TSG-RAN Meeting #16
Marco Island, FL, USA, 4 - 7 June 2002

RP-020338

Title: **Agreed CRs (Release '99 and Rel-4/Rel-5 category A) to TS 34.109**

Source: **TSG-RAN WG2**

Agenda item: **7.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-021396	agreed	34.109	013		R99	Correction to UE test loop mode 2	F	3.5.0	3.6.0
R2-021397	agreed	34.109	014		Rel-4	Correction to UE test loop mode 2	A	4.2.0	4.3.0
R2-021398	agreed	34.109	015		Rel-5	Correction to UE test loop mode 2	A	5.0.0	5.1.0
R2-021399	agreed	34.109	016		R99	Clarification of test loop performance requirements	F	3.5.0	3.6.0
R2-021400	agreed	34.109	017		Rel-4	Clarification of test loop performance requirements	A	4.2.0	4.3.0
R2-021401	agreed	34.109	018		Rel-5	Clarification of test loop performance requirements	A	5.0.0	5.1.0

3GPP TSG-RAN WG2 Meeting #29
Gyeongju, Korea, 13th-17th of May 2002

R2-021396

CR-Form-v4

CHANGE REQUEST

⌘ **34.109 CR 013** ⌘ ev **-** ⌘ Current version: **3.5.0.** ⌘

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

Title:	⌘	Correction to UE test loop mode 2
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2002-05-12
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:	⌘	The application of UE test loop mode 2 is only valid for transport channels in the user plane. Current definition of the UE test loop mode 2 does not clearly state that the the loopback is only valid for transport channels in the user plane.
Summary of change:	⌘	Clarified text in 5.3.2.7.1 that loopback is only valid for the transport channels in the user plane.
Consequences if not approved:	⌘	Specification is not complete and remains ambiguous.

Clauses affected:	⌘	5.3.2.7.1		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	34.109 v4.2.0, CR 014 34.109 v5.0.0, CR 015
Other comments:	⌘	Isolated Impact Analysis: Does only affect implementation of the special conformance testing functions of a UE.		

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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.

5.3.2.7 UE test loop mode 2 operation

For UE test loop mode 2 to work correctly ciphering shall be disabled.

For UE to be able to return downlink transport block data and CRC bits then the up link transport channel configuration shall include a transport format for which the block size is equal or bigger than the sum of the downlink transport block size and the number of downlink CRC bits. If no such uplink transport format exists then the returned data and CRC bits will be truncated.

5.3.2.7.1 Loopback of downlink transport block data and downlink CRC

If UE test mode 2 has been selected then the following loop back scheme shall be performed by the UE for all transport channels associated with a single DTCH~~in the user plane~~:

After the UE has closed the test loop then the UE shall copy the received downlink transport block and CRC bits to the up link transport block and transmit in the up link.

If the uplink radio bearer configuration is of variable rate then the transport format with the smallest transport block size which fits the downlink transport block size and the downlink CRC bits shall be selected in uplink. In case there is no transport format that fits the downlink transport block data and the downlink CRC bits then the data and CRC bits shall be truncated using the transport format with the biggest transport block size.

UE test mode 2 operation is illustrated for the case when uplink transport block size is bigger than the sum of downlink transport block size and size of downlink CRC in figure 5.3.2.7.1.

UE test mode 2 operation is illustrated for the case when uplink transport block size is smaller than the sum of downlink transport block size and size of downlink CRC in figure 5.3.2.7.2.

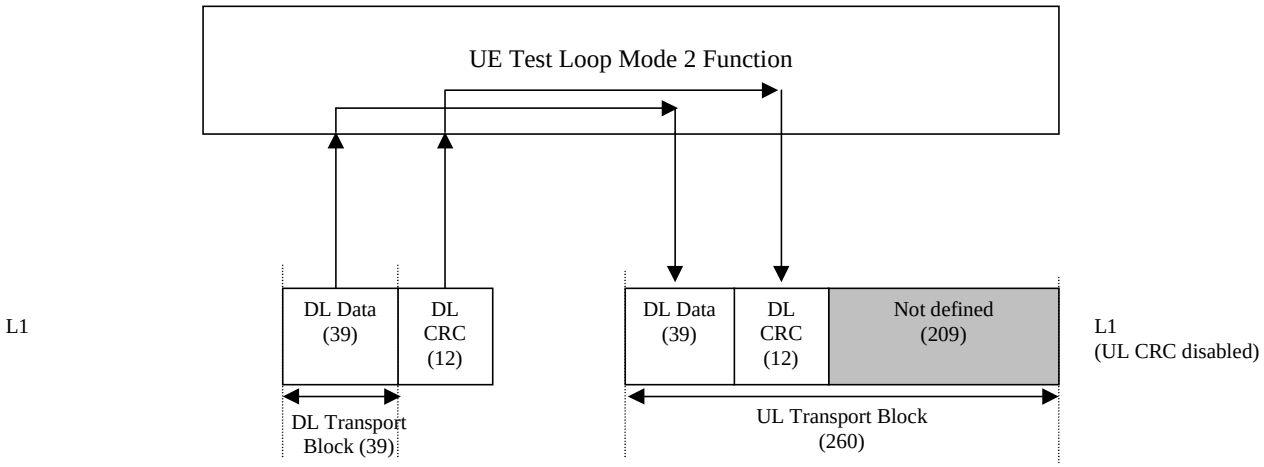

Figure 5.3.2.7.1. UE test loop mode 2 operation for the case when uplink transport block size is bigger than the sum of downlink transport block size and size of downlink CRC

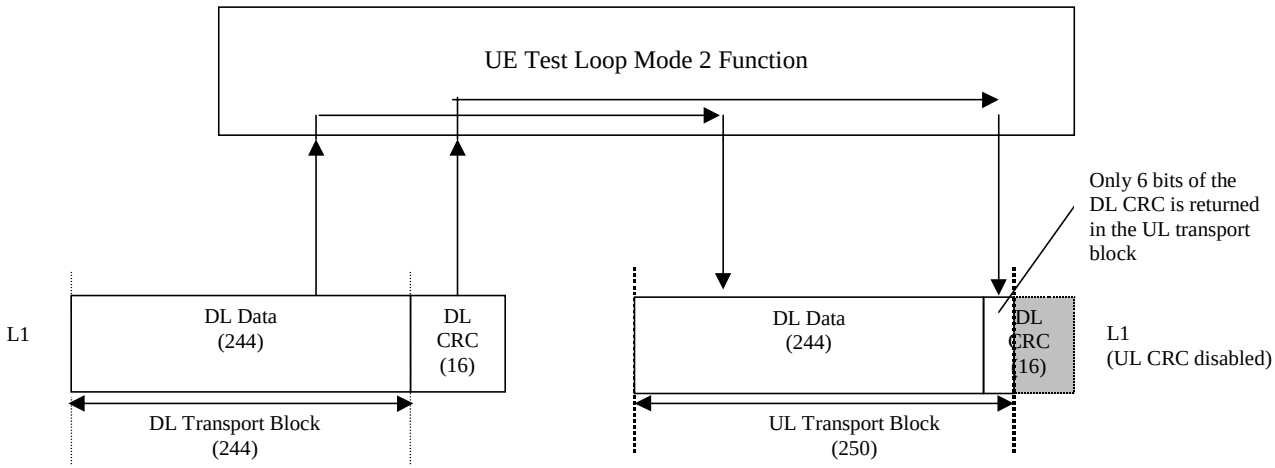

Figure 5.3.2.7.2. UE test loop mode 2 operation for the case when uplink transport block does not fit downlink transport block and downlink CRC bits.

3GPP TSG-RAN WG2 Meeting #29 ***R2-021397***
Gyeongju, Korea, 13th-17th of May 2002

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CHANGE REQUEST

⌘ **34.109 CR 014** ⌘ ev **-** ⌘ Current version: **4.2.0.** ⌘

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

Title:	⌘	Correction to UE test loop mode 2
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2002-05-13
Category:	⌘	**A**
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)*
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R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	The application of UE test loop mode 2 is only valid for transport channels in the user plane. Current definition of the UE test loop mode 2 does not clearly state that the the loopback is only valid for transport channels in the user plane.
Summary of change:	⌘	Clarified text in 5.3.2.7.1 that loopback is only valid for the transport channels in the user plane.
Consequences if not approved:	⌘	Specification is not complete and remains ambiguous.

Clauses affected:	⌘	5.3.2.7.1		
Other specs Affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	34.109 v3.5.0, CR 013 34.109 v5.0.0, CR 015
Other comments:	⌘	Isolated Impact Analysis: Does only affect implementation of the special conformance testing functions of a UE.		

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5.3.2.7 UE test loop mode 2 operation

For UE test loop mode 2 to work correctly ciphering shall be disabled.

For UE to be able to return downlink transport block data and CRC bits then the up link transport channel configuration shall include a transport format for which the block size is equal or bigger than the sum of the downlink transport block size and the number of downlink CRC bits. If no such uplink transport format exists then the returned data and CRC bits will be truncated.

5.3.2.7.1 Loopback of downlink transport block data and downlink CRC

If UE test mode 2 has been selected then the following loop back scheme shall be performed by the UE for all transport channels associated with a single DTCH~~in the user plane~~:

After the UE has closed the test loop then the UE shall copy the received downlink transport block and CRC bits to the up link transport block and transmit in the up link.

If the uplink radio bearer configuration is of variable rate then the transport format with the smallest transport block size which fits the downlink transport block size and the downlink CRC bits shall be selected in uplink. In case there is no transport format that fits the downlink transport block data and the downlink CRC bits then the data and CRC bits shall be truncated using the transport format with the biggest transport block size.

UE test mode 2 operation is illustrated for the case when uplink transport block size is bigger than the sum of downlink transport block size and size of downlink CRC in figure 5.3.2.7.1.

UE test mode 2 operation is illustrated for the case when uplink transport block size is smaller than the sum of downlink transport block size and size of downlink CRC in figure 5.3.2.7.2.

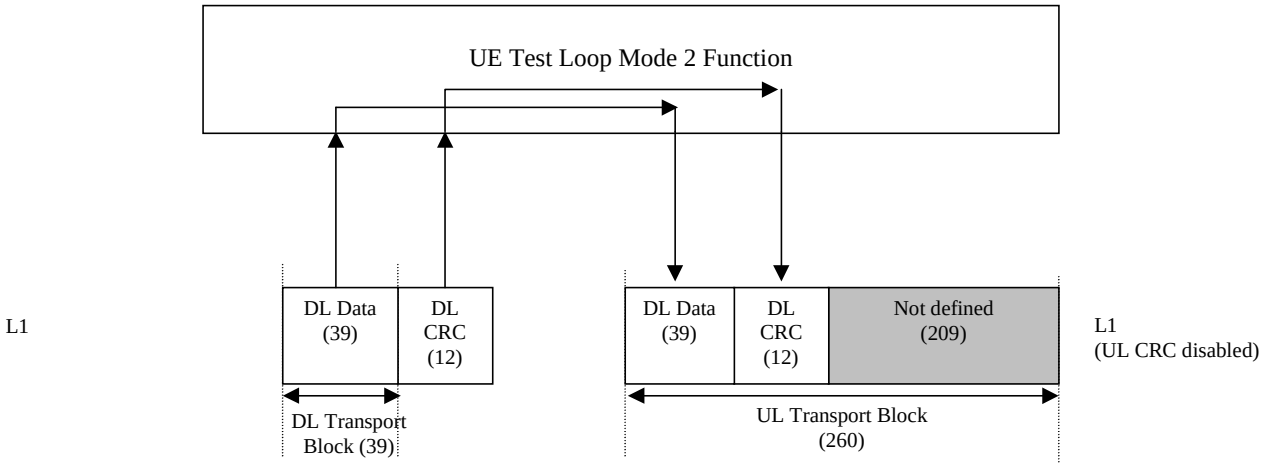

Figure 5.3.2.7.1. UE test loop mode 2 operation for the case when uplink transport block size is bigger than the sum of downlink transport block size and size of downlink CRC

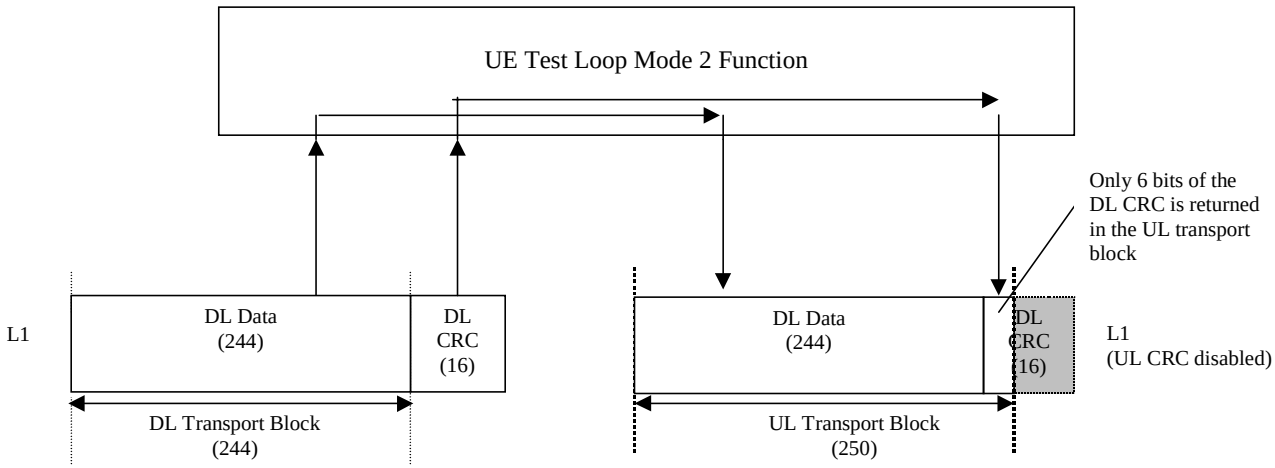

Figure 5.3.2.7.2. UE test loop mode 2 operation for the case when uplink transport block does not fit downlink transport block and downlink CRC bits.

3GPP TSG-RAN WG2 Meeting #29 ***R2-021398***
Gyeongju, Korea, 13th-17th of May 2002

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CHANGE REQUEST

⌘ **34.109 CR 015** ⌘ ev **-** ⌘ Current version: **5.0.0.** ⌘

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

Title:	⌘	Correction to UE test loop mode 2
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2002-05-13
Category:	⌘	**A**
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.

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R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	The application of UE test loop mode 2 is only valid for transport channels in the user plane. Current definition of the UE test loop mode 2 does not clearly state that the the loopback is only valid for transport channels in the user plane.
Summary of change:	⌘	Clarified text in 5.3.2.7.1 that loopback is only valid for the transport channels in the user plane.
Consequences if not approved:	⌘	Specification is not complete and remains ambiguous.

Clauses affected:	⌘	5.3.2.7		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	34.109 v3.5.0, CR 013 34.109 v4.2.0, CR 014
Other comments:	⌘	Isolated Impact Analysis: Does only affect implementation of the special conformance testing functions of a UE.		

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5.3.2.7 UE test loop mode 2 operation

For UE test loop mode 2 to work correctly ciphering shall be disabled.

For UE to be able to return downlink transport block data and CRC bits then the up link transport channel configuration shall include a transport format for which the block size is equal or bigger than the sum of the downlink transport block size and the number of downlink CRC bits. If no such uplink transport format exists then the returned data and CRC bits will be truncated.

5.3.2.7.1 Loopback of downlink transport block data and downlink CRC

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UE test mode 2 operation is illustrated for the case when uplink transport block size is bigger than the sum of downlink transport block size and size of downlink CRC in figure 5.3.2.7.1.

UE test mode 2 operation is illustrated for the case when uplink transport block size is smaller than the sum of downlink transport block size and size of downlink CRC in figure 5.3.2.7.2.

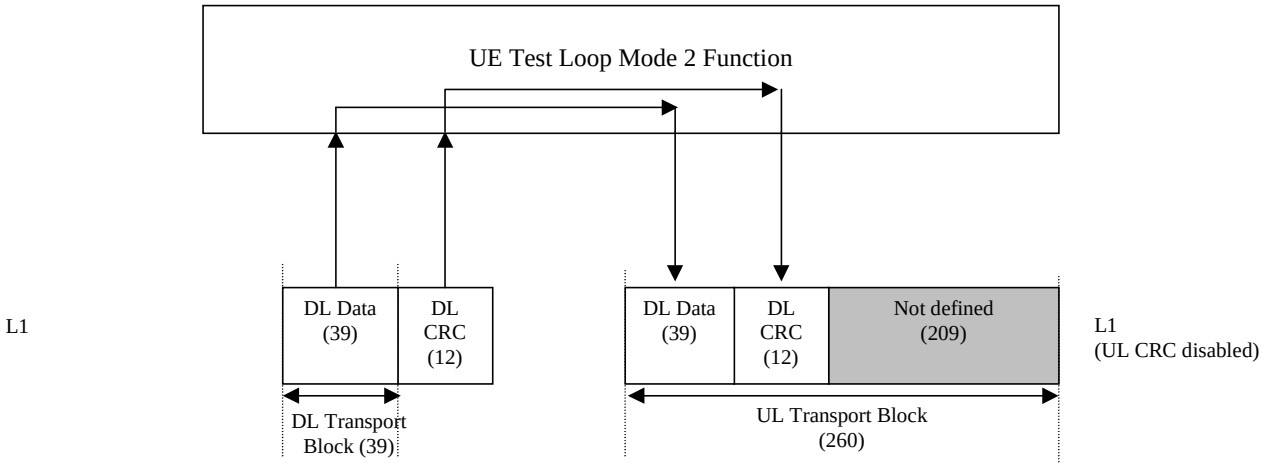

Figure 5.3.2.7.1. UE test loop mode 2 operation for the case when uplink transport block size is bigger than the sum of downlink transport block size and size of downlink CRC

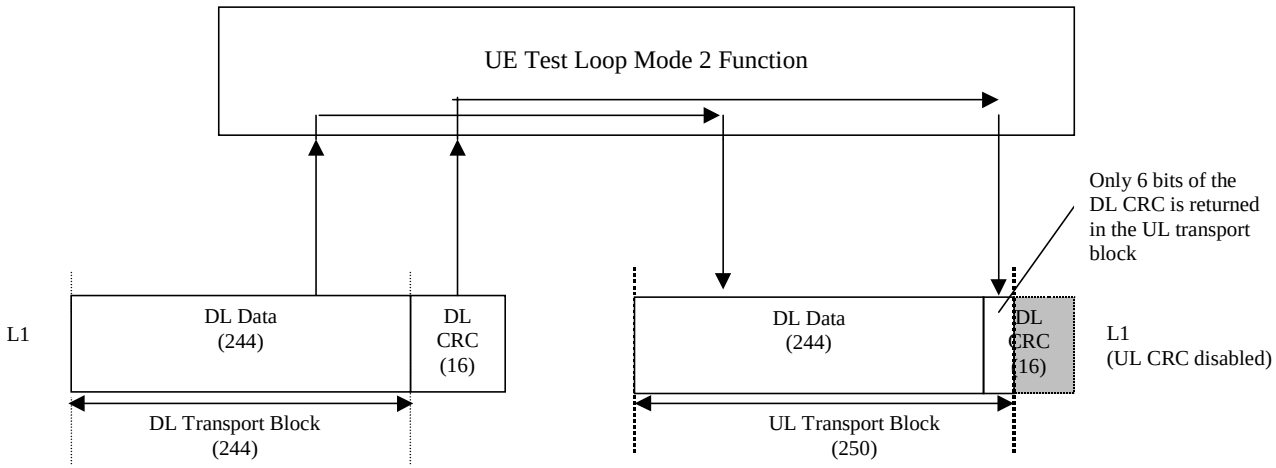

Figure 5.3.2.7.2. UE test loop mode 2 operation for the case when uplink transport block does not fit downlink transport block and downlink CRC bits.

3GPP TSG-RAN WG2 Meeting #29 ***R2-021399***
Gyeongju, Korea, 13th-17th of May 2002

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CHANGE REQUEST

⌘ **34.109 CR 016** ⌘ ev **-** ⌘ Current version: **3.5.0.** ⌘

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

Title:	⌘	Clarification of test loop performance requirements
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2002-05-12
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
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B *(addition of feature),*
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R96 (Release 1996)
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R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	To be able to test conversational CS TM reference radio bearer combinations as specified in 34.108 clause 6.10 a UE must be able to loop back at least 4 SDUs per TTI. E.g. for "Conversational / unknown / UL:64 DL:64 kbps / CS RAB" operated in TM RLC mode 4 SDUs are needed to fill the transport format existing of 4x640 bits ~~transport block set~~. Current text in 34.109 states that every SDU received in DL RLC SAP shall be returned in correspondent UL RLC SAP but there is no limit specified for the minimum number of SDUs a UE shall be able to process per TTI.
Summary of change:	⌘	1. Introduced sub-clauses 5.3.2.9.1 and 5.3.2.9.2: - 5.3.2.9.1 General loopback delay requirement - 5.3.2.9.2 Loopback delay requirement for RLC and PDCP SDUs 2. Current text in 5.3.2.9 kept in subclause 5.3.2.9.1 3. Subclause 5.3.2.9.2 specifies the UE loopback delay requirement for UE test loop mode 1 including capability of handling multiple SDUs per TTI.
Consequences if not approved:	⌘	Specification is not complete and remains ambiguous.Testing of Conversational CS reference radio bearers in TS 34.108 having transport format sets with multiple transport blocks (2xTB, 4xTB) will not be possible.

Clauses affected:	⌘	5.3.2.9, 5.3.2.9.2 (new)		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	34.109 v4.2.0, CR 017 34.109 v5.0.0, CR 018
Other comments:	⌘			

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5.3.2.9 Loopback delay requirement

5.3.2.9.1 General loopback delay requirement

Loopback delay is specified as delay between received DL radio frames and their corresponding UL radio frames produced from the received data. The loopback delay is measured at the antenna connector of the UE and specified in the unit of radio frame(s). Timing offset between DL and UL radio frames, and timing errors are not included in the loopback delay.

For UE operating in UE test loop mode 1 the loopback delay requirement is applicable if the MAC and RLC protocols are configured for transparent operation and if the downlink RLC SDU size is equal to the downlink transport block size, i.e. no segmentation/concatenation takes place.

For UE operating in UE test loop mode 2 the loopback delay requirement is applicable independent of the radio bearer configuration.

While the UE test loop is closed and the radio bearer configuration is not changed, the UE shall maintain a fixed loopback delay (the loopback delay shall not vary during a test). The loopback delay shall not exceed the number of radio frames correspondent to 10 times the TTI of the actual transport channel configuration.

The loopback delay requirement for the 10ms TTI case is illustrated in figure 5.3.2.9.1.

NOTE 1: See TS 25.211 [11], subclause 7.6.3 for definition of the timing offset between DL and UL radio frames for FDD mode.

NOTE 2: See TS 25.133 [12], subclause 7.1 for definition of the timing error for FDD mode.

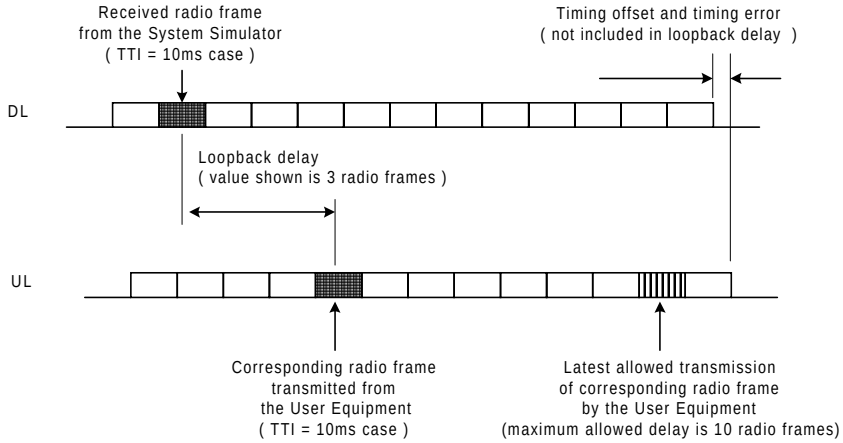

Figure 5.3.2.9.1: Loopback delay requirement (TTI=10 ms)

5.3.2.9.2 Loopback delay requirement for RLC and PDCP SDUs (UE Test loop mode 1)

The maximum delay from receiving a RLC or PDCP SDU in a downlink SAP until returning a SDU in the correspondent uplink SAP shall be within the delay requirement specified in sub-clause 5.3.2.9.1.

The UE test loop function, operating in UE test loop mode 1, shall for every active radio bearer be able to return at least 4 ~~or more~~ SDUs within the time equal to the TTI of the actual radio bearer.

NOTE To enable testing of the Conversational CS TM reference radio bearer combinations as specified in 34.108 clause 6.10 a UE must be able to loop back 4 SDUs per TTI. E.g. for "Conversational / unknown / UL:64 DL:64 kbps / CS RAB" operated in TM RLC mode 4 SDUs are needed to fill the transport format existing of 4x640 bits~~transport block set~~.

NOTE The loopback delay requirement in 5.3.2.9.2 does not impose any synchronisation mechanisms between the uplink RLC entity and the UE test loop function. Thus it could happen that a UE when having received 4 SDUs within one and the same TTI may deliver the SDUs to the uplink RLC entity in two subsequent TTIs. For a TM radio bearer requiring multiple SDUs to fill a transport block set then "Timer discard without explicit signalling" need to be configured to secure that the TM RLC entity does not discard the SDUs in case they are delivered in subsequent TTIs.

3GPP TSG-RAN WG2 Meeting #29 ***R2-021400***
Gyeongju, Korea, 13th-17th of May 2002

CR-Form-v4

CHANGE REQUEST

⌘ **34.109 CR 017** ⌘ ev **-** ⌘ Current version: **4.2.0.** ⌘

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

Title:	⌘	Clarification of test loop performance requirements
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2002-05-13
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
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R96 (Release 1996)
R97 (Release 1997)
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REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘ To be able to test conversational CS TM reference radio bearer combinations as specified in 34.108 clause 6.10 a UE must be able to loop back at least 4 SDUs per TTI. E.g. for "Conversational / unknown / UL:64 DL:64 kbps / CS RAB" operated in TM RLC mode 4 SDUs are needed to fill the transport format existing of 4x640 bits~~transport block set~~.

Current text in 34.109 states that every SDU received in DL RLC SAP shall be returned in correspondent UL RLC SAP but there is no limit specified for the minimum number of SDUs a UE shall be able to process per TTI.

Summary of change: ⌘
1. Introduced sub-clauses 5.3.2.9.1 and 5.3.2.9.2:
   - 5.3.2.9.1 General loopback delay requirement
   - 5.3.2.9.2 Loopback delay requirement for RLC and PDCP SDUs
2. Current text in 5.3.2.9 kept in subclause 5.3.2.9.1,
3. Subclause 5.3.2.9.2 specifies the UE loopback delay requirement for UE test loop mode 1 including capability of handling multiple SDUs per TTI.

Consequences if not approved: ⌘ Specification is not complete and remains ambiguous.Testing of Conversational CS reference radio bearers in TS 34.108 having transport format sets with multiple transport blocks (2xTB, 4xTB) will not be possible.

Clauses affected: ⌘ 5.3.2.9, 5.3.2.9.2 (new)

Other specs affected: ⌘
☐ Other core specifications ⌘ 34.109 v3.5.0, CR 016
34.109 v5.0.0, CR 018
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘

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5.3.2.9 Loopback delay requirement

5.3.2.9.1 General loopback delay requirement

Loopback delay is specified as delay between received DL radio frames and their corresponding UL radio frames produced from the received data. The loopback delay is measured at the antenna connector of the UE and specified in the unit of radio frame(s). Timing offset between DL and UL radio frames, and timing errors are not included in the loopback delay.

For UE operating in UE test loop mode 1 the loopback delay requirement is applicable if the MAC and RLC protocols are configured for transparent operation and if the downlink RLC SDU size is equal to the downlink transport block size, i.e. no segmentation/concatenation takes place.

For UE operating in UE test loop mode 2 the loopback delay requirement is applicable independent of the radio bearer configuration.

While the UE test loop is closed and the radio bearer configuration is not changed, the UE shall maintain a fixed loopback delay (the loopback delay shall not vary during a test). The loopback delay shall not exceed the number of radio frames correspondent to 10 times the TTI of the actual transport channel configuration.

The loopback delay requirement for the 10ms TTI case is illustrated in figure 5.3.2.9.1.

NOTE 1: See TS 25.211 [11], subclause 7.6.3 for definition of the timing offset between DL and UL radio frames for FDD mode.

NOTE 2: See TS 25.133 [12], subclause 7.1 for definition of the timing error for FDD mode.

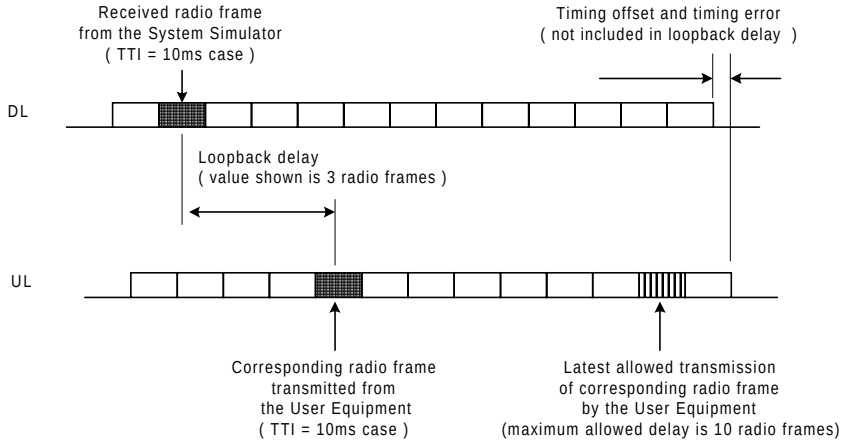

Figure 5.3.2.9.1: Loopback delay requirement (TTI=10 ms)

5.3.2.9.2 Loopback delay requirement for RLC and PDCP SDUs (UE Test loop mode 1)

The maximum delay from receiving a RLC or PDCP SDU in a downlink SAP until returning a SDU in the correspondent uplink SAP shall be within the delay requirement specified in sub-clause 5.3.2.9.1.

The UE test loop function, operating in UE test loop mode 1, shall for every active radio bearer be able to return at least 4 ~~or more~~ SDUs within the time equal to the TTI of the actual radio bearer.

NOTE To enable testing of the Conversational CS TM reference radio bearer combinations as specified in 34.108 clause 6.10 a UE must be able to loop back 4 SDUs per TTI. E.g. for "Conversational / unknown / UL:64 DL:64 kbps / CS RAB" operated in TM RLC mode 4 SDUs are needed to fill the transport format existing of 4x640 bits~~transport block set~~.

NOTE The loopback delay requirement in 5.3.2.9.2 does not impose any synchronisation mechanisms between the uplink RLC entity and the UE test loop function. Thus it could happen that a UE when having received 4 SDUs within one and the same TTI may deliver the SDUs to the uplink RLC entity in two subsequent TTIs. For a TM radio bearer requiring multiple SDUs to fill a transport block set then "Timer discard without explicit signalling" need to be configured to secure that the TM RLC entity does not discard the SDUs in case they are delivered in subsequent TTIs.

3GPP TSG-RAN WG2 Meeting #29 ***R2-021401***
Gyeongju, Korea, 13th-17th of May 2002

CR-Form-v4

CHANGE REQUEST

⌘ **34.109 CR 018** ⌘ ev **-** ⌘ 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 ☐

Title:	⌘	Clarification of test loop performance requirements
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2002-05-13
Category:	⌘	**A**
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)

Reason for change:	⌘	To be able to test conversational CS TM reference radio bearer combinations as specified in 34.108 clause 6.10 a UE must be able to loop back at least 4 SDUs per TTI. E.g. for "Conversational / unknown / UL:64 DL:64 kbps / CS RAB" operated in TM RLC mode 4 SDUs are needed to fill the transport format existing of 4x640 bits~~transport block set~~. Current text in 34.109 states that every SDU received in DL RLC SAP shall be returned in correspondent UL RLC SAP but there is no limit specified for the minimum number of SDUs a UE shall be able to process per TTI.
Summary of change:	⌘	1. Introduced sub-clauses 5.3.2.9.1 and 5.3.2.9.2: - 5.3.2.9.1 General loopback delay requirement - 5.3.2.9.2 Loopback delay requirement for RLC and PDCP SDUs 2. Current text in 5.3.2.9 kept in subclause 5.3.2.9.1 3. Subclause 5.3.2.9.2 specifies the UE loopback delay requirement for UE test loop mode 1 including capability of handling multiple SDUs per TTI.
Consequences if not approved:	⌘	Specification is not complete and remains ambiguous. Testing of Conversational CS reference radio bearers in TS 34.108 having transport format sets with multiple transport blocks (2xTB, 4xTB) will not be possible.

Clauses affected:	⌘	5.3.2.9, 5.3.2.9.2 (new)		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	34.109 v3.5.0, CR 016 34.109 v4.2.0, CR 017
Other comments:	⌘			

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5.3.2.9 Loopback delay requirement

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For UE operating in UE test loop mode 1 the loopback delay requirement is applicable if the MAC and RLC protocols are configured for transparent operation and if the downlink RLC SDU size is equal to the downlink transport block size, i.e. no segmentation/concatenation takes place.

For UE operating in UE test loop mode 2 the loopback delay requirement is applicable independent of the radio bearer configuration.

While the UE test loop is closed and the radio bearer configuration is not changed, the UE shall maintain a fixed loopback delay (the loopback delay shall not vary during a test). The loopback delay shall not exceed the number of radio frames correspondent to 10 times the TTI of the actual transport channel configuration.

The loopback delay requirement for the 10ms TTI case is illustrated in figure 5.3.2.9.1.

NOTE 1: See TS 25.211 [11], subclause 7.6.3 for definition of the timing offset between DL and UL radio frames for FDD mode.

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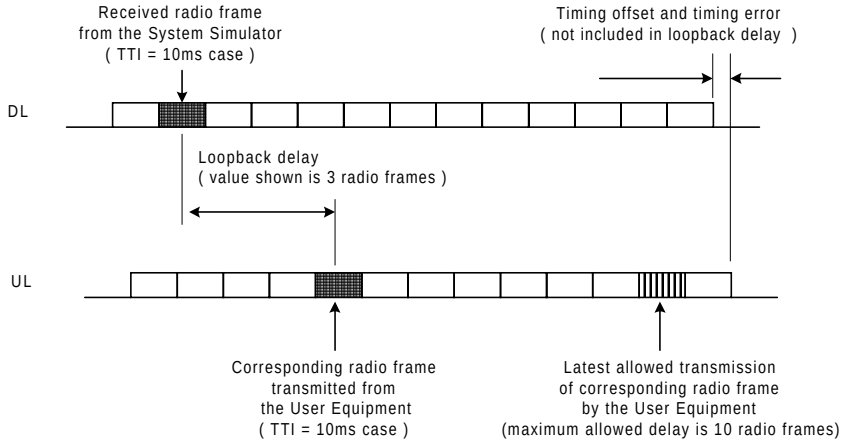

Figure 5.3.2.9.1: Loopback delay requirement (TTI=10 ms)

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The maximum delay from receiving a RLC or PDCP SDU in a downlink SAP until returning a SDU in the correspondent uplink SAP shall be within the delay requirement specified in sub-clause 5.3.2.9.1.

The UE test loop function, operating in UE test loop mode 1, shall for every active radio bearer be able to return at least 4 ~~or more~~ SDUs within the time equal to the TTI of the actual radio bearer.

NOTE To enable testing of the Conversational CS TM reference radio bearer combinations as specified in 34.108 clause 6.10 a UE must be able to loop back 4 SDUs per TTI. E.g. for "Conversational / unknown / UL:64 DL:64 kbps / CS RAB" operated in TM RLC mode 4 SDUs are needed to fill the transport format existing of 4x640 bits~~transport block set~~.

NOTE The loopback delay requirement in 5.3.2.9.2 does not impose any synchronisation mechanisms between the uplink RLC entity and the UE test loop function. Thus it could happen that a UE when having received 4 SDUs within one and the same TTI may deliver the SDUs to the uplink RLC entity in two subsequent TTIs. For a TM radio bearer requiring multiple SDUs to fill a transport block set then "Timer discard without explicit signalling" need to be configured to secure that the TM RLC entity does not discard the SDUs in case they are delivered in subsequent TTIs.