TSG RAN Meeting #24   **RP-040194**
Seoul, Korea, 2 - 4 June 2004

Title   CRs Rel-5 and Corresponding Rel-6) to TS 25.133
Source   TSG RAN WG4
Agenda Item   7.5.5

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-040347	25.133	660	1	F	Rel-5	5.10.0	Clarification of HS-DPCCH in Transport format combination selection requirements	HSDPA-RF
R4-040348	25.133	661	1	A	Rel-6	6.5.0	Clarification of HS-DPCCH in Transport format combination selection requirements	HSDPA-RF
R4-040314	25.133	662	1	F	Rel-5	5.10.0	Correction to UTRA Carrier RSSI measurement tables in test cases	TEI5
R4-040315	25.133	663	1	F	Rel-6	6.5.0	Correction to UTRA Carrier RSSI measurement tables in test cases	TEI6
R4-040316	25.133	664	1	F	Rel-5	5.10.0	Corrections to Io, Ioc and RSCP levels for testing different frequency bands	TEI5
R4-040317	25.133	665	1	F	Rel-6	6.5.0	Corrections to Io, Ioc and RSCP levels for testing different frequency bands	TEI6
R4-040318	25.133	666	1	F	Rel-5	5.10.0	Removal of square brackets and other corrections to support T1	TEI5
R4-040319	25.133	667	1	A	Rel-6	6.5.0	Removal of square brackets and other corrections to support T1	TEI5

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CHANGE REQUEST

⌘	**25.133 CR 660**	⌘**rev 1** ⌘	Current version:	**5.10.0** ⌘

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Proposed change affects: UICC apps⌘ ☐   ME **X** Radio Access Network **X** Core Network ☐

Title: ⌘	Clarification of HS-DPCCH in Transport format combination selection requirements	
Source: ⌘	RAN WG4	
Work item code:⌘	HSDPA-RF	***Date:*** ⌘ 24/05/2004

Category: ⌘ **F**		***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)* *Rel-6 (Release 6)*

Reason for change: ⌘	It is not clear whether HS-DPCCH should be taken into account in the TFC Elimination and Recovery criteria.
Summary of change:⌘	- It is clarified that HS-DPCCH channel should be taken into account in the evaluation of the TFC Elimination and Recovery criteria when the UE actually transmits HS-DPCCH. - The timing of the measurement period is also clearly defined to the timing of DPCH slot. - In this CR UE maximum transmit power reduction due to increased PAR is also taken into account in the requirements. Isolated Impact Analyses: Since the current specification does not define how the TFC selection criteria should be evaluated in case of HS-DPCCH, this CR may require different implementation than what a UE currently has. However, this should not be very likely, since the method in this CR has been a RAN4 working assumption for some time now.
Consequences if not approved: ⌘	Terminals will not take HS-DPCCH into account in a similar manner when evaluating Elimination and Recovery criteria. This makes the optimisation of the network more difficult due to differently behaving terminals.

Clauses affected: ⌘	6.4.2

	Y	N		
Other specs ⌘		X	Other core specifications ⌘	
affected:	X		Test specifications	TS34.121

		X	O&M Specifications	
Other comments:	⌘			
		Equivalent CRs in other Releases: CR661r1 cat. A to 25.133 v6.5.0		

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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.

6.4 Transport format combination selection in UE

6.4.1 Introduction

When the UE estimates that a certain TFC would require more power than the maximum transmit power, it shall limit the usage of transport format combinations for the assigned transport format set, according to the functionality specified in section 11.4 in TS25.321. This in order to make it possible for the network operator to maximise the coverage. Transport format combination selection is described in section 11.4 of TS 25.321.

6.4.2 Requirements

The UE shall continuously evaluate based on the *Elimination, Recovery* and *Blocking* criteria defined below, how TFCs on an uplink DPDCH can be used for the purpose of TFC selection. The evaluation shall be performed for every TFC in the TFCS using the estimated UE transmit power. The UE transmit power estimation for a given TFC, when HS-DPCCH is not transmitted during the measurement period, shall be calculatedmade using the UE transmitted power measured over the measurement period, defined in 9.1.6.1 as one slot, and the DPDCH and DPCCH gain factors of the corresponding TFC and reference transmit power. The reference transmit power is the transmit power of DPCCH and DPDCH of a given TFC during the measurement period for which UE transmit power estimation is made. If HS-DPCCH is transmitted either partially or totally within the given measurement period the UE transmit power estimation for a given TFC shall be calculated using DPDCH and DPCCH gain factors, the maximum value of the HS-DPCCH gain factor that is used during the measurement period, and the reference transmit power. The timing of the measurement period, which is defined in 9.1.6.1 as one slot, is the same as the timing of the DPCH slot.

The UE shall consider the *Elimination* criterion for a given TFC to be detected if the estimated UE transmit power needed for this TFC is greater than the Maximum UE transmitter power for at least X out of the last Y successive measurement periods immediately preceding evaluation. The MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Elimination* criterion was detected.

The UE shall consider the *Recovery* criterion for a given TFC to be detected if the estimated UE transmit power needed for this TFC has not been greater than the Maximum UE transmitter power for the last Z successive measurement periods immediately preceding evaluation. The MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Recovery* criterion was detected.

The evaluation of the *Elimination* criterion and the *Recovery* criterion shall be performed at least once per radio frame.

The definitions of the parameters X,Y and Z which shall be used when evaluating the *Elimination* and the *Recovery* criteria when no compressed mode patterns are activated are given in Table 6.0.

Table 6.0: X, Y, Z parameters for TFC selection

X	Y	Z
15	30	30

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of:

$$(T_{notify} + T_{modify} + T_{L1\_proc})$$

where:

    T_{notify} equals [15] ms, and

    T_{modify} equals $MAX(T_{adapt\_max}, T_{TTI})$, and

$T_{L1\ proc}$ equals 15 ms, and

T_{adapt_max} equals MAX(T_{adapt_1}, T_{adapt_2}, ..., T_{adapt_N}), and

N equals the number of logical channels that need to change rate, and

T_{adapt_n} equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel n. For services where no codec is used T_{adapt} shall be considered to be equal to 0 ms. For services where either UMTS_AMR2 or UMTS_AMR_WB is used, Tadapt shall be considered to be equal to the time required to switch from the current codec mode to a new supported codec mode. In that case Tadapt equals 20 ms + 40 ms per codec mode switch. E.g. Tadapt equals 60ms if one codec mode switch is necessary and Tadapt equals 140ms if 3 codec mode switches are necessary.

T_{TTI} equals the longest uplink TTI of the selected TFC (ms).

The Maximum UE transmitter power is defined as follows

Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power)

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [3]. The UE is allowed to reduce its maximum transmit power for certain gain factors when HS-DPCCH is transmitted as defined in [3]. If the UE is allowed to reduce its maximum transmit power for certain TFCs, the UE shall use the reduced maximum transmit power in the evaluation of the TFC selection criteria for those TFCs.

6.5 Maximum allowed UL TX Power

UTRAN may limit the power the UE is using on the uplink by setting the maximum allowed UL TX power IE defined in TS25.331.

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.6.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the Open loop power control in TS 25.101 section 6.4.1.

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CHANGE REQUEST

⌘	**25.133** CR **661**	⌘**rev** **1** ⌘	Current version:	**6.5.0** ⌘

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Proposed change affects: UICC apps⌘ ☐   ME **X** Radio Access Network **X** Core Network ☐

Title: ⌘	Clarification of HS-DPCCH in Transport format combination selection requirements	
Source: ⌘	RAN WG4	
Work item code:⌘	HSDPA-RF	*Date:* ⌘ 24/05/2004

Category: ⌘ **A**		*Release:* ⌘ Rel-6		

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)
Rel-6   (Release 6)

Reason for change: ⌘	It is not clear whether HS-DPCCH should be taken into account in the TFC Elimination and Recovery criteria.
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Consequences if not approved: ⌘	Terminals will not take HS-DPCCH into account in a similar manner when evaluating Elimination and Recovery criteria. This makes the optimisation of the network more difficult due to differently behaving terminals.

Clauses affected: ⌘	6.4.2

Other specs affected: ⌘	Y	N		
		X	Other core specifications ⌘	
	X		Test specifications	TS34.121

		X	O&M Specifications	
Other comments: ⌘				
		Equivalent CRs in other Releases: CR660r1 cat. F to 25.133 v5.10.0		

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CHANGE REQUEST

⌘ **25.133** CR **662** ⌘rev **1** ⌘ Current version: **5.10.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME **X** Radio Access Network ☐ Core Network ☐

Title: ⌘	Correction to UTRA Carrier RSSI measurement tables in test cases		
Source: ⌘	RAN WG4		
Work item code:⌘	TEI5	***Date:*** ⌘	24/05/2004

Category: ⌘	**F**	***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)* *Rel-6 (Release 6)*

Reason for change: ⌘	Table A.9.5A is entitled "UTRA Carrier RSSI absolute and relative accuracy" but the values for the relative accuracy test requirements are different from the absolute accuracy requirements. Hence, the test requirements for relative accuracy are incorrect. The UTRA Carrier RSSI test case is only defined for Band I. Impact from RF noise floor is different for different frequency bands and thereby test case dependent.
Summary of change:⌘	- Change to Io at sensitivity level for frequency bands II and III (-94dBm for band I, -92dBm for band II and –91dBm for band III) in the UTRA Carrier RSSI test case. - Table A.9.5A "UTRA Carrier RSSI absolute and relative accuracy" is split into two tables: A.9.5.A ""UTRA Carrier RSSI absolute accuracy" I and A.9.5.A2 for "UTRA Carrier RSSI relative accuracy". - A note is added that T1 specifications have to consider the impact of the RF noise floor. Isolated Impact Analyses: Only the test case values are changed. The changes do not affect a UE that fulfils the core requirements.
Consequences if not approved: ⌘	T1 might use wrong test requirements for UTRA Carrier RSSI relative measurements and therefore a UE that fulfills the core requirements does not necessarily pass the test case.

Clauses affected:	⌘	A.9.1.3.1, A.9.1.3.2		

			Y	**N**			
Other specs affected:	⌘			X	Other core specifications	⌘	
			X		Test specifications		34.121
				X	O&M Specifications		

Other comments:	⌘	
		Equivalent CRs in other Releases: CR663r1 cat. F to 25.133 v6.5.0

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A.9.1.3   UTRA Carrier RSSI

A.9.1.3.1   Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.3. In this case both cells are in different frequency and compressed mode is applied. The gap length is 7, detailed definition is in TS 25.101 annex A.5, Set 1 of Table A.22. UTRA Carrier RSSI accuracy requirements are tested by using test parameters in Table A.9.5.

Table A.9.5: UTRA Carrier RSSI Inter frequency test parameters

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior		dB	-10		-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12		-12	
SCH_Ec/Ior		dB	-12		-12		-12	
PICH_Ec/Ior		dB	-15		-15		-15	
DPCH_Ec/Ior		dB	-15	-	-6	-	-6	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-2.56	-0.94	-2.56	-0.94
Ioc	Band I	dBm/ 3.84 MHz	-52.22	-52.22	-70.27	-70.27	-94.46	-94.46
	Band II						-92.46	-92.46
	Band III						-91.46	-91.46
Îor/Ioc		dB	-1.75	-1.75	-4.7	-4.7	-9.54	-9.54
CPICH Ec/Io, Note 1		dBm	-14.0	-14.0	-16.0	-16.0	-20.0	-20.0
Io, Note 1	Band I	dBm/3.84 MHz	-50	-50	-69	-69	-94	-94
	Band II						-92	-92
	Band III						-91	-91
Propagation condition		-	AWGN		AWGN		AWGN	
NOTE 1: CPICH Ec/Io and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.								
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.								

A.9.1.3.2   Test Requirements

The UTRA Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.3. The effect of assumed thermal noise and noise generated in the receiver (–99 dBm for frequency band I, -97dBm for frequency band II and –96dBm for frequency band III) shall be added into the required accuracy defined in Section 9.1.2 as shown in Table A.9.5A and Table A.9.5A2.

Table A.9.5A: UTRA Carrier RSSI absolute ~~and relative~~ accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
UTRA Carrier RSSI	dBm	~~±~~4… (Note 1)~~5.2~~	~~±~~7… (Note 1)~~8.2~~	-94…-70~~87~~ (Band I) -92…-70 (Band II) -91…-70 (Band III)
	~~dBm~~	~~± 4~~	~~± 7~~	~~-87…-70~~
	dBm	± 6	± 9	-70...-50

Note 1: Impact from RF noise floor is test case dependent and has not been considered. Noise floor shall be considered in T1 test case

Table A9.5A2: UTRA Carrier RSSI relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
UTRA Carrier RSSI	dBm	± 7 (Note 1)	± 11(Note 1)	-94…-70 (Band I) -92…-70 (Band II) -91…-70 (Band III)

Note 1: Impact from RF noise floor is test case dependent and has not been considered. Noise floor shall be considered in T1 test case

A.9.1.3A GSM Carrier RSSI

A.9.1.3A.1   Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.4.

In the test in Cell_DCH state compressed mode with purpose "GSM Carrier RSSI Measurement" is applied to measure on GSM. The gap length is 7, detailed definition is in TS 25.101 annex A.5. Table A.9.5AA defines the limits of signal strengths and code powers on the UMTS FDD cell, where the requirement is applicable. In the measurement control information it is indicated to the UE that periodic reporting of the GSM RSSI measurement.

The limits of the GSM test parameters are defined in [21].

Table A.9.5AA: General GSM Carrier RSSI test parameters

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Compressed mode patterns - GSM carrier RSSI measurement		Compressed mode reference pattern 2 Set 2	As specified in table A.22 TS 25.101 section A.5
Inter-RAT measurement quantity		GSM Carrier RSSI	
BSIC verification required		Not required	
Monitored cell list size		6 GSM neighbours including ARFCN 1	Measurement control information is sent before the compressed mode patterns starts.

Table A.9.5B: Cell specific GSM Carrier RSSI test parameters

Parameter	Unit	Cell 1
UTRA RF Channel number	-	Channel 1
Îor/Ioc	dB	-1
Ioc	dBm/ 3.84 MHz	-70
Propagation condition	-	AWGN

A.9.1.3A.2   Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.4.

The rate of correct measurements observed during repeated tests shall be at least 90%.

CR-Form-v7

CHANGE REQUEST

⌘ **25.133** CR **663** ⌘**rev** **1** ⌘ Current version: **6.5.0** ⌘

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Title: ⌘	Correction to UTRA Carrier RSSI measurement tables in test cases
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Work item code:⌘ TEI6	***Date:*** ⌘ 24/05/2004

Category: ⌘ **F**   ***Release:*** ⌘ Rel-6

Use one of the following categories:	*Use one of the following releases:*
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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 be found in 3GPP TR 21.900.	*Rel-4 (Release 4)*
	Rel-5 (Release 5)
	Rel-6 (Release 6)

Reason for change: ⌘	Table A.9.5A is entitled "UTRA Carrier RSSI absolute and relative accuracy" but the values for the relative accuracy test requirements are different from the absolute accuracy requirements. Hence, the test requirements for relative accuracy are incorrect. The UTRA Carrier RSSI test case is only defined for Band I. Impact from RF noise floor is different for different frequency bands and thereby test case dependent.
Summary of change:⌘	- Change to Io at sensitivity level for frequency bands II and III (-94dBm for band I, -92dBm for band II and –91dBm for band III) in the UTRA Carrier RSSI test case. - Table A.9.5A "UTRA Carrier RSSI absolute and relative accuracy" is split into two tables: A.9.5.A ""UTRA Carrier RSSI absolute accuracy" I and A.9.5.A2 for "UTRA Carrier RSSI relative accuracy". - A note is added that T1 specifications have to consider the impact of the RF noise floor. Isolated Impact Analyses: Only the test case values are changed. The changes do not affect a UE that fulfils the core requirements.
Consequences if not approved: ⌘	T1 might use wrong test requirements for UTRA Carrier RSSI relative measurements and therefore a UE that fulfills the core requirements does not necessarily pass the test case.

Clauses affected:	⌘	A.9.1.3.1, A.9.1.3.2		

		Y	**N**			
Other specs **affected:**	⌘		**X**	Other core specifications	⌘	
		X		Test specifications		34.121
			X	O&M Specifications		

Other comments:	⌘	
		Equivalent CRs in other Releases: CR662r1 cat. F to 25.133 v5.10.0

How to create CRs using this form:

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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.

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.

A.9.1.3　UTRA Carrier RSSI

A.9.1.3.1　Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.3. In this case both cells are in different frequency and compressed mode is applied. The gap length is 7, detailed definition is in TS 25.101 annex A.5, Set 1 of Table A.22. UTRA Carrier RSSI accuracy requirements are tested by using test parameters in Table A.9.5.

Table A.9.5: UTRA Carrier RSSI Inter frequency test parameters

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior		dB	-10		-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12		-12	
SCH_Ec/Ior		dB	-12		-12		-12	
PICH_Ec/Ior		dB	-15		-15		-15	
DPCH_Ec/Ior		dB	-15	-	-6	-	-6	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-2.56	-0.94	-2.56	-0.94
Ioc	Band I, IV,VI	dBm/ 3.84 MHz	-52.22	-52.22	-70.27	-70.27	-94.46	-94.46
	Band II, V						-92.46	-92.46
	Band III						-91.46	-91.46
Îor/Ioc		dB	-1.75	-1.75	-4.7	-4.7	-9.54	-9.54
CPICH Ec/Io, Note 1		dBm	-14.0	-14.0	-16.0	-16.0	-20.0	-20.0
Io, Note 1	Band I, IV,VI	dBm/3.84 MHz	-50	-50	-69	-69	-94	-94
	Band II, V						-92	-92
	Band III						-91	-91
Propagation condition		-	AWGN		AWGN		AWGN	
NOTE 1:　CPICH Ec/Io and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.								
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.								

A.9.1.3.2　Test Requirements

The UTRA Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.3. The effect of assumed thermal noise and noise generated in the receiver (–99 dBm for frequency bands I, IV,VI; -97dBm for frequency bands II,V; and –96dBm for frequency band III) shall be added into the required accuracy defined in Section 9.1.2 as shown in Table A.9.5A and in Table A.9.5A2.

Table A.9.5A: UTRA Carrier RSSI absolute ~~and relative~~ accuracy

Parameter	Unit	Accuracy [dB]		Conditions
		Normal condition	**Extreme condition**	**Io [dBm/3.84 MHz]**
UTRA Carrier RSSI	dBm	±-4 (Note 1)~~…5.2~~	±-7 (Note 1)~~…8.2~~	-94…-70~~87~~ (Band I, IV,VI) -92…-70 (Band II, V) -91…-70 (Band III)
	~~dBm~~	~~± 4~~	~~± 7~~	~~-87...-70~~
	dBm	± 6	± 9	-70...-50

Note 1: Impact from RF noise floor is test case dependent and has not been considered. Noise floor shall be considered in T1 test case

Table A.9.5A2: UTRA Carrier RSSI relative accuracy

Parameter	Unit	Accuracy [dB]		Conditions Io [dBm/3.84 MHz]
		Normal condition	Extreme condition	
UTRA Carrier RSSI	dBm	± 7 (Note 1)	± 11(Note 1)	-94…-70 (Band I, IV,VI) -92…-70 (Band II, V) -91…-70 (Band III)

Note 1: Impact from RF noise floor is test case dependent and has not been considered. Noise floor shall be considered in T1 test case

CR-Form-v7

CHANGE REQUEST

⌘   **25.133** CR **664**   ⌘**rev** **1** ⌘ Current version: **5.10.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐   ME **X** Radio Access Network ☐   Core Network ☐

Title: ⌘	Corrections to Io, Ioc and RSCP levels for testing different frequency bands	
Source: ⌘	RAN WG4	
Work item code:⌘	TEI5	***Date:*** ⌘ 24/05/2004

Category: ⌘ **F**	***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)* *Rel-6 (Release 6)*

Reason for change: ⌘	The Io, Ioc and CPICH RSCP levels in the accuracy test cases of Section A.9 are currently only defined for Band I.
Summary of change:⌘	Additional frequency bands are defined in table A.9.1, A.9.2, A.9.3, A.9.4, A.9.5, A.9.6, A.9.7, A.9.8, A.9.9, A.9.11. Ioc, Io and CPICH RSCP levels are also defined for Band II and Band III. Isolated Impact Analyses: Only the test case values are changed. The changes do not affect a UE that fulfils the core requirements.
Consequences if not approved: ⌘	Either testing of other frequency bands but Band I is not possible or T1 may use wrong parameters for Band II and Band III.This may cause a UE fulfilling the core requirements to fail a test case.

Clauses affected: ⌘	A.9.1.1.1.1, A.9.1.1.1.2, A.9.1.2.1.1, A.9.1.2.1.2, A.9.1.2.2, A.9.1.4.1.1, A.9.1.4.1.2, A.9.1.5.1.1, A.9.1.5.2.1, A.9.1.6.1.1, A.9.1.6.2.1

	Y	**N**	
Other specs affected: ⌘		**X**	Other core specifications ⌘
	X		Test specifications 34.121
		X	O&M Specifications

Other comments: ⌘	Equivalent CRs in other Releases: CR665r1 cat. F to 25.133 v6.5.0

How to create CRs using this form:

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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.

A.9 Measurement Performance Requirements

Unless explicitly stated:

- Reported measurements shall be within defined range in 90 % of the cases.

- Measurement channel is 12.2 kbps as defined in TS 25.101 annex A, sub-clause A.3.1. This measurement channel is used both in active cell and cells to be measured.

- Physical channels used as defined in TS 25.101 annex C.

- Cell 1 is the active cell when in CELL_DCH state.

- Single task reporting.

- Power control is active.

A.9.1 Measurement Performance for UE

A.9.1.1 CPICH RSCP

A.9.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.

A.9.1.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. Both CPICH RSCP intra frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.1.

Table A.9.1: CPICH RSCP Intra frequency test parameters

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior		dB	-10		-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12		-12	
SCH_Ec/Ior		dB	-12		-12		-12	
PICH_Ec/Ior		dB	-15		-15		-15	
DPCH_Ec/Ior		dB	-15	-	-15	-	-15	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-1.11	-0.94	-1.11	-0.94
Ioc	Band I	dBm/ 3.84 MHz	-75.54		-59.98		-97.47	
	Band II						-95.47	
	Band III						-94.47	
Îor/Ioc		dB	4	0	9	0	0	-6.53
CPICH RSCP, Note 1	Band I	dBm	-81.5	-85.5	-60.98	-69.88	-107.47	-114.0
	Band II						-105.47	-112.0
	Band III						-104.47	-111.0
Io, Note 1	Band I	dBm/3.84 MHz	-69		-50		-94	
	Band II						-92	
	Band III						-91	
Propagation condition		-	AWGN		AWGN		AWGN	
NOTE 1: CPICH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.								
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.								

A.9.1.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies and compressed mode is applied. The gap length is 7, detailed definition is in TS 25.101 annex A.5, Set 1 of Table A.22. . CPICH RSCP inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.2.

Table A.9.2: CPICH RSCP Inter frequency tests parameters

Parameter		Unit	Test 1		Test 2	
			Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior		dB	-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12	
SCH_Ec/Ior		dB	-12		-12	
PICH_Ec/Ior		dB	-15		-15	
DPCH_Ec/Ior		dB	-15	-	-15	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-1.11	-0.94
Ioc	Band I	dBm/3.84 MHz	-60.00	-60.00	-84.00	-94.46
	Band II				-82.0	-92.46
	Band III				-81.0	-91.46
Îor/Ioc		dB	9.54	9.54	0	-9.54
CPICH RSCP, Note 1	Band I	dBm	-60.46	-60.46	-94.0	-114.0
	Band II				-92.0	-112.0
	Band III				-91.0	-111.0
Io, Note 1	Band I	dBm/3.84 MHz	-50.00	-50.00	-81.0	-94.0
	Band II				-79.0	-92.0
	Band III				-78.0	-91.0
Propagation condition		-	AWGN		AWGN	
NOTE 1: CPICH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.						
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for test 2 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.						

A.9.1.1.2   Test Requirements

The CPICH RSCP measurement accuracy shall meet the requirements in section 9.1.1.

A.9.1.2   CPICH Ec/Io

A.9.1.2.1   Test Purpose and Environment

The purpose of this test is to verify that the CPICH Ec/Io measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.2.

A.9.1.2.1.1   Intra frequency test parameters

In this case all cells are in the same frequency. Both CPICH Ec/Io absolute and relative accuracy requirements are tested by using test parameters in Table A.9.3

Table A.9.3: CPICH Ec/Io Intra frequency test parameters

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior		dB	-10		-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12		-12	
SCH_Ec/Ior		dB	-12		-12		-12	
PICH_Ec/Ior		dB	-15		-15		-15	
DPCH_Ec/Ior		dB	-15	-	-15	-	-6	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-1.11	-0.94	-2.56	-0.94
Ioc	Band I	dBm/ 3.84 MHz	-56.98		-89.07		-94.98	
	Band II						-92.98	
	Band III						-91.98	
Îor/Ioc		dB	3.0	3.0	-2.9	-2.9	-9.0	-9.0
CPICH Ec/Io, Note 1		dBm	-14.0	-14.0	-16.0	-16.0	-20.0	-20.0
Io, Note 1	Band I	dBm/3.84 MHz	-50		-86		-94	
	Band II						-92	
	Band III						-91	
Propagation condition		-	AWGN		AWGN		AWGN	
NOTE 1: CPICH Ec/Io and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.								
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.								

A.9.1.2.1.2 Inter frequency test parameters

In this case both cells are in different frequency and compressed mode is applied. The gap length is 7, detailed definition is in TS 25.101 annex A.5, Set 1 of Table A.22. CPICH Ec/Io inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.4.

Table A.9.4: CPICH Ec/Io Inter frequency tests parameters

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior		dB	-10		-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12		-12	
SCH_Ec/Ior		dB	-12		-12		-12	
PICH_Ec/Ior		dB	-15		-15		-15	
DPCH_Ec/Ior		dB	-15	-	-6	-	-6	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-2.56	-0.94	-2.56	-0.94
Ioc	Band I	dBm/ 3.84 MHz	-52.22	-52.22	-87.27	-87.27	-94.46	-94.46
	Band II						-92.46	-92.46
	Band III						-91.46	-91.46
Îor/Ioc		dB	-1.75	-1.75	-4.7	-4.7	-9.54	-9.54
CPICH Ec/Io, Note 1		dBm	-14.0	-14.0	-16.0	-16.0	-20.0	-20.0
Io, Note 1	Band I	dBm/3.84 MHz	-50	-50	-86	-86	-94	-94
	Band II						-92	-92
	Band III						-91	-91
Propagation condition		-	AWGN		AWGN		AWGN	
NOTE 1: CPICH Ec/Io and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.								
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.								

A.9.1.2.2   Test Requirements

The CPICH Ec/Io measurement accuracy shall meet the requirements in section 9.1.2. In case of the absolute intra-frequency CPICH_Ec/Io measurement and relative inter-frequency CPICH_Ec/Io measurement accuracy test cases the effect of assumed thermal noise and noise generated in the receiver (–99 dBm for frequency band I, -97dBm for frequency band II and –96dBm for frequency band III) shall be added into the required accuracy. The test requirements for the absolute intra -frequency CPICH_Ec/Io measurement are defined in Section 9.1.2 as shown in Table A.9.4A. The test requirements for the relative inter-frequency CPICH_Ec/Io measurement are defined in Section 9.1.2 as shown in Table A.9.4B.

Table A.9.4A: CPICH_Ec/Io Intra-frequency absolute accuracy

| Parameter | Unit | Accuracy [dB] | | Conditions |
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
CPICH_Ec/Io	dB	-2.7…1.5 for -14 ≤ CPICH Ec/Io –3.2…2 for -16 ≤ CPICH Ec/Io < -14 –4.2…3 for -20 ≤ CPICH Ec/Io < -16	-4.2…3	-94...-87 (Band I) -92...-85 (Band II,) -91...-84 (Band III)
		± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-87...-50 (Band I) -85…-50 (Band II) -84…-50 (Band III)

Table A.9.4B: CPICH_Ec/Io Inter frequency relative accuracy

| Parameter | Unit | Accuracy [dB] | | Conditions |
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	±2.7 for -14 ≤ CPICH Ec/Io ±3.2 for -16 ≤ CPICH Ec/Io < -14 ±4.2 for -20 ≤ CPICH Ec/Io < -16	± 4.2	-94...-87 (Band I) -92...-85 (Band II) -91...-84 (Band III)
		± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-87...-50 (Band I) -85…-50 (Band II) -84…-50 (Band III)

A.9.1.4   SFN-CFN observed time difference

A.9.1.4.1   Test Purpose and Environment

The purpose of this test is to verify that the SFN-CFN observed time difference measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.7.

A.9.1.4.1.1   Intra frequency test parameters

During the test the timing difference between Cell 1 and 2 can be set to value from 0…9830399 chips.

In this case all cells are in the same frequency. Table A.9.6 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.6: SFN-CFN observed time difference Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	*Io -13.7 dB = Ioc*, Note 1	*Io -13.7 dB = Ioc*, Note 1
Range 1:Io	dBm/3.84 MHz	-94…-70 (Band I) -92…-70 (Band II) -91…-70 (Band III)	-94…-70 (Band I) -92…-70 (Band II) -91…-70 (Band III)
Range 2: Io		-94…-50 (Band I) -92…-50 (Band II) -91…-50 (Band III)	-94…-50 (Band I -92…-50 (Band II -91…-50 (Band III)
Propagation condition	-	AWGN	
NOTE 1: *Ioc* level shall be adjusted according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*.			

A.9.1.4.1.2   Inter frequency test parameters

During the test the timing difference between Cell 1 and 2 can be set to value from 0…9830399 chips.

In this test case both cells are in different frequency and compressed mode is applied. The gap length is 7, detailed definition is in TS 25.101 annex A.5, Set 1 of Table A.22. Table A.9.7 defines the limits of signal strengths and code powers, where the requirement is applicable.

Table A.9.7: SFN-CFN observed time difference Inter frequency tests parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 2
CPICH_Ec/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.1	10.1
Ioc	dBm/ 3.84 MHz	*Io -10.6 dB = Ioc,* Note 1	*Io -10.6 dB = Ioc,* Note 1
Range 1:Io	dBm/3.84 MHz	-94…-70 (Band I) -92…-70 (Band II) -91…-70 (Band III)	-94…-70 (Band I) -92…-70 (Band II -91…-70 (Band III)
Range 2: Io		-94…-50 (Band I) -92…-50 (Band II) -91…-50 (Band III)	-94…-50 (Band I) -92…-50 (Band II) -91…-50 (Band III)
Propagation condition	-	AWGN	
NOTE 1: *Ioc* level shall be adjusted in each carrier frequency according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*.			

A.9.1.4.2 Test Requirements

The SFN-CFN observed time difference measurement accuracy shall meet the requirements in section 9.1.7.

A.9.1.5 SFN-SFN observed time difference

A.9.1.5.1 SFN-SFN observed time difference type 1

A.9.1.5.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.8.1.

During the test the timing difference between Cell 1 and 2 can be set to value from 0…9830399 chips.

In this case all cells are in the same frequency. Table A.9.8 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.8: SFN-SFN observed time difference type 1 Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
S-CCPCH_Ec/Ior	dB	-12	-12
OCNS	dB	-1.29	-1.29
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	*Io -13.7 dB = Ioc,* Note 1	*Io -13.7 dB = Ioc,* Note 1
Range 1:Io	dBm/3.84 MHz	-94…-70 (Band I) -92…-70 (Band II) -91…-70 (Band III)	-94…-70 (Band I) -92…-70 (Band II -91…-70 (Band III)
Range 2: Io		-94…-50 (Band I) -92…-50 (Band II) -91…-50 (Band III)	-94…-50 (Band I) -92…-50 (Band II -91…-50 (Band III)
Propagation condition	-	AWGN	
NOTE 1: *Ioc* level shall be adjusted according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*.			

A.9.1.5.1.2 Test Requirements

The SFN-SFN observed time difference type 1 measurement accuracy shall meet the requirements in section 9.1.8.1

A.9.1.5.2 SFN-SFN observed time difference type 2 without IPDL period active

A.9.1.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy without IPDL period active is within the specified limits. This test will verify the requirements in section 9.1.8.2.

During the test the time difference between Cell 1 and 2 can be set to value from -1279.75 to 1280 chips.

In this case all cells are in the same frequency. Table A.9.9 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.9: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	*Io -13.7 dB = Ioc,* Note 1	*Io -13.7 dB = Ioc,* Note 1
CPICH_Ec/Io, Note 2	dB	-13.2	-13.2
Range 1:Io	dBm/3.84 MHz	-94…-70 (Band I) -92…-70 (Band II) -91…-70 (Band III)	-94…-70 (Band I) -92…-70 (Band) -91…-70 (Band III)
Range 2: Io		-94…-50 (Band I) -92…-50 (Band II) -91…-50 (Band III)	-94…-50 (Band I) -92…-50 (Band II) -91…-50 (Band III)
Propagation condition	-	AWGN	
NOTE 1: *Ioc* level shall be adjusted according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*. NOTE 2: Io and CPICH Ec/Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.			

A.9.1.5.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2

A.9.1.5.3 SFN-SFN observed time difference type 2 with IPDL period active

A.9.1.5.3.1 Test Purpose and Environment

This requirement is valid only for UEs supporting IPDL measurements.

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.8.2.

During the test the time difference between Cell 1 and 2 shall be set according to the assistance data defined in table A.9.10A.

In this case all cells are in the same frequency. Table A.9.10 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.10: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	Unit	Cell 1		Cell 2	
Time		No idle period	Idle period in Cell 1	No idle period	Idle period in Cell 1
UTRA RF Channel number		Channel 1	Channel 1	Channel 1	Channel 1
CPICH_Ec/Ior	dB	-10	-10	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12	-12	-12
SCH_Ec/Ior	dB	-12	-12	-12	-12
PICH_Ec/Ior	dB	-15	-15	-15	-15
DPCH_Ec/Ior	dB	-15	-15	-	-
OCNS	dB	-1.11	-1.11	-0.94	-0.94
Îor/Ioc	dB	10.5	-24.5	-6	-6
Ioc	dBm/ 3.84 MHz	*-80*			
Io, Note 1	dBm/3.84 MHz	-69.04	-79.01	-69.04	-79.01
CPICH_Ec/Io, Note 1	dB	-10.46	-35.49	-26.96	-16.99
Propagation condition	-	AWGN			
NOTE 1: Io and CPICH Ec/Io levels have been calculated from other parameters for information purposes. They are is not settable parameters themselves.					

When verifying the SFN-SFN observed time difference type 2 intra frequency measurement accuracy with IPDL period active the idle period parameters in table A.9.10A shall be used.

Table A.9.10A: SFN-SFN observed time difference type 2 assistance data test parameters

Parameter	Unit	Cell 1
Search Window Size	Chips	80
IP_Status	-	Continuous
IP_Spacing	Frames	10
IP_Lenght	Symbols	10
IP_Offset	frame	NA
Seed	integer	13
Burst_Start		NA
Burst_Length		NA
Burst_Freq		NA

NOTE: The total signal power spectral density *Io* will change only downwards during BS transmission gap.

A.9.1.5.3.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2

A.9.1.6 UE Rx-Tx time difference

A.9.1.6.1 UE Rx-Tx time difference type 1

A.9.1.6.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE Rx-Tx time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.9.1

Table A.9.11 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.11: UE Rx-Tx time difference type 1 intra frequency test parameters

Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
DPCH_Ec/Ior	dB	-15
OCNS	dB	-1.11
Îor/Ioc	dB	10.5
Ioc	dBm/ 3.84 MHz	*Io −10.9 dB = Ioc,* Note 1
Io	dBm/3.84 MHz	-94…-50 (Band I) -92…-50 (Band II) -91…-50 (Band III)
Propagation condition	-	AWGN
NOTE 1: *Ioc* level shall be adjusted according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*.		

A.9.1.6.1.2 Test Requirements

The UE Rx-Tx time difference type 1 measurement accuracy shall meet the requirements in section 9.1.9.1.

A.9.1.6.2 UE Rx-Tx time difference type 2

A.9.1.6.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE Rx-Tx time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.9.2.

Table A.9.12 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.12: UE Rx-Tx time difference type 2 intra frequency test parameters

Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
DPCH_Ec/Ior	dB	-15
OCNS	dB	-1.11
Îor/Ioc	dB	10.5
Ioc	dBm/ 3.84 MHz	Io −10.9 dB = Ioc, Note 1
Io	dBm/ 3.84 MHz	-94…-50 (Band I) -92…-50 (Band II) -91…-50 (Band III)
Propagation condition	-	AWGN
NOTE 1: Ioc level shall be adjusted according the total signal power spectral density Io at receiver input and the geometry factor Îor/Ioc.		

A.9.1.6.2.2 Test Requirements

The UE Rx-Tx time difference type 2 measurement accuracy shall meet the requirements in section 9.1.9.2.

CR-Form-v7

CHANGE REQUEST

⌘ **25.133** CR **665** ⌘rev **1** ⌘ Current version: **6.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐   ME **X** Radio Access Network ☐   Core Network ☐

Title: ⌘	Corrections to Io, Ioc and RSCP levels for testing different frequency bands
Source: ⌘	RAN WG4
Work item code: ⌘ TEI6	***Date:*** ⌘ 24/05/2004

Category: ⌘ **F**

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.

Release: ⌘ Rel-6

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)
Rel-6 (Release 6)

Reason for change: ⌘	The Io, Ioc and CPICH RSCP levels in the accuracy test cases of Section A.9 are currently only defined for Band I.
Summary of change: ⌘	Additional frequency bands are defined in table A.9.1, A.9.2, A.9.3, A.9.4, A.9.5, A.9.6, A.9.7, A.9.8, A.9.9, A.9.11. Ioc, Io and CPICH RSCP levels are also defined for Band II Band III, band IV, band V and band VI Isolated Impact Analyses: Only the test case values are changed. The changes do not affect a UE that fulfils the core requirements.
Consequences if not approved: ⌘	Either testing of other frequency bands but Band I is not possible or T1 may use wrong parameters for Band II, Band III, band IV, band V and band VI.This may cause a UE fulfilling the core requirements to fail a test case.
Clauses affected: ⌘	A.9.1.1.1.1, A.9.1.1.1.2, A.9.1.2.1.1, A.9.1.2.1.2, A.9.1.2.2, A.9.1.4.1.1, A.9.1.4.1.2, A.9.1.5.1.1, A.9.1.5.2.1, A.9.1.6.1.1, A.9.1.6.2.1

Other specs affected: ⌘	Y	N		⌘	
		X	Other core specifications	⌘	
	X		Test specifications		34.121
		X	O&M Specifications		

Other comments: ⌘	Equivalent CRs in other Releases: CR664r1 cat. F to 25.133 v5.10.0

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.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.

A.9 Measurement Performance Requirements

Unless explicitly stated:

- Reported measurements shall be within defined range in 90 % of the cases.

- Measurement channel is 12.2 kbps as defined in TS 25.101 annex A, sub-clause A.3.1. This measurement channel is used both in active cell and cells to be measured.

- Physical channels used as defined in TS 25.101 annex C.

- Cell 1 is the active cell when in CELL_DCH state.

- Single task reporting.

- Power control is active.

A.9.1 Measurement Performance for UE

A.9.1.1 CPICH RSCP

A.9.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.

A.9.1.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. Both CPICH RSCP intra frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.1.

Table A.9.1: CPICH RSCP Intra frequency test parameters

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior		dB	-10		-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12		-12	
SCH_Ec/Ior		dB	-12		-12		-12	
PICH_Ec/Ior		dB	-15		-15		-15	
DPCH_Ec/Ior		dB	-15	-	-15	-	-15	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-1.11	-0.94	-1.11	-0.94
Ioc	Band I, IV, VI	dBm/ 3.84 MHz	-77.54		-59.98		-97.47	
	Band II, V						-95.47	
	Band III						-94.47	
Îor/Ioc		dB	4	0	9	0	0	-6.53
CPICH RSCP, Note 1	Band I, IV, VI	dBm	-83.5	-87.5	-60.98	-69.88	-107.47	-114.0
	Band II, V						-105.47	-112
	Band III						-104.47	-111
Io, Note 1	Band I, IV, VI	dBm/3.84 MHz	-71		-50		-94	
	Band II, V						-92	
	Band III						-91	
Propagation condition		-	AWGN		AWGN		AWGN	
NOTE 1: CPICH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.								
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.								

A.9.1.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies and compressed mode is applied. The gap length is 7, detailed definition is in TS 25.101 annex A.5, Set 1 of Table A.22. . CPICH RSCP inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.2.

Table A.9.2: CPICH RSCP Inter frequency tests parameters

Parameter		Unit	Test 1		Test 2	
			Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior		dB	-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12	
SCH_Ec/Ior		dB	-12		-12	
PICH_Ec/Ior		dB	-15		-15	
DPCH_Ec/Ior		dB	-15	-	-15	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-1.11	-0.94
Ioc	Band I, IV, VI	dBm/3.84 MHz	-60.00	-60.00	-84.00	-94.46
	Band II, V				-82.00	-92.46
	Band III				-81.00	-91.46
Îor/Ioc		dB	9.54	9.54	0	-9.54
CPICH RSCP, Note 1	Band I, IV, VI	dBm	-60.46	-60.46	-94.0	-114.0
	Band II, V				-92.0	-112.0
	Band III				-91.0	-111.0
Io, Note 1	Band I, IV, VI	dBm/3.84 MHz	-50.00	-50.00	-81.0	-94.0
	Band II, V				-79.0	-92.0
	Band III				-78.0	-91.0
Propagation condition		-	AWGN		AWGN	
NOTE 1: CPICH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.						
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for test 2 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.						

A.9.1.1.2 Test Requirements

The CPICH RSCP measurement accuracy shall meet the requirements in section 9.1.1.

A.9.1.2 CPICH Ec/Io

A.9.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH Ec/Io measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.2.

A.9.1.2.1.1 Intra frequency test parameters

In this case all cells are in the same frequency. Both CPICH Ec/Io absolute and relative accuracy requirements are tested by using test parameters in Table A.9.3

Table A.9.3: CPICH Ec/Io Intra frequency test parameters

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior		dB	-10		-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12		-12	
SCH_Ec/Ior		dB	-12		-12		-12	
PICH_Ec/Ior		dB	-15		-15		-15	
DPCH_Ec/Ior		dB	-15	-	-15	-	-6	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-1.11	-0.94	.2.56	-0.94
Ioc	Band I, IV, VI	dBm/ 3.84 MHz	-56.98		-89.07		-94.98	
	Band II, V						-92.98	
	Band III						-91.98	
Îor/Ioc		dB	3.0	3.0	-2.9	-2.9	-9.0	-9.0
CPICH Ec/Io, Note 1		dBm	-14.0	-14.0	-16.0	-16.0	-20.0	-20.0
Io, Note 1	Band I, IV, VI	dBm/3.84 MHz	-50		-86		-94	
	Band II, V						-92	
	Band III						-91	
Propagation condition		-	AWGN		AWGN		AWGN	
NOTE 1: CPICH Ec/Io and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.								
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.								

A.9.1.2.1.2   Inter frequency test parameters

In this case both cells are in different frequency and compressed mode is applied. The gap length is 7, detailed definition is in TS 25.101 annex A.5, Set 1 of Table A.22. CPICH Ec/Io inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.4.

Table A.9.4: CPICH Ec/Io Inter frequency tests parameters

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
UTRA RF Channel number			Channel 1	Channel 2	Channel 1	Channel 2	Channel 1	Channel 2
CPICH_Ec/Ior		dB	-10		-10		-10	
PCCPCH_Ec/Ior		dB	-12		-12		-12	
SCH_Ec/Ior		dB	-12		-12		-12	
PICH_Ec/Ior		dB	-15		-15		-15	
DPCH_Ec/Ior		dB	-15	-	-6	-	-6	-
OCNS_Ec/Ior		dB	-1.11	-0.94	-2.56	-0.94	-2.56	-0.94
Ioc	Band I, IV, VI	dBm/ 3.84 MHz	-52.22	-52.22	-87.27	-87.27	-94.46	-94.46
	Band II, V						-92.46	-92.46
	Band III						-91.46	-91.46
Îor/Ioc		dB	-1.75	-1.75	-4.7	-4.7	-9.54	-9.54
CPICH Ec/Io, Note 1		dBm	-14.0	-14.0	-16.0	-16.0	-20.0	-20.0
Io, Note 1	Band I, IV, VI	dBm/3.84 MHz	-50	-50	-86	-86	-94	-94
	Band II, V						-92.0	-92.0
	Band III						-91.0	-91.0
Propagation condition		-	AWGN		AWGN		AWGN	
NOTE 1: CPICH Ec/Io and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.								
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.								

A.9.1.2.2   Test Requirements

The CPICH Ec/Io measurement accuracy shall meet the requirements in section 9.1.2. In case of the absolute intra -frequency CPICH_Ec/Io measurement and relative inter-frequency CPICH_Ec/Io measurement accuracy test cases the effect of assumed thermal noise and noise generated in the receiver (–99 dBm for frequency bands I, IV and VI; -97dBm for frequency bands II and V; and –96dBm for frequency band III) shall be added into the required accuracy. The test requirements for the absolute intra -frequency CPICH_Ec/Io measurement are defined in Section 9.1.2 as shown in Table A.9.4A. The test requirements for the relative inter-frequency CPICH_Ec/Io measurement are defined in Section 9.1.2 as shown in Table A.9.4B.

Table A.9.4A: CPICH_Ec/Io Intra-frequency absolute accuracy

| Parameter | Unit | Accuracy [dB] | | Conditions |
		Normal condition	Extreme condition	Io [dBm/3.84 MHz]
CPICH_Ec/Io	dB	-2.7…1.5 for -14 ≤ CPICH Ec/Io –3.2…2 for -16 ≤ CPICH Ec/Io < -14 –4.2…3 for -20 ≤ CPICH Ec/Io < -16	-4.2…3	-94...-87 (Band I, IV, VI) -92…-85 (Band II, V) -91…-84 (Band III)
		± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-87...-50 (Band I, IV, VI) -85…-50 (Band II, V) -84…-50 (Band III)

Table A.9.4B: CPICH_Ec/Io Inter frequency relative accuracy

| Parameter | Unit | Accuracy [dB] | | Conditions |
		Normal condition	Extreme condition	Io [dBm]
CPICH_Ec/Io	dB	±2.7 for -14 ≤ CPICH Ec/Io ±3.2 for -16 ≤ CPICH Ec/Io < -14 ±4.2 for -20 ≤ CPICH Ec/Io < -16	± 4.2	-94...-87 (Band I, IV, VI) -92…-85 (Band II, V) -91…-84 (Band III)
		± 1.5 for -14 ≤ CPICH Ec/Io ± 2 for -16 ≤ CPICH Ec/Io < -14 ± 3 for -20 ≤ CPICH Ec/Io < -16	± 3	-87...-50 (Band I, IV, VI) -85…-50 (Band II, V) -84…-50 (Band III)

A.9.1.4   SFN-CFN observed time difference

A.9.1.4.1   Test Purpose and Environment

The purpose of this test is to verify that the SFN-CFN observed time difference measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.7.

A.9.1.4.1.1   Intra frequency test parameters

During the test the timing difference between Cell 1 and 2 can be set to value from 0…9830399 chips.

In this case all cells are in the same frequency. Table A.9.6 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.6: SFN-CFN observed time difference Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	*Io -13.7 dB = Ioc,* Note 1	*Io -13.7 dB = Ioc,* Note 1
Range 1:Io	dBm/3.84 MHz	-94…-70 (Band I, IV, VI) -92…-70 (Band II, V) -91…-70 (Band III)	-94…-70 (Band I, IV, VI) -92…-70 (Band II, V) -91…-70 (Band III)
Range 2: Io		-94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)	-94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)
Propagation condition	-	AWGN	
NOTE 1: *Ioc* level shall be adjusted according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*.			

A.9.1.4.1.2 Inter frequency test parameters

During the test the timing difference between Cell 1 and 2 can be set to value from 0…9830399 chips.

In this test case both cells are in different frequency and compressed mode is applied. The gap length is 7, detailed definition is in TS 25.101 annex A.5, Set 1 of Table A.22. Table A.9.7 defines the limits of signal strengths and code powers, where the requirement is applicable.

Table A.9.7: SFN-CFN observed time difference Inter frequency tests parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 2
CPICH_Ec/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.1	10.1
Ioc	dBm/ 3.84 MHz	*Io -10.6 dB = Ioc,* Note 1	*Io -10.6 dB = Ioc,* Note 1
Range 1:Io	dBm/3.84 MHz	-94…-70 (Band I, IV, VI) -92…-70 (Band II, V) -91…-70 (Band III)	-94…-70 (Band I, IV, VI) -92…-70 (Band II, V) -91…-70 (Band III)
Range 2: Io		-94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)	-94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)
Propagation condition	-	AWGN	
NOTE 1: *Ioc* level shall be adjusted in each carrier frequency according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*.			

A.9.1.4.2 Test Requirements

The SFN-CFN observed time difference measurement accuracy shall meet the requirements in section 9.1.7.

A.9.1.5　SFN-SFN observed time difference

A.9.1.5.1　　SFN-SFN observed time difference type 1

A.9.1.5.1.1　　Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.8.1.

During the test the timing difference between Cell 1 and 2 can be set to value from 0…9830399 chips.

In this case all cells are in the same frequency. Table A.9.8 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.8: SFN-SFN observed time difference type 1 Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
S-CCPCH_Ec/Ior	dB	-12	-12
OCNS	dB	-1.29	-1.29
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	*Io -13.7 dB = Ioc,* Note 1	*Io -13.7 dB = Ioc,* Note 1
Range 1:Io Range 2: Io	dBm/3.84 MHz	-94…-70 (Band I, IV, VI) -92…-70 (Band II, V) -91…-70 (Band III) -94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)	-94…-70 (Band I, IV, VI) -92…-70 (Band II, V) -91…-70 (Band III) -94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)
Propagation condition	-	AWGN	
NOTE 1:　*Ioc* level shall be adjusted according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc.*			

A.9.1.5.1.2　　Test Requirements

The SFN-SFN observed time difference type 1 measurement accuracy shall meet the requirements in section 9.1.8.1

A.9.1.5.2　　SFN-SFN observed time difference type 2 without IPDL period active

A.9.1.5.2.1　　Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy without IPDL period active is within the specified limits. This test will verify the requirements in section 9.1.8.2.

During the test the time difference between Cell 1 and 2 can be set to value from -1279.75 to 1280 chips.

In this case all cells are in the same frequency. Table A.9.9 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.9: SFN-SFN observed time difference type 2 Intra frequency test parameters

Parameter	Unit	Cell 1	Cell 2
UTRA RF Channel number		Channel 1	Channel 1
CPICH_Ec/Ior	dB	-10	-10
PCCPCH_Ec/Ior	dB	-12	-12
SCH_Ec/Ior	dB	-12	-12
PICH_Ec/Ior	dB	-15	-15
DPCH_Ec/Ior	dB	-15	-15
OCNS	dB	-1.11	-1.11
Îor/Ioc	dB	10.5	10.5
Ioc	dBm/ 3.84 MHz	*Io -13.7 dB = Ioc,* Note 1	*Io -13.7 dB = Ioc,* Note 1
CPICH_Ec/Io, Note 2	dB	-13.2	-13.2
Range 1:Io	dBm/3.84 MHz	-94…-70 (Band I, IV, VI) -92…-70 (Band II, V) -91…-70 (Band III)	-94…-70 (Band I, IV, VI) -92…-70 (Band II, V) -91…-70 (Band III)
Range 2: Io		-94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)	-94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)
Propagation condition	-	AWGN	
NOTE 1: *Ioc* level shall be adjusted according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*.			
NOTE 2: Io and CPICH Ec/Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.			

A.9.1.5.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.8.2

A.9.1.6 UE Rx-Tx time difference

A.9.1.6.1 UE Rx-Tx time difference type 1

A.9.1.6.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE Rx-Tx time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.9.1

Table A.9.11 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.11: UE Rx-Tx time difference type 1 intra frequency test parameters

Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
DPCH_Ec/Ior	dB	-15
OCNS	dB	-1.11
Îor/Ioc	dB	10.5
Ioc	dBm/ 3.84 MHz	*Io −10.9 dB = Ioc,* Note 1
Io	dBm/3.84 MHz	-94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)
Propagation condition	-	AWGN
NOTE 1: *Ioc* level shall be adjusted according the total signal power spectral density *Io* at receiver input and the geometry factor *Îor/Ioc*.		

A.9.1.6.1.2 Test Requirements

The UE Rx-Tx time difference type 1 measurement accuracy shall meet the requirements in section 9.1.9.1.

A.9.1.6.2 UE Rx-Tx time difference type 2

A.9.1.6.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE Rx-Tx time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.9.2.

Table A.9.12 defines the limits of signal strengths and code powers, where the requirements are applicable.

Table A.9.12: UE Rx-Tx time difference type 2 intra frequency test parameters

Parameter	Unit	Cell 1
UTRA RF Channel number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
DPCH_Ec/Ior	dB	-15
OCNS	dB	-1.11
Îor/Ioc	dB	10.5
Ioc	dBm/ 3.84 MHz	Io −10.9 dB = Ioc, Note 1
Io	dBm/ 3.84 MHz	-94…-50 (Band I, IV, VI) -92…-50 (Band II, V) -91…-50 (Band III)
Propagation condition	-	AWGN
NOTE 1: Ioc level shall be adjusted according the total signal power spectral density Io at receiver input and the geometry factor Îor/Ioc.		

A.9.1.6.2.2 Test Requirements

The UE Rx-Tx time difference type 2 measurement accuracy shall meet the requirements in section 9.1.9.2.

CR-Form-v7

CHANGE REQUEST

| ⌘ | **25.133** CR **666** | ⌘**rev** | **1** | ⌘ | Current version: | **5.10.0** | ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐   ME **X** Radio Access Network ☐   Core Network ☐

Title:	⌘	Removal of square brackets and other corrections to support T1
Source:	⌘	RAN WG4
Work item code:⌘	TEI5	***Date:*** ⌘ 24/05/2004

Category: ⌘ **F**	***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)
Rel-6 (Release 6)

Reason for change: ⌘	The are still square brackets in Tnotify in TFC selection requirements and in the corresponding test case.

Notation of $T_{identify, intra}$ and $T_{identify\_intra}$ is used interchangeably

Notation of $T_{identify, inter}$ and $T_{identify\_inter}$ is used interchangeably

Notation of $T_{Measurement\ inter}$ and $T_{Measurement\_inter}$ is used interchangeably

The "<5 seconds" requirements in section "8.1.2.2.5 Event Triggered Reporting" was originally intended to be ≤5 seconds as in the test scenario in section "A.8.1.2 Event triggered reporting of multiple neighbours in AWGN propagation condition" (T3 in table A.8.3 is 5 seconds). Now there is discrepancy between the test case and the core requirement.

Test scenarios in the section A.4.2 cover requirements in section 4.2.2.3 and 4.2.2.2 but a reference to 4.2.2.3 is missing.

Some test scenarios specify power control on, but then specify a fixed DPCH_Ec/Ior.

In the test case in section A.8.1.4 it is not defined for which cell the event 1A should be triggered.

Summary of change: ⌘	Correct section "5.5.2.1.1Intra frequency cell reselection" to use $T_{identify, intra}$ notation

Correct section "5.5.2.1.2 Inter frequency cell reselection" to use $T_{identify, intra}$ notation

Correct section "5.5.2.1.2 Inter frequency cell reselection" to use $T_{Measurement, inter}$

Consequences if not approved:	⌘	There are discrepancies in the test cases, we might cause T1 to test a UE incorrectly and therefore a UE fulfilling the requirements may not pass the tests.

Clauses affected:	⌘	5.5.2.1.1, 5.2.2.1.2, 6.4.2, 8.1.2.2.5, A.4.2, A.6.1.1.1, A.6.1.1.2, A.6.4.2, A.8.1.1.1, A.8.1.2.1, A.8.1.3.1, A.8.1.4.1, A.8.1.4.2, A.8.2.1.1

		Y	N			
Other specs affected:	⌘			Other core specifications	⌘	
		X		Test specifications		34.121
				O&M Specifications		

Other comments:	⌘	
		Equivalent CRs in other Releases: CR667r1 cat. A to 25.133 v6.5.0

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.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.

5.5.2.1.1 Intra frequency cell reselection

The cell re-selection delay in CELL_FACH state to a cell in the same frequency shall be less than

$$T_{reselection, intra} = T_{identify, intra} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{identify, intra}$ is specified in 8.4.2.2.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} = The time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell..

T_{RA} = The additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify, intra}$, the cell reselection delay in CELL_FACH state to a cell in the same frequency shall be less than

$$T_{reselection, intra} = T_{Measurement\_Period\ Intra} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{Measurement\_Period\ Intra}$ = Specified in 8.4.2.2.2.

These requirements assume radio conditions to be sufficient, so reading of system information can be done without errors.

5.5.2.1.2 Inter frequency cell reselection

The cell re-selection delay in CELL_FACH state to a FDD cell on a different frequency shall be less than

$$T_{reselection, inter} = T_{identify, inter} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

.where

$T_{identify, inter}$ is specified in 8.4.2.3.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} = The time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell..

T_{RA} = The additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify, inter}$, the cell reselection delay in CELL_FACH state to a FDD cell on a different frequency shall be less than

$$T_{reselection, inter} = T_{Measurement\ inter} + T_{IU} + 20 + T_{SI} + T_{RA} \quad T_{reselection, inter} = T_{Measurement, inter} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{Measurement, inter}$ = Specified in 8.4.2.3.2.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

6.4 Transport format combination selection in UE

6.4.1 Introduction

When the UE estimates that a certain TFC would require more power than the maximum transmit power, it shall limit the usage of transport format combinations for the assigned transport format set, according to the functionality specified in section 11.4 in TS25.321. This in order to make it possible for the network operator to maximise the coverage. Transport format combination selection is described in section 11.4 of TS 25.321.

6.4.2 Requirements

The UE shall continuously evaluate based on the *Elimination, Recovery* and *Blocking* criteria defined below, how TFCs on an uplink DPDCH can be used for the purpose of TFC selection. The evaluation shall be performed for every TFC in the TFCS using the estimated UE transmit power. The UE transmit power estimation for a given TFC shall be made using the UE transmitted power measured over the measurement period, defined in 9.1.6.1 as one slot, and the gain factors of the corresponding TFC.

The UE shall consider the *Elimination* criterion for a given TFC to be detected if the estimated UE transmit power needed for this TFC is greater than the Maximum UE transmitter power for at least X out of the last Y successive measurement periods immediately preceding evaluation. The MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Elimination* criterion was detected.

The UE shall consider the *Recovery* criterion for a given TFC to be detected if the estimated UE transmit power needed for this TFC has not been greater than the Maximum UE transmitter power for the last Z successive measurement periods immediately preceding evaluation. The MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Recovery* criterion was detected.

The evaluation of the *Elimination* criterion and the *Recovery* criterion shall be performed at least once per radio frame.

The definitions of the parameters X,Y and Z which shall be used when evaluating the *Elimination* and the *Recovery* criteria when no compressed mode patterns are activated are given in Table 6.0.

Table 6.0: X, Y, Z parameters for TFC selection

X	Y	Z
15	30	30

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of:

$$(T_{notify} + T_{modify} + T_{L1\_proc})$$

where:

T_{notify} equals [15] ms, and

T_{modify} equals $MAX(T_{adapt\_max}, T_{TTI})$, and

$T_{L1\ proc}$ equals 15 ms, and

T_{adapt_max} equals $MAX(T_{adapt\_1}, T_{adapt\_2}, ..., T_{adapt\_N})$, and

N equals the number of logical channels that need to change rate, and

T_{adapt_n} equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel n. For services where no codec is used T_{adapt} shall be considered to be equal to 0 ms. For services where either UMTS_AMR2 or UMTS_AMR_WB is used, Tadapt shall be considered to be equal to the time required to switch from the current codec mode to a new supported codec mode. In that case Tadapt equals 20 ms + 40 ms per codec mode switch. E.g. Tadapt equals 60ms if one codec mode switch is necessary and Tadapt equals 140ms if 3 codec mode switches are necessary.

T_{TTI} equals the longest uplink TTI of the selected TFC (ms).

The Maximum UE transmitter power is defined as follows

Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power)

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [3].

6.5   Maximum allowed UL TX Power

UTRAN may limit the power the UE is using on the uplink by setting the maximum allowed UL TX power IE defined in TS25.331.

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.6.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the Open loop power control in TS 25.101 section 6.4.1.

8.1.2.2.5 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, on cells belonging to monitored set, measured without L3 filtering, shall be less than the above defined $T_{\text{identify intra.}}$ defined in Section 8.1.2.2.1

If a cell, belonging to monitored set, which the UE has identified and measured at least once over the measurement period, becomes undetectable for a period $\leq$ 5 seconds and then the cell becomes detectable again and triggers an event, the measurement reporting delay shall be less than $T_{\text{Measurement\_Period Intra}}$ ms provided the timing to that cell has not changed more than +/-32 chips, the UE CPICH measurement capabilities of section 8.1.2.2.2 are valid and L3 filtering has not been used. When L3 filtering is used an additional delay can be expected.

If a cell belonging to monitored set has been detectable at least for the time period $T_{\text{identify\_intra}}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{\text{Measurement\_Period Intra}}$ when the L3 filter has not been used and the UE CPICH measurement capabilities of Section 8.1.2.2.2 are valid.

The event triggered measurement reporting delay on cells not belonging to monitored set, measured without L3 filtering, shall be less than the above defined $T_{\text{identify detected set}}$ defined in Section 8.1.2.2.1.

8.1.2.3 FDD inter frequency measurements

In the CELL_DCH state when a transmission gap pattern sequence with the "FDD measurements" purpose is provided by the network the UE shall continuously measure identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

In order for the requirements in the following subsections to apply the UTRAN must provide a transmission gap pattern sequence with measurement purpose FDD measurement using the following combinations for TGL1, TGL2, TGD and Max TGPL:

Table 8.1

TGL1 [slots]	TGL2 [slots]	TGD [slots]	Max TGPL [frames]
7	-	undefined	18
14	-	undefined	36
10	-	undefined	24
7	7	15…269	18 + ceil(TGD/15)
14	14	45…269	36 + ceil(TGD/15)

A.4 Idle Mode

A.4.1 Cell selection

(void)

A.4.2 Cell Re-Selection

Two scenarios are considered:

- Scenario 1: Single carrier case

- Scenario 2: Multi carrier case

For each of them a test is proposed.

NOTE: Existing scenarios cover only requirements in section 4.2.2.2 and 4.2.2.3. More scenarios, covering requirements in section 4.2.2.1, will be added later.

A.4.2.1 Scenario 1: Single carrier case

A.6 RRC Connection Control

A.6.1 RRC Re-establishment delay

A.6.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

A.6.1.1.1 TEST 1

The test parameters are given in table A.6.1 and table A.6.2 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consist of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6.1 General test parameters for RRC re-establishment delay, Test 1

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS 25.101, section A.3.1
Power Control		On	
Active cell, initial condition		Cell 1	
Active cell, final condition		Cell 2	
N313		20	
N315		1	
T313	Seconds	0	
T_{SI}	ms	1280	Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SI} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms.
Monitored cell list size		24	Monitored set shall only include intra frequency neighbours.
Cell 2			Included in the monitored set.
Reporting frequency	Seconds	4	
T1	s	10	
T2	s	6	

Table A.6.2 Cell specific parameters for RRC re-establishment delay test, Test 1

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
Cell Frequency	ChNr	1		1	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DCH_Ec/Ior	dB	Note 1 -17	-Infinity	Not applicable	
OCNS_Ec/Ior	dB	Note 2 -1.049	-0.941	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	2,39	-Infinity	4,39	0,02
I_{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/Io	dB	-15	-Infinity	-13	
Propagation Condition		AWGN			
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_or .					

A.6.1.1.2   TEST 2

The test parameters are given in table A.6.3 and table A.6.4 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6.3 General test parameters for RRC re-establishment delay, Test 2

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS 25.101, section A.3.1
Power Control		On	
Active cell, initial condition		Cell 1	
Active cell, final condition		Cell 2	
N313		20	
N315		1	
T313	Seconds	0	
T_{SI}	ms	1280	Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SI} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms.
Monitored cell list size		24	Monitored set shall include 2 additional frequencies.
Cell 2			Cell 2 is not included in the monitored set. Cell 2 is located on one of the 2 additional frequencies of the monitored set.
Reporting frequency	Seconds	4	
T1	s	10	
T2	s	6	

Table A.6.4 Cell specific parameters for RRC re-establishment delay test, Test 2

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
Cell Frequency	ChNr	1		2	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DCH_Ec/Ior	dB	Note 1 -17	-Infinity	Not applicable	
OCNS_Ec/Ior	dB	Note 2 -1.049	-0.941	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	-3,35	-Infinity	-Infinity	0,02
I_{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/Io	dB	-15	-Infinity	-Infinity	-13
Propagation Condition		AWGN			
Note 1: The DPCH level is controlled by the power control loop					
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.					

A.6.1.2 Test Requirements

A.6.1.2.1 Test 1

The Re-establishment delay $T_{RE-ESTABLISH}$ to a known cell shall be less than 1.9s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed as

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ-KNOWN}.$$

where

$T_{RRC-RE-ESTABLISH} = 160ms + (N_{313}-1)*10ms + T_{313}$

$T_{UE-RE-ESTABLISH\_REQ-KNOWN} = 50ms + T_{search} + T_{SI} + T_{RA}$,

$N_{313} = 20$

$T_{313} = 0s$

$T_{search} = 100ms$

T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 1820ms, allow 1.9s in the test case.

A.6.1.2.2 Test 2

The Re-establishment delay to an unknown cell shall be less than 4.2s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed as

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ-UNKNOWN}.$$

where

$T_{RRC\text{-}RE\text{-}ESTABLISH}=160ms+(N_{313}-1)*10ms+T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN}=50ms+T_{search}*NF + T_{SI} + T_{RA}$,

$N_{313}=20$

$T_{313}=0s$

$T_{search}=800ms$

NF is the number of different frequencies in the monitored set. 3 frequencies are assumed in this test case.

T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms).1280 ms is assumed in this test case.

This gives a total of 4120ms, allow 4.2s in the test case.

A.6.4 Transport format combination selection in UE

A.6.4.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 6.4.

A.6.4.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 6.4 for a RAB intended for packet data services, i.e. Interactive or Background, PS, UL: 64kbps as defined in TS 34.108.

The test parameters are given in Table A.6.8 , A.6.9 and Table A.6.10 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table A.6.8 and A.6.9 can be found in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH".

Table A.6.8: UL reference RAB, Interactive or Background

	TFI	64 kbps RAB (20ms TTI)	DCCH 3.4kbps (40ms TTI)
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Table A.6.9: UL TFCI

TFCI	(64 kbps RAB, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF0, TF1)
UL_TFC2	(TF1, TF0)
UL_TFC3	(TF1, TF1)
UL_TFC4	(TF2, TF0)
UL_TFC5	(TF2, TF1)
UL_TFC6	(TF3, TF0)
UL_TFC7	(TF3, TF1)
UL_TFC8	(TF4, TF0)
UL_TFC9	(TF4, TF1)

Table A.6.10: General test parameters

Parameter	Unit	Value	Comment
TFCS size		10	
TFCS		UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7, UL_TFC8, UL_TFC9	
Power Control		On	
Active cell		Cell 1	
Maximum allowed UL TX power	dBm	21	
T1	s	30	
T2	s	10	
Propagation condition		AWGN	

The radio conditions in the test shall be sufficient, so that decoding of the TPC commands can be made without errors.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL_TFC8 or UL_TFC9) during the entire test and it shall be ensured that the UE is using UL_TFC8 or UL_TFC9 at the end of T1.

The test shall be performed in the following way:

Before time period T1:

The allowed TFCS according to table A.6.10 shall be signalled to the UE.

During time period T1:

The system simulator shall ensure that the UE output power is commanded to be between 14 to 15 dB below the UE Maximum allowed UL TX power.

During time period T2:

The system simulator shall continously send TPC_cmd=1 to the UE from the beginning of T2 until the end of T2.

> NOTE: This will emulate that UL_TFC8 to UL_TFC9 can not be supported beacuse the UE reaches the maximum UL Tx power and still UTRAN is sending power-up commands. The time from the beginning of T2 until the UE blocks (stops using) UL_TFC8 and UL_TFC9 shall be measured.

A.6.4.2 Test Requirements

A.6.4.2.1 Interactive or Background, PS, UL: 64 kbps

The UE shall have stopped using UL_TFC8 and UL_TFC9 within 140 ms from beginning of time period T2.

The rate of correct tests observed during repeated tests shall be at least 90%.

> NOTE: The delay from the begining of T2 can be expressed as:

$$T_{ramp} + T_{detect\_block} + T_{notify} + T_{modify} + T_{L1\_proc} + T_{align\_TTI}$$

where:

T_{ramp}	Margin added for the increase of UE output power to the UE maximum power. A margin of 1 frame (10ms) is used, i.e. 15 TPC commands.
T_{detect_block}	The time needed to detect that UL_TFC8 and UL_TFC9 can no longer be supported, i.e. defines the maximum time to detect that the *Elimination* criterion is fulfilled for UL_TFC8 and UL_TFC9. According to X and Y values of 15 and 30 as defined in Section 6.4.2 and by assuming the maximum misalignment between the frame boundary, where the evaluation of the *Elimination* criterion is performed and the last slot needed for triggering the *Elimination* criterion on L1, T_{detect_block} becomes 15 slots +14 slots =19.33 ms.
T_{notify}	Equal to [15] ms, the time allowed for MAC to indicate to higher layers that UL_TFC8 and UL_TFC9 can no longer be supported.
T_{modify}	Equal to $MAX(T_{adapt\_max}, T_{TTI}) = MAX(0, 40) = 40ms$
T_{adapt_max}	Equals to 0ms for the case without codec.
T_{L1_proc}	Equals 15ms.
T_{align_TTI}	Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case.
T_{TTI}	See section 6.4.2. Equals 40 ms in the test case.

This gives a maximum delay of (10 + 19.33 + [15] + 40 + 15 + 40) ms= 139.33 ms from the beginning of T2, allow 140 ms in the test case.

A.8 UE Measurements Procedures

A.8.1 FDD intra frequency measurements

A.8.1.1 Event triggered reporting in AWGN propagation conditions

A.8.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.1 and A.8.2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1: General test parameters for Event triggered reporting in AWGN propagation conditions

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		24	
T1	s	5	
T2	s	5	
T3	s	5	

Table A.8.2: Cell specific test parameters for Event triggered reporting in AWGN propagation conditions

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3
CPICH_Ec/Ior	dB	-10			-10		
PCCPCH_Ec/Ior	dB	-12			-12		
SCH_Ec/Ior	dB	-12			-12		
PICH_Ec/Ior	dB	-15			-15		
DPCH_Ec/Ior	dB	Note 1 -17			N/A		
OCNS		Note 2 -1.049			-0.941		
$\hat{I}_{or}/I_{oc}$	dB	0	6.97	0	-Infinity	5.97	-Infinity
I_{oc}	dBm/3.84 MHz	-70					
CPICH_Ec/Io	dB	-13	-13	-13	-Infinity	-14	-Infinity
Propagation Condition		AWGN					
Note 1: The DPCH level is controlled by the power control loop							
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.							

A.8.1.1.2 Test Requirements

The UE shall send one Event 1A triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall send one Event 1B triggered measurement report, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x $\text{TTI}_{\text{UL DCCH}}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.1.2 Event triggered reporting of multiple neighbours in AWGN propagation condition

A.8.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.3 and A.8.4. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A, 1C and 1B shall be used and the periodical reporting of the events is not applied. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. In the initial condition before the time T1 only Cell1 is active.

Table A.8.3: General test parameters for Event triggered reporting of multiple neighbours in AWGN propagation conditions

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Replacement activation threshold		0	Applicable for event 1C
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		32	
T1	S	10	
T2	S	10	
T3	S	5	
T4	S	10	

Table A.8.4: Cell specific test parameters for Event triggered reporting of multiple neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2				Cell3			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/Ior	dB	-10				-10				-10			
PCCPCH_Ec/Ior	dB	-12				-12				-12			
SCH_Ec/Ior	dB	-12				-12				-12			
PICH_Ec/Ior	dB	-15				-15				-15			
DPCH_Ec/Ior	dB	Note 1 -17				N/A				N/A			
OCNS_Ec/Ior	dB	Note 2 -1.049				-0.941				-0.941			
$\hat{I}_{or}/I_{oc}$	dB	6.97	6.93	5.97	6.12	-Inf	9.43	6.97	7.62	5.97	6.93	-Inf	5.62
I_{oc}	dBm/ 3.84 MHz	-85											
CPICH_Ec/Io	dB	-13	-16	-14	-15.5	-Inf	-13.5	-13	-14	-14	-16	-Inf	-16
Propagation Condition		AWGN											

Note 1:   The DPCH level is controlled by the power control loop
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.

A.8.1.2.2   Test Requirements

a) The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 800 ms from the beginning of time period T1.

b) The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T1.

c) The UE shall send one Event 1C triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

d) The UE shall send one Event 1A triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

e) The UE shall send one Event 1B triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

f) The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T4.

g) The UE may send one Event 1C triggered measurement report for Cell2 after the beginning of the time period T4.

h) The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T4.

i) The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x $TTI_{UL\ DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.1.3 Event triggered reporting of two detectable neighbours in AWGN propagation condition

A.8.1.3.1   Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.5 and A.8.6. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used and the periodical reporting of the events is not applied. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. In the initial condition before the time T1 only Cell1 is active.

Table A.8.5: General test parameters for Event triggered reporting of two detectable neighbours in AWGN propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		32	
T1	s	10	
T2	s	10	
T3	s	10	
T4	s	10	

Table A.8.6: Cell specific test parameters for Event triggered reporting of two detectable neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2				Cell3			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/Ior	dB	-10				-10				-10			
PCCPCH_Ec/Ior	dB	-12				-12				-12			
SCH_Ec/Ior	dB	-12				-12				-12			
PICH_Ec/Ior	dB	-15				-15				-15			
DPCH_Ec/Ior	dB	-17 Note 1				N/A				N/A			
OCNS_Ec/Ior	dB	-1.049 Note 2				-0.941				-0.941			
$\hat{I}_{or}/I_{oc}$	dB	14.55	28.51	14.45	28.51	-Inf	27.51	13.95	21.51	8.05	21.51	13.95	27.51
I_{oc}	dBm/ 3.84 MHz	-85											
CPICH_Ec/Io	dB	-11	-13	-14.5	-13	-Inf	-14.0	-15	-20	-17.5	-20	-15	-14
Propagation Condition		AWGN											

Note 1:   The DPCH level is controlled by the power control loop
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I$_{or}$.

A.8.1.3.2   Test Requirements

a) The UE shall send one Event 1A triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

b) The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

c) The UE shall send one Event 1B triggered measurement report for Cell2, with a measurement reporting delay less than 200 ms from the beginning of time period T4.

d) The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x TTI$_{\text{UL DCCH}}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.1.4 Correct reporting of neighbours in fading propagation condition

A.8.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs sufficient layer 1 filtering of the measurements, see section 9.1, which are the base for the event evaluation. The test is performed in fading propagation conditions. This test will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8.7 and A.8.8.In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and Event 1B shall be used. The test consists of two successive time periods, each with a time duration of T1 and T2 respectively.

The TTI of the uplink DCCH shall be 20ms.

Table A.8.7: General test parameters for correct reporting of neighbours in fading propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	0	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	120	
Filter coefficient		0	
Monitored cell list size		24	Signalled before time T1.
T1	s	200	
T2	s	201	

Table A.8.8: Cell specific test parameters for correct reporting of neighbours in fading propagation condition

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DPCH_Ec/Ior	dB	-17Note 1		N/A	
OCNS		-1.049Note 2		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	7.29	3.29	3.29	7.29
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/Io	dB	-12	-16	-16	-12
Propagation Condition		Case 5 as specified in Annex B of TS25.101			
Note 1: The DPCH level is controlled by the power control loop					
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I$_{or}$.					

A.8.1.4.2 Test Requirements

a) The number of received event 1A reports for cell 2 during time period T1 shall be less than 60.

b) During the first 1 s of time period T2 no event reports shall be counted.

c) The number of received event 1B reports counted from 1s after the beginning of time period T2 until the end of time period T2 shall be less than 60.

A.8.1.5 Event triggered reporting of multiple neighbour cells in Case 1 fading condition

A.8.1.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in Case1 fading propagation condition. This test will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8.8A and A.8.8B below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A shall be used and "CFN-SFN-Observed Time Difference" shall be reported. The test consists of two successive time periods, with time duration of T1 and T2, respectively. During time duration T1, the UE shall not have any timing information of invisible cells.

Table A.8.8A: General test parameters for event triggered reporting in multi-cell pedestrian environment

DCH parameters	Unit	DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cells		Cell2, Cell3, Cell4	
Hysteresis	dB	0	Applicable for event 1A
Time to Trigger	ms	0	Applicable for event 1A
Filter coefficient		0	Applicable for event 1A
Reporting range R_{1a}	dB	9	Applicable for event 1A
W		0	Applicable for event 1A
TriggeringCondition		activeSetAndMonitoredSetCells	Applicable for event 1A
Monitored cell list size		32	
T1	s	5	
T2	s	5	

Table 8.8B: Cell specific test parameters for event triggered reporting in multi-cell pedestrian environment

Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior	dB	-10		-10		-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12		-12		-12	
SCH_Ec/Ior	dB	-12		-12		-12		-12	
PICH_Ec/Ior	dB	-15		-15		-15		-15	
DPCH_Ec/Ior	dB	n.a.		Note 1		Note 1		Note 1	
OCNS_Ec/Ior	dB	-0.941		Note 2		Note 2		Note 2	
$\hat{I}_{or}/I_{oc}$	dB	-∞	1.3	4.3	1.3	4.3	1.3	1.3	4.3
I_{oc}	dBm/3.84 MHz	-70							
Propagation Condition		Case 1 (3km/h)							
CPICH_Ec/Io	dB	-∞	-17.6	-14.6	-17.6	-14.6	-17.6	-17.6	-14.6
$\dfrac{SCH\_\hat{E}_{c,\mathrm{maxpath}}}{I_o}$	dB	-∞	-20.0	-17.0	-20.0	-17.0	-20.0	-20.0	-17.0

NOTE 1:   The DPCH level is controlled by the power control loop.
NOTE 2:   The power of the OCNS channel that is added shall make the total power equal to I_{or}.
NOTE 3:   CPICH_Ec/Io and SCH_Ec_maxpath/Io levels have been calculated from other parameters for information purposes. They are not settable themselves.

A.8.1.5.2   Test Requirements

The UE shall send one Event 1A triggered measurement report for Cell 1 with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x TTI$_{\mathrm{UL\ DCCH}}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.1.6   Event triggered reporting of multiple neighbour cells in Case 3 fading condition

A.8.1.6.1   Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in Case3 fading propagation condition. This test will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8.8C and A.8.8D below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1F shall be used and "CFN-SFN-Observed Time Difference" shall be reported. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of invisible cells.

Table A.8.8C: General test parameters for event triggered reporting in multi-cell vehicular environment

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cells		Cell2, Cell3, Cell4	
Hysteresis	dB	0	Applicable for event 1A
Time to Trigger	ms	0	Applicable for event 1A
Filter coefficient		0	Applicable for event 1A and event 1F
Reporting range R_{1a}	dB	8	Applicable for event 1A
W		0	Applicable for event 1A
TriggeringCondition		activeSetAndMonitoredSetCells	Applicable for event 1A
Absolute threshold T_{1f}	dB	-20	Applicable for event 1F
Time to Trigger	ms	0	Applicable for event 1F
TriggeringCondition		activeSet	Applicable for event 1F
Monitored cell list size		32	
T1	s	5	
T2	s	5	

Table 8.8D: Cell specific test parameters for event triggered reporting in multi-cell vehicular environment

Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior	dB	-10		-10		-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12		-12		-12	
SCH_Ec/Ior	dB	-9.3		-9.3		-9.3		-9.3	
PICH_Ec/Ior	dB	-15		-15		-15		-15	
DPCH_Ec/Ior	dB	n.a.		Note 1		Note 1		Note 1	
OCNS_Ec/Ior	dB	Note 2		Note 2		Note 2		Note 2	
$\hat{I}_{or}/I_{oc}$	dB	-∞	1.1	3.6	4.6	3.6	4.6	6.6	-∞
I_{oc}	dBm/3.84 MHz	-70							
Propagation Condition		Case 3 (120km/h)							
CPICH_Ec/Io	dB	-∞	-18.0	-16.5	-14.5	-16.5	-14.5	-13.5	-∞
$\dfrac{SCH\_\hat{E}_{c,\mathrm{maxpath}}}{I_o}$	dB	-∞	-20.0	-18.5	-16.5	18.5	-16.5	-15.5	-∞
NOTE 1: The DPCH level is controlled by the power control loop.									
NOTE 2: The power of the OCNS channel that is added shall make the total power equal to I$_{or}$.									
NOTE 3: CPICH_Ec/Io, SCH_Ec_maxpath/Io, and I_o levels have been calculated from other parameters for information purposes. They are not settable themselves.									

A.8.1.6.2 Test Requirements

The UE shall send an Event 1A triggered measurement report for Cell 1, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The UE shall send an Event 1F triggered measurement report for Cell 4, with a measurement reporting delay less than 200 ms from the beginning of time period T2.

The rate of correct events 1A for Cell1 observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x TTI$_{\mathrm{UL\ DCCH}}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.2 FDD inter frequency measurements

A.8.2.1 Correct reporting of neighbours in AWGN propagation condition

A.8.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1.2.2 and section 8.1.2.3.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.8.9 and A.8.10 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting.

Table A.8.9: General test parameters for Correct reporting of neighbours in AWGN propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Compressed mode		A.22 set 1	As specified in TS 25.101 section A.5.
Active cell		Cell 1	
Threshold non used frequency	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting range	dB	4	Applicable for event 1A
Hysteresis	dB	0	
W		1	Applicable for event 1A
W non-used frequency		1	Applicable for event 2C
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		24 on channel 1 16 on channel 2	Measurement control information is sent before the compressed mode pattern starts.
T1	s	10	
T2	s	5	

TableA.8.10: Cell Specific parameters for Correct reporting of neighbours in AWGN propagation condition

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 2	
CPICH_Ec/Ior	dB	-10		-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12		-12	
SCH_Ec/Ior	dB	-12		-12		-12	
PICH_Ec/Ior	dB	-15		-15		-15	
DPCH_Ec/Ior	dB	~~-17~~Note 1		N/A		N/A	
OCNS		~~-1.049~~Note 2		−0.941		−0.941	
$\hat{I}_{or}/I_{oc}$	dB	0	5.42	-Infinity	3.92	-1.8	-1.8
I_{oc}	dBm/3.84 MHz	-70				-70	
CPICH_Ec/Io	dB	-13	-13	-Infinity	-14.5	-14	-14
Propagation Condition	AWGN						
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.							

A.8.2.1.2   Test Requirements

a) The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 9 seconds from the beginning of time period T1.

b) The UE shall send one Event 1A triggered measurement report, with a measurement reporting delay less than 956.2 ms from the beginning of time period T2.The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x $TTI_{UL\ DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

CR-Form-v7

CHANGE REQUEST

⌘   **25.133 CR 667**   ⌘**rev** **1** ⌘ Current version: **6.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐   ME **X** Radio Access Network ☐   Core Network ☐

Title: ⌘	Removal of square brackets and other corrections to support T1	
Source: ⌘	RAN WG4	
Work item code:⌘	TEI5	***Date:*** ⌘ 24/05/2004

Category: ⌘ **A**	***Release:*** ⌘ Rel-6
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)* *Rel-6 (Release 6)*

Reason for change: ⌘	The are still square brackets in Tnotify in TFC selection requirements and in the corresponding test case. Notation of $T_{identify,\ intra}$ and $T_{identify\_intra}$ is used interchangeably. Notation of $T_{identify,\ inter}$ and $T_{identify\_inter}$ is used interchangeably. Notation of $T_{Measurement\ inter}$ and $T_{Measurement\_inter}$ is used interchangeably The "<5 seconds" requirements in section "8.1.2.2.5 Event Triggered Reporting" was originally intended to be ≤5 seconds as in the test scenario in section "A.8.1.2 Event triggered reporting of multiple neighbours in AWGN propagation condition" (T3 in table A.8.3 is 5 seconds). Now there is discrepancy between the test case and the core requirement. Test scenarios in the section A.4.2 cover requirements in section 4.2.2.3 and 4.2.2.2 but a reference to 4.2.2.3 is missing. Some test scenarios specify power control on, but then specify a fixed DPCH_Ec/Ior. In the test case in section A.8.1.4 it is not defined for which cell the event 1A should be triggered.
Summary of change: ⌘	Correct section "5.5.2.1.1Intra frequency cell reselection" to use $T_{identify,\ intra}$ notation Correct section "5.5.2.1.2 Inter frequency cell reselection" to use $T_{identify,\ intra}$ notation Correct section "5.5.2.1.2 Inter frequency cell reselection" to use $T_{Measurement,\ inter}$

The square brackets are removed from the Tnotify requirements in section 6.4.2 and in the corresponding test case.

Change <5 seconds in section "8.1.2.2.5 Event Triggered Reporting" to ≤5 seconds as originally intended.

Add reference to section 4.2.2.3 to description of test scenario in A.4.2

Correct DPCH_Ec/Ior in table A.6.2, A.6.4, A.8.2, A.8.4, A.8.6, A.8.8, A.8,10

Clarification that the event 1As counted in the test in section A.8.1.4 is for the neighbour cell (cell 2) only.

<u>Isolated Impact Analyses:</u>

Most of the changes are corrections to the test case and therefore if a UE fulfils the core requirements, these changes should not affect the UE.

The change of <5 seconds to ≤5 seconds may potentially have a negative impact on terminal if the UE has not used the interpretation of the test case.

The removal of square brackets should not have an impact on a UE as the values have been unchanged for long time.

Consequences if not approved:	⌘	There are discrepancies in the test cases, we might cause T1 to test a UE incorrectly and therefore a UE fulfilling the requirements may not pass the tests.

Clauses affected:	⌘	5.5.2.1.1, 5.2.2.1.2, 6.4.2, 8.1.2.2.5, A.4.2, A.6.1.1.1, A.6.1.1.2, A.6.4.2, A.8.1.1.1, A.8.1.2.1, A.8.1.3.1, A.8.1.4.1, A.8.1.4.2, A.8.2.1.1			
		Y	**N**		
Other specs affected:	⌘			Other core specifications	⌘
		X		Test specifications	34.121
				O&M Specifications	

Other comments:	⌘	
		Equivalent CRs in other Releases: CR666r1 cat. F to 25.133 v5.10.0

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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://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.

5.5 Cell Re-selection in CELL_FACH

5.5.1 Introduction

The UE shall evaluate the cell re-selection criteria specified in TS 25.304, based on radio measurements, and if a better cell is found that cell is selected.

5.5.2 Requirements

The Cell reselection delays specified below are applicable when the RRC parameter $T_{reselection}$ is set to 0. Otherwise the Cell reselection delay is increased $T_{reselection}$ s.

The measurements CPICH Ec/Io and CPICH RSCP shall be used for cell reselection in Cell-FACH state to another FDD cell, P-CCPCH RSCP shall be used for cell re-selection to a TDD cell and GSM carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for a cell-reselection in an AWGN environment shall comply with the requirements in section 9. The measurements used for S-criteria and cell re-selection evaluation in CELL_FACH shall be performed according to section 8.4.

5.5.2.1 Cell re-selection delay

For UTRA FDD the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For UTRA TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the RRC CELL UPDATE message to the UTRAN on the RACH.

For GSM the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

5.5.2.1.1 Intra frequency cell reselection

The cell re-selection delay in CELL_FACH state to a cell in the same frequency shall be less than

$$T_{reselection, intra} = T_{identify, intra} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{identify, intra}$ is specified in 8.4.2.2.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} = The time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell..

T_{RA} = The additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify,intra}$, the cell reselection delay in CELL_FACH state to a cell in the same frequency shall be less than

$$T_{reselection, intra} = T_{Measurement\_Period\ Intra} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{Measurement,\ Period\ Intra}$ = Specified in 8.4.2.2.2.

These requirements assume radio conditions to be sufficient, so reading of system information can be done without errors.

5.5.2.1.2   Inter frequency cell reselection

The cell re-selection delay in CELL_FACH state to a FDD cell on a different frequency shall be less than

$$T_{reselection,\ inter} = T_{identify,\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}\ ms$$

.where

$T_{identify,inter}$ is specified in 8.4.2.3.1.

T_{IU} is the interruption uncertainty when changing the timing from the old to the new cell. T_{IU} can be up to one frame (10 ms).

T_{SI} = The time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell..

T_{RA} = The additional delay caused by the random access procedure.

If a cell has been detectable at least $T_{identify,inter}$, the cell reselection delay in CELL_FACH state to a FDD cell on a different frequency shall be less than

$$\overline{T_{reselection,inter} = T_{Measurement\ inter} + T_{IU} + 20 + T_{SI} + T_{RA}} \ T_{reselection,inter} = T_{Measurement,inter} + T_{IU} + 20 + T_{SI} + T_{RA}$$

ms

where

$T_{Measurement,inter}$ = Specified in 8.4.2.3.2.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

6.4 Transport format combination selection in UE

6.4.1 Introduction

When the UE estimates that a certain TFC would require more power than the maximum transmit power, it shall limit the usage of transport format combinations for the assigned transport format set, according to the functionality specified in section 11.4 in TS25.321. This in order to make it possible for the network operator to maximise the coverage. Transport format combination selection is described in section 11.4 of TS 25.321.

6.4.2 Requirements

The UE shall continuously evaluate based on the *Elimination, Recovery* and *Blocking* criteria defined below, how TFCs on an uplink DPDCH can be used for the purpose of TFC selection. The evaluation shall be performed for every TFC in the TFCS using the estimated UE transmit power. The UE transmit power estimation for a given TFC shall be made using the UE transmitted power measured over the measurement period, defined in 9.1.6.1 as one slot, and the gain factors of the corresponding TFC.

The UE shall consider the *Elimination* criterion for a given TFC to be detected if the estimated UE transmit power needed for this TFC is greater than the Maximum UE transmitter power for at least X out of the last Y successive measurement periods immediately preceding evaluation. The MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Elimination* criterion was detected.

The UE shall consider the *Recovery* criterion for a given TFC to be detected if the estimated UE transmit power needed for this TFC has not been greater than the Maximum UE transmitter power for the last Z successive measurement periods immediately preceding evaluation. The MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within T_{notify} from the moment the *Recovery* criterion was detected.

The evaluation of the *Elimination* criterion and the *Recovery* criterion shall be performed at least once per radio frame.

The definitions of the parameters X,Y and Z which shall be used when evaluating the *Elimination* and the *Recovery* criteria when no compressed mode patterns are activated are given in Table 6.0.

Table 6.0: X, Y, Z parameters for TFC selection

X	Y	Z
15	30	30

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of:

$$(T_{notify} + T_{modify} + T_{L1\_proc})$$

where:

T_{notify} equals [15] ms, and

T_{modify} equals $MAX(T_{adapt\_max}, T_{TTI})$, and

$T_{L1\ proc}$ equals 15 ms, and

T_{adapt_max} equals $MAX(T_{adapt\_1}, T_{adapt\_2}, ..., T_{adapt\_N})$, and

N equals the number of logical channels that need to change rate, and

T_{adapt_n} equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel n. For services where no codec is used T_{adapt} shall be considered to be equal to 0 ms. For services where either UMTS_AMR2 or UMTS_AMR_WB is used, Tadapt shall be considered to be equal to the time required to switch from the current codec mode to a new supported codec mode. In that case Tadapt equals 20 ms + 40 ms per codec mode switch. E.g. Tadapt equals 60ms if one codec mode switch is necessary and Tadapt equals 140ms if 3 codec mode switches are necessary.

T_{TTI} equals the longest uplink TTI of the selected TFC (ms).

The Maximum UE transmitter power is defined as follows

Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power)

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [3].

6.5 Maximum allowed UL TX Power

UTRAN may limit the power the UE is using on the uplink by setting the maximum allowed UL TX power IE defined in TS25.331.

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.6.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the Open loop power control in TS 25.101 section 6.4.1.

8.1.2.2.5 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, on cells belonging to monitored set, measured without L3 filtering, shall be less than the above defined $T_{identify\ intra.}$ defined in Section 8.1.2.2.1

If a cell, belonging to monitored set, which the UE has identified and measured at least once over the measurement period, becomes undetectable for a period $\leq$ 5 seconds and then the cell becomes detectable again and triggers an event, the measurement reporting delay shall be less than $T_{Measurement\_Period\ Intra}$ ms provided the timing to that cell has not changed more than +/-32 chips, the UE CPICH measurement capabilities of section 8.1.2.2.2 are valid and L3 filtering has not been used. When L3 filtering is used an additional delay can be expected.

If a cell belonging to monitored set has been detectable at least for the time period $T_{identify\_intra}$ and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ Intra}$ when the L3 filter has not been used and the UE CPICH measurement capabilities of Section 8.1.2.2.2 are valid.

The event triggered measurement reporting delay on cells not belonging to monitored set, measured without L3 filtering, shall be less than the above defined $T_{identify\ detected\ set}$ defined in Section 8.1.2.2.1.

8.1.2.3 FDD inter frequency measurements

In the CELL_DCH state when a transmission gap pattern sequence with the "FDD measurements" purpose is provided by the network the UE shall continuously measure identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

In order for the requirements in the following subsections to apply the UTRAN must provide a transmission gap pattern sequence with measurement purpose FDD measurement using the following combinations for TGL1, TGL2, TGD and Max TGPL:

Table 8.1

TGL1 [slots]	TGL2 [slots]	TGD [slots]	Max TGPL [frames]
7	-	undefined	18
14	-	undefined	36
10	-	undefined	24
7	7	15…269	18 + ceil(TGD/15)
14	14	45…269	36 + ceil(TGD/15)

A.4 Idle Mode

A.4.1 Cell selection

(void)

A.4.2 Cell Re-Selection

Two scenarios are considered:

- Scenario 1: Single carrier case

- Scenario 2: Multi carrier case

For each of them a test is proposed.

NOTE: Existing scenarios cover only requirements in section 4.2.2.2 and 4.2.2.3. More scenarios, covering requirements in section 4.2.2.1, will be added later.

A.4.2.1 Scenario 1: Single carrier case

A.6   RRC Connection Control

A.6.1   RRC Re-establishment delay

A.6.1.1   Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

A.6.1.1.1   TEST 1

The test parameters are given in table A.6.1 and table A.6.2 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consist of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6.1 General test parameters for RRC re-establishment delay, Test 1

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS 25.101, section A.3.1
Power Control		On	
Active cell, initial condition		Cell 1	
Active cell, final condition		Cell 2	
N313		20	
N315		1	
T313	Seconds	0	
T_{SI}	ms	1280	Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SI} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms.
Monitored cell list size		24	Monitored set shall only include intra frequency neighbours.
Cell 2			Included in the monitored set.
Reporting frequency	Seconds	4	
T1	s	10	
T2	s	6	

Table A.6.2 Cell specific parameters for RRC re-establishment delay test, Test 1

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
Cell Frequency	ChNr	1		1	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DCH_Ec/Ior	dB	Note 1 -17	-Infinity	Not applicable	
OCNS_Ec/Ior	dB	Note 2 -1.049	-0.941	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	2,39	-Infinity	4,39	0,02
I_{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/Io	dB	-15	-Infinity	-13	
Propagation Condition		AWGN			
Note 1: The DPCH level is controlled by the power control loop					
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.					

A.6.1.1.2   TEST 2

The test parameters are given in table A.6.3 and table A.6.4 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

Table A.6.3 General test parameters for RRC re-establishment delay, Test 2

Parameter	Unit	Value	Comment
DCH Parameters		DL Reference measurement channel 12.2 kbps	As specified in TS 25.101, section A.3.1
Power Control		On	
Active cell, initial condition		Cell 1	
Active cell, final condition		Cell 2	
N313		20	
N315		1	
T313	Seconds	0	
T_{SI}	ms	1280	Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SI} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms.
Monitored cell list size		24	Monitored set shall include 2 additional frequencies.
Cell 2			Cell 2 is not included in the monitored set. Cell 2 is located on one of the 2 additional frequencies of the monitored set.
Reporting frequency	Seconds	4	
T1	s	10	
T2	s	6	

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Table A.6.4 Cell specific parameters for RRC re-establishment delay test, Test 2

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
Cell Frequency	ChNr	1		2	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DCH_Ec/Ior	dB	~~-17~~Note 1	-Infinity	Not applicable	
OCNS_Ec/Ior	dB	~~-1.049~~Note 2	-0.941	-0.941	
$\hat{I}_{or}/I_{oc}$	dB	-3,35	-Infinity	-Infinity	0,02
I_{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/Io	dB	-15	-Infinity	-Infinity	-13
Propagation Condition		AWGN			
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .					

A.6.1.2   Test Requirements

A.6.1.2.1   Test 1

The Re-establishment delay $T_{RE\text{-}ESTABLISH}$ to a known cell shall be less than 1.9s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed as

$$T_{RE\text{-}ESTABLISH}= T_{RRC\text{-}RE\text{-}ESTABLISH}+ T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}KNOWN}.$$

where

$T_{RRC\text{-}RE\text{-}ESTABLISH}=160ms+(N_{313}-1)*10ms+T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\_REQ\text{-}KNOWN}=50ms+T_{search} + T_{SI} + T_{RA}$,

$N_{313}=20$

$T_{313}=0s$

$T_{search}=100ms$

T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 1820ms, allow 1.9s in the test case.

A.6.1.2.2   Test 2

The Re-establishment delay to an unknown cell shall be less than 4.2s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed as

$$T_{RE\text{-}ESTABLISH}= T_{RRC\text{-}RE\text{-}ESTABLISH}+ T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN}.$$

where

$T_{RRC\text{-}RE\text{-}ESTABLISH}=160ms+(N_{313}\text{-}1)*10ms+T_{313}$

$T_{UE\text{-}RE\text{-}ESTABLISH\text{-}REQ\text{-}UNKNOWN}=50ms+T_{search}*NF+T_{SI}+T_{RA}$,

$N_{313}=20$

$T_{313}=0s$

$T_{search}=800ms$

NF is the number of different frequencies in the monitored set. 3 frequencies are assumed in this test case.

T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

T_{SI} is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms).1280 ms is assumed in this test case.

This gives a total of 4120ms, allow 4.2s in the test case.

A.6.4 Transport format combination selection in UE

A.6.4.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 6.4.

A.6.4.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 6.4 for a RAB intended for packet data services, i.e. Interactive or Background, PS, UL: 64kbps as defined in TS 34.108.

The test parameters are given in Table A.6.8 , A.6.9 and Table A.6.10 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table A.6.8 and A.6.9 can be found in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH".

Table A.6.8: UL reference RAB, Interactive or Background

	TFI	64 kbps RAB (20ms TTI)	DCCH 3.4kbps (40ms TTI)
TFS	TF0, bits	0x336	0x148
	TF1, bits	1x336	1x148
	TF2, bits	2x336	N/A
	TF3, bits	3x336	N/A
	TF4, bits	4x336	N/A

Table A.6.9: UL TFCI

TFCI	(64 kbps RAB, DCCH)
UL_TFC0	(TF0, TF0)
UL_TFC1	(TF0, TF1)
UL_TFC2	(TF1, TF0)
UL_TFC3	(TF1, TF1)
UL_TFC4	(TF2, TF0)
UL_TFC5	(TF2, TF1)
UL_TFC6	(TF3, TF0)
UL_TFC7	(TF3, TF1)
UL_TFC8	(TF4, TF0)
UL_TFC9	(TF4, TF1)

Table A.6.10: General test parameters

Parameter	Unit	Value	Comment
TFCS size		10	
TFCS		UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3, UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7, UL_TFC8, UL_TFC9	
Power Control		On	
Active cell		Cell 1	
Maximum allowed UL TX power	dBm	21	
T1	s	30	
T2	s	2	
Propagation condition		AWGN	

The radio conditions in the test shall be sufficient, so that decoding of the TPC commands can be made without errors.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL_TFC8 or UL_TFC9) during the entire test and it shall be ensured that the UE is using UL_TFC8 or UL_TFC9 at the end of T1.

The test shall be performed in the following way:

Before time period T1:

The allowed TFCS according to table A.6.10 shall be signalled to the UE.

During time period T1:

The system simulator shall ensure that the UE output power is commanded to be between 14 to 15 dB below the UE Maximum allowed UL TX power.

During time period T2:

The system simulator shall continously send TPC_cmd=1 to the UE from the beginning of T2 until the end of T2.

> NOTE: This will emulate that UL_TFC8 to UL_TFC9 can not be supported beacuse the UE reaches the maximum UL Tx power and still UTRAN is sending power-up commands. The time from the beginning of T2 until the UE blocks (stops using) UL_TFC8 and UL_TFC9 shall be measured.

A.6.4.2   Test Requirements

A.6.4.2.1   Interactive or Background, PS, UL: 64 kbps

The UE shall have stopped using UL_TFC8 and UL_TFC9 within 140 ms from beginning of time period T2.

The rate of correct tests observed during repeated tests shall be at least 90%.

> NOTE: The delay from the begining of T2 can be expressed as:

$$T_{ramp} + T_{detect\_block} + T_{notify} + T_{modify} + T_{L1\_proc} + T_{align\_TTI}$$

where:

T_{ramp}	Margin added for the increase of UE output power to the UE maximum power. A margin of 1 frame (10ms) is used, i.e. 15 TPC commands.
T_{detect_block}	The time needed to detect that UL_TFC8 and UL_TFC9 can no longer be supported, i.e. defines the maximum time to detect that the *Elimination* criterion is fulfilled for UL_TFC8 and UL_TFC9. According to X and Y values of 15 and 30 as defined in Section 6.4.2 and by assuming the maximum misalignment between the frame boundary, where the evaluation of the *Elimination* criterion is performed and the last slot needed for triggering the *Elimination* criterion on L1, T_{detect_block} becomes 15 slots +14 slots =19.33 ms.
T_{notify}	Equal to [15] ms, the time allowed for MAC to indicate to higher layers that UL_TFC8 and UL_TFC9 can no longer be supported.
T_{modify}	Equal to $MAX(T_{adapt\_max}, T_{TTI}) = MAX(0, 40) = 40ms$
T_{adapt_max}	Equals to 0ms for the case without codec.
T_{L1_proc}	Equals 15ms.
T_{align_TTI}	Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case.
T_{TTI}	See section 6.4.2. Equals 40 ms in the test case.

This gives a maximum delay of (10 + 19.33 + [15] + 40 + 15 + 40) ms= 139.33 ms from the beginning of T2, allow 140 ms in the test case.

A.8 UE Measurements Procedures

A.8.1 FDD intra frequency measurements

A.8.1.1 Event triggered reporting in AWGN propagation conditions

A.8.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.1 and A.8.2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1: General test parameters for Event triggered reporting in AWGN propagation conditions

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		24	
T1	s	5	
T2	s	5	
T3	s	5	

Table A.8.2: Cell specific test parameters for Event triggered reporting in AWGN propagation conditions

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3
CPICH_Ec/Ior	dB	-10			-10		
PCCPCH_Ec/Ior	dB	-12			-12		
SCH_Ec/Ior	dB	-12			-12		
PICH_Ec/Ior	dB	-15			-15		
DPCH_Ec/Ior	dB	-17 Note 1			N/A		
OCNS		-1.049 Note 2			-0.941		
$\hat{I}_{or}/I_{oc}$	dB	0	6.97	0	-Infinity	5.97	-Infinity
I_{oc}	dBm/3.84 MHz	-70					
CPICH_Ec/Io	dB	-13	-13	-13	-Infinity	-14	-Infinity
Propagation Condition		AWGN					
Note 1: The DPCH level is controlled by the power control loop							
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .							

A.8.1.1.2   Test Requirements

The UE shall send one Event 1A triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall send one Event 1B triggered measurement report, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x $TTI_{UL\,DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.1.2   Event triggered reporting of multiple neighbours in AWGN propagation condition

A.8.1.2.1   Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.3 and A.8.4. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A, 1C and 1B shall be used and the periodical reporting of the events is not applied. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. In the initial condition before the time T1 only Cell1 is active.

Table A.8.3: General test parameters for Event triggered reporting of multiple neighbours in AWGN propagation conditions

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Replacement activation threshold		0	Applicable for event 1C
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		32	
T1	S	10	
T2	S	10	
T3	S	5	
T4	S	10	

Table A.8.4: Cell specific test parameters for Event triggered reporting of multiple neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2				Cell3			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/Ior	dB	-10				-10				-10			
PCCPCH_Ec/Ior	dB	-12				-12				-12			
SCH_Ec/Ior	dB	-12				-12				-12			
PICH_Ec/Ior	dB	-15				-15				-15			
DPCH_Ec/Ior	dB	~~-17~~Note 1				N/A				N/A			
OCNS_Ec/Ior	dB	~~-1.049~~Note 2				-0.941				-0.941			
$\hat{I}_{or}/I_{oc}$	dB	6.97	6.93	5.97	6.12	-Inf	9.43	6.97	7.62	5.97	6.93	-Inf	5.62
I_{oc}	dBm/ 3.84 MHz	-85											
CPICH_Ec/Io	dB	-13	-16	-14	-15.5	-Inf	-13.5	-13	-14	-14	-16	-Inf	-16
Propagation Condition	AWGN												
Note 1: The DPCH level is controlled by the power control loop													
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.													

A.8.1.2.2   Test Requirements

a)   The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 800 ms from the beginning of time period T1.

b)   The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T1.

c)   The UE shall send one Event 1C triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

d)   The UE shall send one Event 1A triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

e)   The UE shall send one Event 1B triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

f)   The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T4.

g)   The UE may send one Event 1C triggered measurement report for Cell2 after the beginning of the time period T4.

h)   The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T4.

i)   The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x TTI$_{UL\ DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.1.3   Event triggered reporting of two detectable neighbours in AWGN propagation condition

A.8.1.3.1   Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.5 and A.8.6. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1B shall be used and the periodical reporting of the events is not applied. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. In the initial condition before the time T1 only Cell1 is active.

Table A.8.5: General test parameters for Event triggered reporting of two detectable neighbours in AWGN propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	3	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		32	
T1	s	10	
T2	s	10	
T3	s	10	
T4	s	10	

Table A.8.6: Cell specific test parameters for Event triggered reporting of two detectable neighbours in AWGN propagation condition

Parameter	Unit	Cell 1				Cell 2				Cell3			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
CPICH_Ec/Ior	dB	-10				-10				-10			
PCCPCH_Ec/Ior	dB	-12				-12				-12			
SCH_Ec/Ior	dB	-12				-12				-12			
PICH_Ec/Ior	dB	-15				-15				-15			
DPCH_Ec/Ior	dB	-17 Note 1				N/A				N/A			
OCNS_Ec/Ior	dB	-1.049 Note 2				-0.941				-0.941			
$\hat{I}_{or}/I_{oc}$	dB	14.55	28.51	14.45	28.51	-Inf	27.51	13.95	21.51	8.05	21.51	13.95	27.51
I_{oc}	dBm/3.84 MHz	-85											
CPICH_Ec/Io	dB	-11	-13	-14.5	-13	-Inf	-14.0	-15	-20	-17.5	-20	-15	-14
Propagation Condition		AWGN											
Note 1: The DPCH level is controlled by the power control loop													
Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.													

A.8.1.3.2   Test Requirements

a) The UE shall send one Event 1A triggered measurement report for Cell2, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

b) The UE shall send one Event 1A triggered measurement report for Cell3, with a measurement reporting delay less than 200 ms from the beginning of time period T3.

c) The UE shall send one Event 1B triggered measurement report for Cell2, with a measurement reporting delay less than 200 ms from the beginning of time period T4.

d) The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x TTI$_{UL\ DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.1.4 Correct reporting of neighbours in fading propagation condition

A.8.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs sufficient layer 1 filtering of the measurements, see section 9.1, which are the base for the event evaluation. The test is performed in fading propagation conditions. This test will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8.7 and A.8.8. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and Event 1B shall be used. The test consists of two successive time periods, each with a time duration of T1 and T2 respectively.

The TTI of the uplink DCCH shall be 20ms.

Table A.8.7: General test parameters for correct reporting of neighbours in fading propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cell		Cell 1	
Reporting range	dB	0	Applicable for event 1A and 1B
Hysteresis	dB	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	120	
Filter coefficient		0	
Monitored cell list size		24	Signalled before time T1.
T1	s	200	
T2	s	201	

Table A.8.8: Cell specific test parameters for correct reporting of neighbours in fading propagation condition

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DPCH_Ec/Ior	dB	-17Note 1		N/A	
OCNS		-1.049Note 2		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	7.29	3.29	3.29	7.29
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/Io	dB	-12	-16	-16	-12
Propagation Condition		Case 5 as specified in Annex B of TS25.101			
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I$_{or}$.					

A.8.1.4.2 Test Requirements

a) The number of received event 1A reports for Cell2 during time period T1 shall be less than 60.

b) During the first 1 s of time period T2 no event reports shall be counted.

c) The number of received event 1B reports counted from 1s after the beginning of time period T2 until the end of time period T2 shall be less than 60.

A.8.1.5 Event triggered reporting of multiple neighbour cells in Case 1 fading condition

A.8.1.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in Case1 fading propagation condition. This test will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8.8A and A.8.8B below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A shall be used and "CFN-SFN-Observed Time Difference" shall be reported. The test consists of two successive time periods, with time duration of T1 and T2, respectively. During time duration T1, the UE shall not have any timing information of invisible cells.

Table A.8.8A: General test parameters for event triggered reporting in multi-cell pedestrian environment

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cells		Cell2, Cell3, Cell4	
Hysteresis	dB	0	Applicable for event 1A
Time to Trigger	ms	0	Applicable for event 1A
Filter coefficient		0	Applicable for event 1A
Reporting range R_{1a}	dB	9	Applicable for event 1A
W		0	Applicable for event 1A
TriggeringCondition		activeSetAndMonitoredSetCells	Applicable for event 1A
Monitored cell list size		32	
T1	s	5	
T2	s	5	

Table 8.8B: Cell specific test parameters for event triggered reporting in multi-cell pedestrian environment

Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior	dB	-10		-10		-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12		-12		-12	
SCH_Ec/Ior	dB	-12		-12		-12		-12	
PICH_Ec/Ior	dB	-15		-15		-15		-15	
DPCH_Ec/Ior	dB	n.a.		Note 1		Note 1		Note 1	
OCNS_Ec/Ior	dB	-0.941		Note 2		Note 2		Note 2	
$\hat{I}_{or}/I_{oc}$	dB	-∞	1.3	4.3	1.3	4.3	1.3	1.3	4.3
I_{oc}	dBm/3.84 MHz	-70							
Propagation Condition		Case 1 (3km/h)							
CPICH_Ec/Io	dB	-∞	-17.6	-14.6	-17.6	-14.6	-17.6	-17.6	-14.6
$\dfrac{SCH\_\hat{E}_{c,\text{maxpath}}}{I_o}$	dB	-∞	-20.0	-17.0	-20.0	-17.0	-20.0	-20.0	-17.0
NOTE 1: The DPCH level is controlled by the power control loop. NOTE 2: The power of the OCNS channel that is added shall make the total power equal to I_{or}. NOTE 3: CPICH_Ec/Io and SCH_Ec_maxpath/Io levels have been calculated from other parameters for information purposes. They are not settable themselves.									

A.8.1.5.2   Test Requirements

The UE shall send one Event 1A triggered measurement report for Cell 1 with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x TTI$_{\text{UL DCCH}}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.1.6   Event triggered reporting of multiple neighbour cells in Case 3 fading condition

A.8.1.6.1   Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in Case3 fading propagation condition. This test will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8.8C and A.8.8D below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 1F shall be used and "CFN-SFN-Observed Time Difference" shall be reported. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of invisible cells.

Table A.8.8C: General test parameters for event triggered reporting in multi-cell vehicular environment

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Active cells		Cell2, Cell3, Cell4	
Hysteresis	dB	0	Applicable for event 1A
Time to Trigger	ms	0	Applicable for event 1A
Filter coefficient		0	Applicable for event 1A and event 1F
Reporting range R_{1a}	dB	8	Applicable for event 1A
W		0	Applicable for event 1A
TriggeringCondition		activeSetAndMonitoredSetCells	Applicable for event 1A
Absolute threshold T_{1f}	dB	-20	Applicable for event 1F
Time to Trigger	ms	0	Applicable for event 1F
TriggeringCondition		activeSet	Applicable for event 1F
Monitored cell list size		32	
T1	s	5	
T2	s	5	

Table 8.8D: Cell specific test parameters for event triggered reporting in multi-cell vehicular environment

Parameter	Unit	Cell 1		Cell 2		Cell 3		Cell 4	
		T1	T2	T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 1		Channel 1	
CPICH_Ec/Ior	dB	-10		-10		-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12		-12		-12	
SCH_Ec/Ior	dB	-9.3		-9.3		-9.3		-9.3	
PICH_Ec/Ior	dB	-15		-15		-15		-15	
DPCH_Ec/Ior	dB	n.a.		Note 1		Note 1		Note 1	
OCNS_Ec/Ior	dB	Note 2		Note 2		Note 2		Note 2	
$\hat{I}_{or}/I_{oc}$	dB	-∞	1.1	3.6	4.6	3.6	4.6	6.6	-∞
I_{oc}	dBm/3.84 MHz	-70							
Propagation Condition		Case 3 (120km/h)							
CPICH_Ec/Io	dB	-∞	-18.0	-16.5	-14.5	-16.5	-14.5	-13.5	-∞
$\dfrac{SCH\_\hat{E}_{c,maxpath}}{I_o}$	dB	-∞	-20.0	-18.5	-16.5	18.5	-16.5	-15.5	-∞

NOTE 1: The DPCH level is controlled by the power control loop.
NOTE 2: The power of the OCNS channel that is added shall make the total power equal to I$_{or}$.
NOTE 3: CPICH_Ec/Io, SCH_Ec_maxpath/Io, and I_o levels have been calculated from other parameters for information purposes. They are not settable themselves.

A.8.1.6.2   Test Requirements

The UE shall send an Event 1A triggered measurement report for Cell 1, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The UE shall send an Event 1F triggered measurement report for Cell 4, with a measurement reporting delay less than 200 ms from the beginning of time period T2.

The rate of correct events 1A for Cell1 observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x TTI$_{UL\ DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.2 FDD inter frequency measurements

A.8.2.1 Correct reporting of neighbours in AWGN propagation condition

A.8.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1.2.3.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.8.9 and A.8.10 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A and 2C shall be used. The CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C reporting.

Table A.8.9: General test parameters for Correct reporting of neighbours in AWGN propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Compressed mode		A.22 set 1	As specified in TS 25.101 section A.5.
Active cell		Cell 1	
Threshold non used frequency	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting range	dB	4	Applicable for event 1A
Hysteresis	dB	0	
W		1	Applicable for event 1A
W non-used frequency		1	Applicable for event 2C
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		24 on channel 1 16 on channel 2	Measurement control information is sent before the compressed mode pattern starts.
T1	s	10	
T2	s	5	

TableA.8.10: Cell Specific parameters for Correct reporting of neighbours in AWGN propagation condition

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T1	T2	T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 1		Channel 2	
CPICH_Ec/Ior	dB	-10		-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12		-12	
SCH_Ec/Ior	dB	-12		-12		-12	
PICH_Ec/Ior	dB	-15		-15		-15	
DPCH_Ec/Ior	dB	~~-17~~Note 1		N/A		N/A	
OCNS		~~-1.049~~Note 2		−0.941		−0.941	
$\hat{I}_{or}/I_{oc}$	dB	0	5.42	-Infinity	3.92	-1.8	-1.8
I_{oc}	dBm/3.84 MHz	-70				-70	
CPICH_Ec/Io	dB	-13	-13	-Infinity	-14.5	-14	-14
Propagation Condition	AWGN						
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.							

A.8.2.1.2   Test Requirements

a) The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 9 seconds from the beginning of time period T1.

b) The UE shall send one Event 1A triggered measurement report, with a measurement reporting delay less than 956.2 ms from the beginning of time period T2.The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x $TTI_{UL\ DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in the UL DCCH.

A.8.2.2   Correct reporting of neighbours in Fading propagation condition

A.8.2.2.1   Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1.2.3.The test parameters are given in Table A.8.11 and A.8.12. In the measurement control information it is indicated to the UE that event-triggered reporting 2C shall be used. The test consists of two successive time periods, each with a time duration of T1 and T2 respectively.

Table A.8.11: General test parameters for Correct reporting of neighbours in Fading propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Compressed mode		A.22 set 2 (TGPL1=12)	As specified in TS 25.101 section A.5.
Active cell		Cell 1	
Absolute Threshold (Ec/N0) for Event 2c	dB	-18	
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		Total 24 8 on frequency Channel 2	Measurement control information is sent before the compressed mode pattern starts.
Propagation Condition		Case 5	As specified in Annex B of TS 25.101.
Frequency offset	ppm	+/- 0.1	Frequency offset between Cell 1 and Cell 2.
T1	s	2	
T2	s	40	

Table A.8.12: Test parameters for Correct reporting of neighbours in Fading propagation condition

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 2	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DPCH_Ec/Ior	dB	Note 1		N/A	
OCNS		Note 2		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	0		-Infinity	-1.8
I_{oc}	dBm/3.84 MHz	-70		-70	
CPICH_Ec/Io	dB	-13		-Infinity	-14
Propagation Condition		Case 5 as specified in Annex B of TS25.101			
Note 1:	The DPCH level is controlled by the power control loop				
Note 2:	The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.				

A.8.2.2.2   Test Requirements

a) The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 36 seconds from the beginning of time period T2.

b) The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.2.3   Correct reporting of neighbours in fading propagation condition using TGL1=14

A.8.2.3.1   Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1.2.3. The test parameters are given in Table

A.8.12A and A.8.12B. In the measurement control information it is indicated to the UE that event-triggered reporting 2C shall be used. The test consists of two successive time periods, each with time duration of T1 and T2 respectively.

Table A.8.12A: General test parameters for Correct reporting of neighbours in Fading propagation condition

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Compressed mode		A.22 set 4	As specified in TS 25.101 section A.5.
Active cell		Cell 1	
Absolute Threshold (Ec/N0) for Event 2c	dB	-18	
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		Total 24 8 on frequency Channel 2	Measurement control information is sent before the compressed mode pattern starts.
Propagation Condition		Case 5	As specified in Annex B of TS 25.101.
Frequency offset	ppm	+/- 0.1	Frequency offset between Cell 1 and Cell 2.
T1	s	2	
T2	s	6	

Table A.8.12B: Test parameters for Correct reporting of neighbours in Fading propagation condition

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 1		Channel 2	
CPICH_Ec/Ior	dB	-10		-10	
PCCPCH_Ec/Ior	dB	-12		-12	
SCH_Ec/Ior	dB	-12		-12	
PICH_Ec/Ior	dB	-15		-15	
DPCH_Ec/Ior	dB	Note 1		N/A	
OCNS		Note 2		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	0		-Infinity	-1.8
I_{oc}	dBm/3.84 MHz	-70		-70	
CPICH_Ec/Io	dB	-13		-Infinity	-14
Propagation Condition		Case 5 as specified in Annex B of TS25.101			
Note 1: The DPCH level is controlled by the power control loop Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I$_{or}$.					

A.8.2.3.2   Test Requirements

a) The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 seconds from the beginning of time period T2.

b) The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.3 TDD measurements

A.8.3.1 Correct reporting of TDD neighbours in AWGN propagation condition

A.8.3.1.1 Test Purpose and Environment

A.8.3.1.1.1 3.84 Mcps TDD Option

The purpose of this test is to verify that the UE makes correct reporting of events when measuring on UTRA TDD cells. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.13, A.8.14 and A.14A below. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Two cells shall be present in the test, cell 1 being the serving UTRA FDD cell and cell 2 being a UTRA TDD neighbour cell.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The P-CCPCH RSCP of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

The TTI of the uplink DCCH shall be 20ms.

Table A.8.13: General test parameters for Correct reporting of TDD neighbours in AWGN propagation condition

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Compressed mode			A.22 set 3	As specified in TS25.101 section A.5
Initial conditions	Active cell		Cell 1	FDD cell
	Neighbour cell		Cell 2	TDD cell
Final condition	Active cell		Cell 1	FDD cell
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	Hysteresis parameter for event 2C
Time to Trigger		ms	0	
Threshold non-used frequency		dBm	-71	Applicable for Event 2C
Filter coefficient			0	
Monitored cell list size			6 FDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T1		s	15	
T2		s	10	

Table A.8.14: Cell 1 specific test parameters for Correct reporting of TDD neighbours in AWGN propagation condition

Parameter	Unit	Cell 1
		T1, T2
UTRA RF Channel Number		Channel 1
CPICH_Ec/Ior	dB	-10
P-CCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
DPCH_Ec/Ior	dB	Note 1
OCNS_Ec/Ior	dB	Note 2
$\hat{I}_{or}/I_{oc}$	dB	0
I_{oc}	dBm/3.84 MHz	-70
CPICH_Ec/Io	dB	-13
Propagation Condition		AWGN
Note 1: The DPCH level is controlled by the power control loop		
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I$_{or}$.		

Table A.5.14A: Cell 2 specific test parameters for Correct reporting of TDD neighbours in AWGN propagation condition

Parameter	Unit	Cell 2			
DL timeslot number		**0**		**8**	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 2			
P-CCPCH_Ec/Ior	dB	-3		n.a.	
PICH_Ec/Ior	dB	n.a.		-3	
SCH_Ec/Ior	dB	-9			
SCH_t$_{offset}$	dB	10			
OCNS_Ec/Ior	dB	-3.12			
P-CCPCH RSCP	dBm	-75	-67	n.a.	n.a.
$\hat{I}_{or}/I_{oc}$	dB	-2	6	-2	6
I_{oc}	dBm/3,84 MHz	-70			
Propagation Condition		AWGN			
Note that the transmit energy per PN chip for the SCH is averaged over the 256 chip duration when the SCH is present in the time slot.					

A.8.3.1.1.2   1.28 Mcps TDD Option

The purpose of this test is to verify that the UE makes correct reporting of events when measuring on UTRA TDD cells. This test will partly verify the requirements in section 8.1.2. and 9.1.

The test parameters are given in Table A.8.14B, A.8.14C and A.8.14D below. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Two cells shall be present in the test, cell 1 being the serving UTRA FDD cell and cell 2 being a UTRA TDD neighbour cell.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The P-CCPCH RSCP of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

The TTI of the uplink DCCH shall be 20ms.

Table A.8.14B: General test parameters for Correct reporting of TDD neighbours in AWGN propagation condition

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control			On	
Target quality value on DTCH		BLER	0.01	
Compressed mode			A.22 set 3	As specified in TS25.101 section A.5
Initial conditions	Active cell		Cell 1	FDD cell
	Neighbour cell		Cell 2	TDD cell
Final condition	Active cell		Cell 1	FDD cell
O		dB	0	Cell individual offset. This value shall be used for all cells in the test.
Hysteresis		dB	0	Hysteresis parameter for event 2C
Time to Trigger		ms	0	
Threshold non-used frequency		dBm	-71	Applicable for Event 2C
Filter coefficient			0	
Monitored cell list size			6 FDD neighbours on Channel 1 6 TDD neighbours on Channel 2	
T1		s	15	
T2		s	10	

Table A.8.14C: Cell 1 specific test parameters for Correct reporting of TDD neighbours in AWGN propagation condition

Parameter	Unit	Cell 1
		T1, T2
UTRA RF Channel Number		Channel 1
CPICH_Ec/Ior	dB	-10
P-CCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
DPCH_Ec/Ior	dB	Note 1
OCNS_Ec/Ior	dB	Note 2
$\hat{I}_{or}/I_{oc}$	dB	0
I_{oc}	dBm/3.84 MHz	-70
CPICH_Ec/Io	dB	-13
Propagation Condition		AWGN
Note 1: The DPCH level is controlled by the power control loop Note 2 : The power of the OCNS channel that is added shall make the total power from the cell to be equal to I$_{or}$.		

Table A.8.14D: Cell 2 specific test parameters for Correct reporting of TDD neighbours in AWGN propagation condition

Parameter	Unit	Cell 2			
DL timeslot number		0		DwPTs	
		T1	T2	T1	T2
UTRA RF Channel Number		Channel 2			
P-CCPCH_Ec/Ior	dB	-3			
DwPCH _Ec/Ior	dB			0	
OCNS_Ec/Ior	dB	-3			
P-CCPCH RSCP	dBm	-75	-67		
$\hat{I}_{or}/I_{oc}$	dB	-2	6	-2	6
I_{oc}	dBm/1.28 MHz	-70			
Propagation Condition		AWGN			

A.8.3.1.2   Test Requirements

The UE shall send one Event 2C triggered measurement report for Cell 2 with a measurement reporting delay less than 8.8 s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

A.8.4   GSM measurements

A.8.4.1   Correct reporting of GSM neighbours in AWGN propagation condition

A.8.4.1.1   Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event when doing inter-RAT GSM measurements. The test will partly verify the requirements in section 8.1.2.5. The requirements are also applicable for a UE not requiring compressed mode, in which case no compressed mode pattern should be sent for the parameters specified in table A8.15.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.8.15, A.8.16 and A.8.17 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3B and 3C shall be used.

A.8.4.1.1.1 Test 1. With BSIC verification required

Table A.8.15: General test parameters for Correct reporting of GSM neighbours in AWGN propagation condition, Test 1

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Compressed mode patterns			Only applicable for UE requiring compressed mode patterns
- GSM carrier RSSI measurement		DL Compressed mode reference pattern 2 in Set 2	As specified in table A.22 TS 25.101 section A.5
- GSM Initial BSIC identification		Pattern 2	As specified in section 8.1.2.5.2.1 table 8.7.
Active cell		Cell 1	
Inter-RAT measurement quantity		GSM Carrier RSSI	
BSIC verification required		required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for event 3B and 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		24 FDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before the compressed mode patterns starts.
N Identify abort		66	Taken from table 8.7.
T1	s	5	
T2	s	7	
T3	s	5	

Table A.8.16: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 1)

Parameter	Unit	Cell 1
		T1, T2, T3
UTRA RF Channel Number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
DPCH_Ec/Ior	dB	Note 1
OCNS		Note 2
$\hat{I}_{or}/I_{oc}$	dB	0
I_{oc}	dBm/ 3.84 MHz	-85
CPICH_Ec/Io	dB	-13
Propagation Condition		AWGN
Note 1: The DPCH level is controlled by the power control loop. Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.		

Table A.8.17: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 2)

Parameter	Unit	Cell 2		
		T1	T2	T3
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-Infinity	-75	-85

A.8.4.1.1.2 Test 2: Without BSIC verification required

Table A.8.18: General test parameters for Correct reporting of GSM neighbours in AWGN propagation condition, Test 2

Parameter	Unit	Value	Comment
DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control		On	
Target quality value on DTCH	BLER	0.01	
Compressed mode patterns - GSM carrier RSSI measurement		DL Compressed mode reference pattern 2 in Set 2	Only applicable for UE requiring compressed mode patterns As specified in table A.22 TS 25.101 section A.5
Active cell		Cell 1	
Inter-RAT measurement quantity		GSM Carrier RSSI	
BSIC verification required		not required	
Threshold other system	dBm	-80	Absolute GSM carrier RSSI threshold for event 3B and 3C.
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
Monitored cell list size		24 FDD neighbours on Channel 1 6 GSM neighbours including ARFCN 1	Measurement control information is sent before the compressed mode patterns starts.
T1	s	5	
T2	s	2	
T3	s	5	

Table A.8.19: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 1)

Parameter	Unit	Cell 1
		T1, T2, T3
UTRA RF Channel Number		Channel 1
CPICH_Ec/Ior	dB	-10
PCCPCH_Ec/Ior	dB	-12
SCH_Ec/Ior	dB	-12
PICH_Ec/Ior	dB	-15
DPCH_Ec/Ior	dB	Note 1
OCNS		Note 2
$\hat{I}_{or}/I_{oc}$	dB	0
I_{oc}	dBm/ 3.84 MHz	-85
CPICH_Ec/Io	dB	-13
Propagation Condition		AWGN
Note 1: The DPCH level is controlled by the power control loop.		
Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_or.		

Table A.8.20: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 2)

Parameter	Unit	Cell 2		
		T1	T2	T3
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-Infinity	-75	-85

A.8.4.1.2 Test Requirements

A.8.4.1.2.1 TEST 1 With BSIC verification required

The UE shall send one Event 3C triggered measurement report for Cell2, with a measurement reporting delay less than 6.24 s from the beginning of time period T2.

The UE shall send one Event 3B triggered measurement report for Cell2, with a measurement reporting delay less than 960 ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.4.1.2.2 TEST 2 Without BSIC verification required

The UE shall send one Event 3C triggered measurement report for Cell2, with a measurement reporting delay less than 960 ms from the beginning of time period T2.

The UE shall send one Event 3B triggered measurement report for Cell2, with a measurement reporting delay less than 960 ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.