-01-1121	Clarification of compressed mode	Rel-4	A	TEI	4.2.0	4.3.0
3	25.212	121	-	R1-01-1165	Support of multiple CCTrChs of dedicated type	R99	F	TEI	3.7.0	3.8.0
4	25.212	122	-	R1-01-1165	Support of multiple CCTrChs of dedicated type	Rel-4	A	TEI	4.2.0	4.3.0

CR-Form-v4

CHANGE REQUEST

⌘ **25.212 CR 117** ⌘ 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: ⌘	Clarification of compressed mode	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	TEI	***Date:*** ⌘ 2001-11-13

Category: ⌘ **F**	***Release:*** ⌘ R99

Use <u>one</u> 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 <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: ⌘	-	Compressed mode with SF/2 is not applicable when SF=4 in normal mode, this is clearly stated in TS 25.211 for DL, but there is no such statement for UL. Following the determination of SF in UL, a UE could assume to use multicode when compressed mode is initiated with SF/2, which is of course not intended.
	-	Statements relative to the DL procedure are descriptive (i.e. not necessary) and incorrect (i.e. misleading). When using fixed position in the DL it may be that the block length is not a multiple of Fi after rate matching. When this happens, this is corrected by the 1st DTX insertion block.
Summary of change: ⌘	-	Clarify that compressed mode with SF/2 method is not applicable when SF=4.
	-	Removal of the descriptive text in section 4.2.4
Consequences if not approved: ⌘		Ambiguous UE implementation. Inconsistency in 25.212.

Clauses affected: ⌘	4.2.4, 4.4.3.2	
Other specs Affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications	
Other comments: ⌘	This CR is considered to have isolated impact.	

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.

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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 reques

4.2.4 Radio frame size equalisation

Radio frame size equalisation is padding the input bit sequence in order to ensure that the output can be segmented in F_i data segments of same size as described in subclause 4.2.7. Radio frame size equalisation is only performed in the UL. ~~(In normal mode and in compressed modes by SF reduction and by higher layer scheduling, DL rate matching output block length is always an integer multiple of F_i. In compressed mode by puncturing, first interleaver input block length after p-bits insertion is always an integer multiple of F_i).~~

The input bit sequence to the radio frame size equalisation is denoted by $c_{i1}, c_{i2}, c_{i3}, \ldots, c_{iE_i}$, where i is TrCH number and E_i the number of bits. The output bit sequence is denoted by $t_{i1}, t_{i2}, t_{i3}, \ldots, t_{iT_i}$, where T_i is the number of bits. The output bit sequence is derived as follows:

- $t_{ik} = c_{ik}$, for k = 1… E_i; and

- $t_{ik} = \{0, 1\}$ for k= E_i +1… T_i, if $E_i < T_i$;

where

- $T_i = F_i * N_i$; and

- $N_i = \lceil E_i / F_i \rceil$ is the number of bits per segment after size equalisation.

4.4.3 Transmission time reduction method

When in compressed mode, the information normally transmitted during a 10 ms frame is compressed in time. The mechanisms provided for achieving this are puncturing, reduction of the spreading factor by a factor of two , and higher layer scheduling. In the downlink, all methods are supported while compressed mode by puncturing is not used in the uplink. The maximum idle length is defined to be 7 slots per one 10 ms frame. The slot formats that are used in compressed frames are listed in [2].

4.4.3.1 Compressed mode by puncturing

Rate matching is applied for creating a transmission gap in one or two frames. The algorithm for rate matching as described in subclause 4.2.7 is used.

4.4.3.2 Compressed mode by reducing the spreading factor by 2

The spreading factor (SF) can be reduced by 2 during one compressed radio frame to enable the transmission of the information bits in the remaining time slots of the compressed frame. This method is not supported for SF=4.

On the downlink, UTRAN can also order the UE to use a different scrambling code in a compressed frame than in a non-compressed frame. If the UE is ordered to use a different scrambling code in a compressed frame, then there is a one-to-one mapping between the scrambling code used in the non-compressed frame and the one used in the compressed frame, as described in [3] subclause 5.2.1.

4.4.3.3 Compressed mode by higher layer scheduling

Compressed frames can be obtained by higher layer scheduling. Higher layers then set restrictions so that only a subset of the allowed TFCs are used in a compressed frame. The maximum number of bits that will be delivered to the physical layer during the compressed radio frame is then known and a transmission gap can be generated. Note that in the downlink, the TFCI field is expanded on the expense of the data fields and this shall be taken into account by higher layers when setting the restrictions on the TFCs. Compressed mode by higher layer scheduling shall not be used with fixed starting positions of the TrCHs in the radio frame.

CR-Form-v4

CHANGE REQUEST

| ⌘ | **25.212** CR **118** | ⌘ rev | **-** | ⌘ | Current version: | **4.2.0** | ⌘ |

*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: ⌘	Clarification of compressed mode	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	TEI	***Date:*** ⌘ 2001-11-13
Category: ⌘ **A**		***Release:*** ⌘ REL-4

Use <u>one</u> of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
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D *(editorial modification)*
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R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘	- Compressed mode with SF/2 is not applicable when SF=4 in normal mode, this is clearly stated in TS 25.211 for DL, but there is no such statement for UL. Following the determination of SF in UL, a UE could assume to use multicode when compressed mode is initiated with SF/2, which is of course not intended. - Statements relative to the DL procedure are descriptive (i.e. not necessary) and incorrect (i.e. misleading). When using fixed position in the DL it may be that the block length is not a multiple of Fi after rate matching. When this happens, this is corrected by the 1st DTX insertion block.
Summary of change: ⌘	- Clarify that compressed mode with SF/2 method is not applicable when SF=4. - Removal of the descriptive text in section 4.2.4
Consequences if not approved: ⌘	Ambiguous UE implementation. Inconsistency in 25.212.

Clauses affected: ⌘	4.2.4, 4.4.3.2

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

Other comments: ⌘	This CR is considered to have isolated impact.

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- $T_i = F_i * N_i$; and

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When in compressed mode, the information normally transmitted during a 10 ms frame is compressed in time. The mechanisms provided for achieving this are puncturing, reduction of the spreading factor by a factor of two , and higher layer scheduling. In the downlink, all methods are supported while compressed mode by puncturing is not used in the uplink. The maximum idle length is defined to be 7 slots per one 10 ms frame. The slot formats that are used in compressed frames are listed in [2].

4.4.3.1 Compressed mode by puncturing

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4.4.3.2 Compressed mode by reducing the spreading factor by 2

The spreading factor (SF) can be reduced by 2 during one compressed radio frame to enable the transmission of the information bits in the remaining time slots of the compressed frame. This method is not supported for SF=4.

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CR-Form-v5

CHANGE REQUEST

| ⌘ | **25.212** CR **121** | ⌘**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: ⌘	Support of multiple CCTrChs of dedicated type	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	TEI	***Date:*** ⌘ November 15th 2001
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: ⌘	25.212 does not indicate that support of multiple CCTrChs of dedicated type is not part of release 99.
Summary of change: ⌘	A note is added in 4.2.14.1.2 to indicate that support of multiple CCTrChs of dedicated type is not part of the current release.
Consequences if not approved: ⌘	Missing information in 25.212 since having multiple CCTrChs of dedicated type is not supported by the signalling in release 99. Isolated impact CR : this is an isolated impact CR since there is no signalling anyway to support multiple CCTrChs of dedicated type in release 99.

Clauses affected: ⌘	4.2.14.1.2
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.

2) Only transport channels with the same active set can be mapped onto the same CCTrCH.

3) Different CCTrCHs cannot be mapped onto the same PhCH.

4) One CCTrCH shall be mapped onto one or several PhCHs. These physical channels shall all have the same SF.

5) Dedicated Transport channels and common transport channels cannot be multiplexed into the same CCTrCH.

6) For the common transport channels, only the FACH and PCH may belong to the same CCTrCH.

There are hence two types of CCTrCH:

1) CCTrCH of dedicated type, corresponding to the result of coding and multiplexing of one or several DCHs.

2) CCTrCH of common type, corresponding to the result of the coding and multiplexing of a common channel, RACH in the uplink, DSCH ,BCH, or FACH/PCH for the downlink.

4.2.14.1 Allowed CCTrCH combinations for one UE

4.2.14.1.1 Allowed CCTrCH combinations on the uplink

A maximum of one CCTrCH is allowed for one UE on the uplink. It can be either:

1) one CCTrCH of dedicated type;

2) one CCTrCH of common type.

4.2.14.1.2 Allowed CCTrCH combinations on the downlink

The following CCTrCH combinations for one UE are allowed:

- x CCTrCH of dedicated type + y CCTrCH of common type. The allowed combination of CCTrCHs of dedicated and common type are given from UE radio access capabilities. There can be a maximum on one CCTrCH of common type for DSCH and a maximum of one CCTrCH of common type for FACH. With one CCTrCH of common type for DSCH, there shall be only one CCTrCH of dedicated type.

NOTE 1: There is only one DPCCH in the uplink, hence one TPC bits flow on the uplink to control possibly the different DPDCHs on the downlink, part of the same or several CCTrCHs.

NOTE 2: There is only one DPCCH in the downlink, even with multiple CCTrCHs. With multiple CCTrCHs, the DPCCH is transmitted on one of the physical channels of that CCTrCH which has the smallest SF among the multiple CCTrCHs. Thus there is only one TPC command flow and only one TFCI word in downlink even with multiple CCTrCHs.

NOTE 3 : in the current release, only 1 CCTrCH of dedicated type is supported.

CR-Form-v5

CHANGE REQUEST

| ⌘ | **25.212** CR **122** | ⌘ **rev** | **-** | ⌘ | Current version: | **4.2.0** | ⌘ |

*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: ⌘	Support of multiple CCTrChs of dedicated type	
Source: ⌘	TSG RAN WG1	
Work item code: ⌘	TEI	***Date:*** ⌘ November 15th 2001
Category: ⌘ **A**		***Release:*** ⌘ REL-4

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R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change: ⌘	25.212 does not indicate that support of multiple CCTrChs of dedicated type is not part of release 4.
Summary of change: ⌘	A note is added in 4.2.14.1.2 to indicate that support of multiple CCTrChs of dedicated type is not part of the current release.
Consequences if not approved: ⌘	Missing information in 25.212 since having multiple CCTrChs of dedicated type is not supported by the signalling in release 4. Isolated impact CR : this is an isolated impact CR since there is no signalling anyway to support multiple CCTrChs of dedicated type in release 4.

Clauses affected: ⌘	4.2.14.1.2
Other specs affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	

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2) Only transport channels with the same active set can be mapped onto the same CCTrCH.

3) Different CCTrCHs cannot be mapped onto the same PhCH.

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There are hence two types of CCTrCH:

1) CCTrCH of dedicated type, corresponding to the result of coding and multiplexing of one or several DCHs.

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4.2.14.1.2 Allowed CCTrCH combinations on the downlink

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NOTE 1: There is only one DPCCH in the uplink, hence one TPC bits flow on the uplink to control possibly the different DPDCHs on the downlink, part of the same or several CCTrCHs.

NOTE 2: There is only one DPCCH in the downlink, even with multiple CCTrCHs. With multiple CCTrCHs, the DPCCH is transmitted on one of the physical channels of that CCTrCH which has the smallest SF among the multiple CCTrCHs. Thus there is only one TPC command flow and only one TFCI word in downlink even with multiple CCTrCHs.

NOTE 3 : in the current release, only 1 CCTrCH of dedicated type is supported.