TSG-RAN Meeting #14
Kyoto, Japan, 11 - 14 December 2001

RP-010753

Title: **Agreed CRs (Release '99 and Rel-4 category A) to TS 25.301**

Source: **TSG-RAN WG2**

Agenda item: **8.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-012515	agreed	25.301	057		R99	Removal of Tr mode DCCH from R99 only	F	3.8.0	3.9.0
---	---	---	---		---	<no Rel-4 shadow>	---	---	---
R2-012535	agreed	25.301	058		R99	Clean up of RLC function	F	3.8.0	3.9.0
R2-012635	agreed	25.301	059		Rel-4	Clean up of RLC function	A	4.1.0	4.2.0
R2-012567	agreed	25.301	060		R99	Correction on transport channel numbering	F	3.8.0	3.9.0
R2-012636	agreed	25.301	061		Rel-4	Correction on transport channel numbering	A	4.1.0	4.2.0

3GPP TSG-RAN WG2 Meeting #25 **R2-012515**
Makuhari, Japan, 26- 30 November, 2001

CR-Form-v4

CHANGE REQUEST

⌘ **25.301** **CR** **057** ⌘ ev **-** ⌘ Current version: **3.8.0** ⌘

*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:	⌘	Removal of Tr mode DCCH from R99 only
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	November 26, 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:	⌘	Transparent Mode DCCH is intended to support TFO and TrFO with GSM networks. Anyhow, these features will only be fully supported by the standard only from Rel-4 onward. Moreover, the way Transparent Mode DCCM is defined in R99 is extremely inefficient, e.g. 20-60 bits of information are sent almost every 20 ms to convey an information that could be more appropriately be encoded with 3-5 bits. Therefore it seems very unlikely that this R99 feature would ever be deployed in commercial networks. Its removal, on the other hand, would simplify the UE development and it would reduce the amount of testing. Note that none of the configurations so far defined in TS 34.108v3.4.0 includes the Transparent Mode DCCH.
Summary of change:	⌘	Transparent Mode DCCH is removed from RRC prtocol specification R99 **Isolated Impact Change Analysis.** This change affects the Tr Mode DCCH. It would not affect implementations behaving like indicated in the CR, it would affect implementations supporting the corrected functionality otherwise.
Consequences if not approved:	⌘	UE would be unnecessary complex to implement a feature that will almost certainly never be implemented in R99 systems.

Clauses affected:	⌘	5.3.5.17		
Other specs affected:	⌘	**X** Other core specifications	⌘	CR 1130 to TS 25.331 CR 167 to TS 25.322 CR 062 to TS 25.303 TS 33.102 may also be affected No change to 25.301 v4.1.0!
		☐ Test specifications		
		☐ O&M Specifications		

Other comments:	⌘	There is no shadow Rel-4 CR, since Transparent Mode DCCH is supported in Rel-4.R2-01???? Is the LS to inform SA3 of the removal of the “TRANSPORT FORMAT COMBINATION CONTROL (TM DCCH only)” from the list of messages for which integrity protection is not performedThe removal of this feature was agreed at RAN2 #24 during the discussion of R2-012344.

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:

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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.

5.3.5.17 Data flow for DCCH mapped to DCH

In this case non-transparent ~~or transparent~~ transmission mode on RLC is applied. A MAC header is needed only if DCCH and DTCH logical channels are multiplexed in MAC before mapping to a DCH, i.e. either the data flow in Figure 8 or Figure 9 is applicable.

[…]

3GPP TSG-RAN WG2 meeting #25
Makuhari, Japan, November 26th – 30th, 2001

Tdoc R2-012535

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CHANGE REQUEST

⌘ **25.301** **CR** **058** ⌘ ev **-** ⌘ Current version: **3.8.0** ⌘

*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:	⌘	Cleanup of RLC function
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-11-19
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
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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:	⌘	The list of RLC functions is not aligned with 25.322
Summary of change:	⌘	The list of RLC functions was modified in 25.322 in the editorial cleanup of RLC. This CR aligns the list of RLC functions in 25.301 with 25.322.
Consequences if not approved:	⌘	Misaligned specifications

Clauses affected:	⌘	5.3.2.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.301 v4.1.0, CR 059
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.

5.3.2 RLC Services and Functions

This subclause provides an overview on services and functions provided by the RLC sublayer. A detailed description of the RLC protocol is given in [8].

5.3.2.1 Services provided to the upper layer

- **Transparent data transfer**. This service transmits upper layer PDUs without adding any protocol information, possibly including segmentation/reassembly functionality.
- **Unacknowledged data transfer**. This service transmits upper layer PDUs without guaranteeing delivery to the peer entity. The unacknowledged data transfer mode has the following characteristics:
  - Detection of erroneous data: The RLC sublayer shall deliver only those SDUs to the receiving upper layer that are free of transmission errors by using the sequence-number check function.
  - Immediate delivery: The receiving RLC sublayer entity shall deliver a SDU to the upper layer receiving entity as soon as it arrives at the receiver.
- **Acknowledged data transfer**. This service transmits upper layer PDUs and guarantees delivery to the peer entity. In case RLC is unable to deliver the data correctly, the user of RLC at the transmitting side is notified. For this service, both in-sequence and out-of-sequence delivery are supported. In many cases a upper layer protocol can restore the order of its PDUs. As long as the out-of-sequence properties of the lower layer are known and controlled (i.e. the upper layer protocol will not immediately request retransmission of a missing PDU) allowing out-of-sequence delivery can save memory space in the receiving RLC. The acknowledged data transfer mode has the following characteristics:
  - Error-free delivery: Error-free delivery is ensured by means of retransmission. The receiving RLC entity delivers only error-free SDUs to the upper layer.
  - Unique delivery: The RLC sublayer shall deliver each SDU only once to the receiving upper layer using duplication detection function.
  - In-sequence delivery: RLC sublayer shall provide support for in-order delivery of SDUs, i.e., RLC sublayer should deliver SDUs to the receiving upper layer entity in the same order as the transmitting upper layer entity submits them to the RLC sublayer.
  - Out-of-sequence delivery: Alternatively to in-sequence delivery, it shall also be possible to allow that the receiving RLC entity delivers SDUs to upper layer in different order than submitted to RLC sublayer at the transmitting side.
- **Maintenance of QoS as defined by upper layers.** The retransmission protocol shall be configurable by layer 3 to provide different levels of QoS. This can be controlled.
- **Notification of unrecoverable errors**. RLC notifies the upper layer of errors that cannot be resolved by RLC itself by normal exception handling procedures, e.g. by adjusting the maximum number of retransmissions according to delay requirements.

There is a single RLC connection per Radio Bearer.

5.3.2.2 RLC Functions

- **Segmentation and reassembly.** This function performs segmentation/reassembly of variable-length upper layer PDUs into/from smaller RLC PDUs. The RLC PDU size is adjustable to the actual set of transport formats.
- **Concatenation.** If the contents of an RLC SDU cannot be carried by one RLC PDU, the first segment of the next RLC SDU may be put into the RLC PDU in concatenation with the last segment of the previous RLC SDU.
- **Padding.** When concatenation is not applicable and the remaining data to be transmitted does not fill an entire RLC PDU of given size, the remainder of the data field shall be filled with padding bits.

- **Transfer of user data.** This function is used for conveyance of data between users of RLC services. RLC supports acknowledged, unacknowledged and transparent data transfer. QoS setting controls transfer of user data.

- **Error correction.** This function provides error correction by retransmission (e.g. Selective Repeat, Go Back N, or a Stop-and-Wait ARQ) in acknowledged data transfer mode.

- **In-sequence delivery of upper layer PDUs**. This function preserves the order of upper layer PDUs that were submitted for transfer by RLC using the acknowledged data transfer service. If this function is not used, out-of-sequence delivery is provided.

- **Duplicate Detection.** This function detects duplicated received RLC PDUs and ensures that the resultant upper layer PDU is delivered only once to the upper layer.

- **Flow control**. This function allows an RLC receiver to control the rate at which the peer RLC transmitting entity may send information.

- **Sequence number check.** This function is used in unacknowledged mode and guarantees the integrity of reassembled PDUs and provides a mechanism for the detection of corrupted RLC SDUs through checking sequence number in RLC PDUs when they are reassembled into a RLC SDU. A corrupted RLC SDU will be discarded.

- **Protocol error detection and recovery**. This function detects and recovers from errors in the operation of the RLC protocol.

- **Ciphering**. This function prevents unauthorised acquisition of data. Ciphering is performed in RLC layer for non-transparent RLC mode. Details of the security architecture are specified in [15].

~~- **Polling**. This function is used when an RLC transmitter requests a status report of an RLC receiver.~~

~~- **Status transmission**. An RLC receiver uses this function to transmit status reports to a RLC transmitter in order to inform about which PDUs that have been received and not received.~~

- **SDU discard**. This function allows an RLC transmitter to discharge RLC SDU from the buffer.

~~- **Estimated PDU Counter (EPC) mechanism**. This function is used for scheduling the retransmission of status reports in the receiver side.~~

~~- **Suspend/resume function**. Suspension and resumption of data transfer.~~

~~- **Stop/continue function**. Stop and continue of data transfer.~~

~~- **Re-establishment function**. Re-establish an acknowledged or unacknowledged mode RLC entity.~~

3GPP TSG-RAN WG2 meeting #25
Makuhari, Japan, November 26th – 30th, 2001

Tdoc R2-012635

CR-Form-v4

CHANGE REQUEST

⌘ **25.301 CR 059** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

*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:	⌘	Cleanup of RLC functions
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-11-30
Category:	⌘	**F**
Release:	⌘	REL-4

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:	⌘	The list of RLC functions is not aligned with 25.322
Summary of change:	⌘	The list of RLC functions was modified in 25.322 in the editorial cleanup of RLC. This CR aligns the list of RLC functions in 25.301 with 25.322.
Consequences if not approved:	⌘	Misaligned specifications

Clauses affected:	⌘	5.3.2.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.301 v3.8.0, CR 058
Other comments:	⌘			

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  - Error-free delivery: Error-free delivery is ensured by means of retransmission. The receiving RLC entity delivers only error-free SDUs to the upper layer.
  - Unique delivery: The RLC sublayer shall deliver each SDU only once to the receiving upper layer using duplication detection function.
  - In-sequence delivery: RLC sublayer shall provide support for in-order delivery of SDUs, i.e., RLC sublayer should deliver SDUs to the receiving upper layer entity in the same order as the transmitting upper layer entity submits them to the RLC sublayer.
  - Out-of-sequence delivery: Alternatively to in-sequence delivery, it shall also be possible to allow that the receiving RLC entity delivers SDUs to upper layer in different order than submitted to RLC sublayer at the transmitting side.
- **Maintenance of QoS as defined by upper layers.** The retransmission protocol shall be configurable by layer 3 to provide different levels of QoS. This can be controlled.
- **Notification of unrecoverable errors**. RLC notifies the upper layer of errors that cannot be resolved by RLC itself by normal exception handling procedures, e.g. by adjusting the maximum number of retransmissions according to delay requirements.

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5.3.2.2 RLC Functions

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- **Transfer of user data.** This function is used for conveyance of data between users of RLC services. RLC supports acknowledged, unacknowledged and transparent data transfer. QoS setting controls transfer of user data.

- **Error correction.** This function provides error correction by retransmission (e.g. Selective Repeat, Go Back N, or a Stop-and-Wait ARQ) in acknowledged data transfer mode.

- **In-sequence delivery of upper layer PDUs**. This function preserves the order of upper layer PDUs that were submitted for transfer by RLC using the acknowledged data transfer service. If this function is not used, out-of-sequence delivery is provided.

- **Duplicate Detection.** This function detects duplicated received RLC PDUs and ensures that the resultant upper layer PDU is delivered only once to the upper layer.

- **Flow control**. This function allows an RLC receiver to control the rate at which the peer RLC transmitting entity may send information.

- **Sequence number check.** This function is used in unacknowledged mode and guarantees the integrity of reassembled PDUs and provides a mechanism for the detection of corrupted RLC SDUs through checking sequence number in RLC PDUs when they are reassembled into a RLC SDU. A corrupted RLC SDU will be discarded.

- **Protocol error detection and recovery**. This function detects and recovers from errors in the operation of the RLC protocol.

- **Ciphering**. This function prevents unauthorised acquisition of data. Ciphering is performed in RLC layer for non-transparent RLC mode. Details of the security architecture are specified in [15].

~~- **Polling**. This function is used when an RLC transmitter requests a status report of an RLC receiver.~~

~~- **Status transmission**. An RLC receiver uses this function to transmit status reports to a RLC transmitter in order to inform about which PDUs that have been received and not received.~~

- **SDU discard**. This function allows an RLC transmitter to discharge RLC SDU from the buffer.

~~- **Estimated PDU Counter (EPC) mechanism**. This function is used for scheduling the retransmission of status reports in the receiver side.~~

~~- **Suspend/resume function**. Suspension and resumption of data transfer.~~

~~- **Stop/continue function**. Stop and continue of data transfer.~~

~~- **Re-establishment function**. Re-establish an acknowledged or unacknowledged mode RLC entity.~~

3GPP TSG RAN WG2 Meeting #25
Makuhari, Japan, 26-30 Nov. 2001

R2-012567

CR-Form-v4

CHANGE REQUEST

⌘ **25.301** **CR** **060** ⌘ rev **-** ⌘ Current version: **3.8.0** ⌘

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

Title:	⌘	Correction on transport channel numbering
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	26 November 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:	⌘	A simple error is identified, which can give misunderstanding.
Summary of change:	⌘	A transport channel identity for uplink DCH is corrected to be associated with each uplink DCH transport channel. Isolated impact analysis: • The CR corrects an error and should have an isolated impact
Consequences if not approved:	⌘	Error still remains in the spec.

Clauses affected:	⌘	5.3.6		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.301 v4.1.0, CR 061
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.

5.3.6 Transport Channel and Logical Channel Numbering

The UE model for transport channel and logical channel numbering is defined by the following:

- For FACH transport channels:
  - A transport channel identity is associated with each FACH transport channel. Each identity is unique within the downlink FACHs mapped onto the same physical channel.
  - Transport channel identities can be allocated non sequentially.
  - Transport channel identity is not used to determine the radio bearer mapping. The transport channels that can be used are determined from the available physical channels.
  - Each downlink DCCH and DTCH has a unique logical channel identity.
- For RACH and CPCH transport channels:
  - A transport channel identity is associated with each RACH transport channel. Each identity is unique within the RACHs mapped onto the same PRACH.
  - A transport channel identity is associated with each CPCH transport channel. Each identity is unique within the CPCHs mapped onto the same CPCH set.
  - Transport channel identities can be allocated non sequentially.
  - Transport channel identity is not used to determine the radio bearer mapping. The transport channels that can be used are determined from the available physical channels.
  - Each uplink DCCH and DTCH has a unique logical channel identity.
- For downlink DCH and DSCH transport channels:
  - A transport channel identity is associated with each downlink DCH transport channel. Each identity is unique within the downlink DCHs configured in the UE;
  - Transport channel identities can be allocated non sequentially.
  - A transport channel identity is associated with each DSCH transport channel. Each identity is unique within the DSCHs configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a transport channel. Each identity is unique within the logical channels mapped to the same transport channel.
  - A logical channel that is mapped to DCH and DSCH simultaneously has one logical channel identity.
- For uplink DCH and USCH transport channels:
  - A transport channel identity is associated with each ~~down~~uplink DCH transport channel. Each identity is unique within the uplink DCHs configured in the UE;
  - Transport channel identities can be allocated non sequentially.
  - A transport channel identity is associated with each USCH transport channel. Each identity is unique within the USCHs configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a transport channel. Each identity is unique within the logical channels mapped to the same transport channel.

3GPP TSG RAN WG2 Meeting #25
Makuhari, Japan, 26-30 Nov. 2001

R2-012636

CR-Form-v4

CHANGE REQUEST

⌘ **25.301** **CR** **061** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

*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:	⌘	Correction on transport channel numbering
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	27 November 2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
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R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	A simple error is identified, which can give misunderstanding.
Summary of change:	⌘	A transport channel identity for uplink DCH is corrected to be associated with each uplink DCH transport channel. Isolated impact analysis: • The CR corrects an error and should have an isolated impact
Consequences if not approved:	⌘	Error still remains in the spec.

Clauses affected:	⌘	5.3.6		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.301 v3.8.0, CR 060
Other comments:	⌘			

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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 request.

5.3.6 Transport Channel and Logical Channel Numbering

The UE model for transport channel and logical channel numbering is defined by the following:

- For FACH transport channels:
  - A transport channel identity is associated with each FACH transport channel. Each identity is unique within the downlink FACHs mapped onto the same physical channel.
  - Transport channel identities can be allocated non sequentially.
  - Transport channel identity is not used to determine the radio bearer mapping. The transport channels that can be used are determined from the available physical channels.
  - Each downlink DCCH and DTCH has a unique logical channel identity.
- For RACH and CPCH transport channels:
  - A transport channel identity is associated with each RACH transport channel. Each identity is unique within the RACHs mapped onto the same PRACH.
  - A transport channel identity is associated with each CPCH transport channel. Each identity is unique within the CPCHs mapped onto the same CPCH set.
  - Transport channel identities can be allocated non sequentially.
  - Transport channel identity is not used to determine the radio bearer mapping. The transport channels that can be used are determined from the available physical channels.
  - Each uplink DCCH and DTCH has a unique logical channel identity.
- For downlink DCH and DSCH transport channels:
  - A transport channel identity is associated with each downlink DCH transport channel. Each identity is unique within the downlink DCHs configured in the UE;
  - Transport channel identities can be allocated non sequentially.
  - A transport channel identity is associated with each DSCH transport channel. Each identity is unique within the DSCHs configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a transport channel. Each identity is unique within the logical channels mapped to the same transport channel.
  - A logical channel that is mapped to DCH and DSCH simultaneously has one logical channel identity.
- For uplink DCH and USCH transport channels:
  - A transport channel identity is associated with each ~~down~~uplink DCH transport channel. Each identity is unique within the uplink DCHs configured in the UE;
  - Transport channel identities can be allocated non sequentially.
  - A transport channel identity is associated with each USCH transport channel. Each identity is unique within the USCHs configured in the UE;
  - A logical channel identity is associated with each logical channel that is multiplexed with other logical channels before being mapped to a transport channel. Each identity is unique within the logical channels mapped to the same transport channel.