

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

**RP-040188**

**Title** CRs (R'99 and Rel-4/Rel-5/Rel-6 Category A) to TS 25.133  
**Source** TSG RAN WG4  
**Agenda Item** 7.5.3

RAN4 Tdoc	Spec	CR	R	Cat	Rel	Curr Ver	Title	Work Item
R4-040379	25.133	655	3	F	R99	3.16.0	Change of test cases using event triggered reporting with event 1B	TEI
R4-040351	25.133	673		F	R99	3.17.0	Correction of erroneous implementation of CR#211	TEI

Beijing, China 10 - 14 May 2004

CR-Form-v7

**CHANGE REQUEST**⌘ **25.133 CR 655** ⌘ rev **3** ⌘ Current version: **3.16.0** ⌘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  Radio Access Network  Core Network 

<b>Title:</b>	⌘ Change of testcases using event triggered reporting with event 1B		
<b>Source:</b>	⌘ RAN WG4		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 24/05/2004
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

**Reason for change:** ⌘ In some testcases we test event 1B, see e.g. 25.133 section A 8.1.1 and in 34.121, section 8.6.1.1. In this testcase event 1B shall be triggered on cell 2, while cell 1 is the active cell. It does not say anything about adding cell 2 to the active set.

The triggering event is based on the signalled triggering condition 1 which is set as below.

-Triggering condition 1      Active set cells and monitored set cells

Which is OK, we shall have an event on monitored cells, i.e. Cell 2.

However, in 25.331, release 99, in section 10.3.7.39 in the table the following is added about Triggering condition 1:

Indicates which cells can trigger the event. In this version of the specification, the UE behaviour is unspecified when using a triggering condition other than "Active set cells" for the intra-frequency events 1b or 1f.

Thus, in case the Cell 2 is not included in Active set the UE does not need to trigger an event 1B!

The power levels of the dedicated channels are wrong since they according the testcase are power controlled. In the current testcase they have a fixed value.

<b>Summary of change:</b> ⌘	In the testcases using event 1B, a test procedure is written describing when the the cells are moved into the active set before they shall trigger the event 1B. The principles of the testprocedures shall be used when the testprocedure are defined in T1. The power levels of the dedicated channels are changed from fixed levels to power controlled levels.
<b>Consequences if not approved:</b> ⌘	Some UEs will not trigger the event 1B in the testcases since it is not mandatory

<b>Clauses affected:</b> ⌘	A 8.1.1, A 8.1.2, A 8.1.3, A 8.1.4												
<b>Other specs affected:</b>	<table border="1"> <tr> <td>Y</td> <td>N</td> <td></td> </tr> <tr> <td></td> <td>X</td> <td>Other core specifications</td> </tr> <tr> <td>X</td> <td></td> <td>Test specifications</td> </tr> <tr> <td></td> <td>X</td> <td>O&amp;M Specifications</td> </tr> </table>	Y	N			X	Other core specifications	X		Test specifications		X	O&M Specifications
Y	N												
	X	Other core specifications											
X		Test specifications											
	X	O&M Specifications											
<b>Other comments:</b> ⌘	Only a R99 CR is proposed since in the requirements in 25.331 for Rel-4 and later the UE behaviour is specified when using a triggering condition Active set cells and monitored set cells. Thereby Event 1Bs will be triggered on cell in measured set.												

**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.

## 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 [and that CPICH Ec/Io and SFN-CFN observed time difference shall be reported together with Event 1A](#). The test consists of three successive time periods, with a time duration of T1, T2, ~~and T3~~ [and T4](#) 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	<del>dB</del>	3	Applicable for event 1A and 1B
Hysteresis	<del>dB</del>	0	
W		1	Applicable for event 1A and 1B
Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger	<del>ms</del>	0	
Filter coefficient		0	
Monitored cell list size		24	
T1	<del>s</del>	5	
T2	<del>s</del>	5	
T3	<del>s</del>	<del>1</del>	
<a href="#">T4</a>	<a href="#">s</a>	<a href="#">5</a>	

**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	T4	T1	T2	T3	T4
CPICH_Ec/Ior	dBdB	-10				-10			
PCCPCH_Ec/Ior	dBdB	-12				-12			
SCH_Ec/Ior	dBdB	-12				-12			
PICH_Ec/Ior	dBdB	-15				-15			
DPCH_Ec/Ior	dBdB	Note 1-17				N/A		Note 1	
OCNS		Note 2-1.049				-0.941		Note 2	
$\hat{I}_{or}/I_{oc}$	dBdB	0	6.97	6.97	0	-Infinity	5.97	5.97	-Infinity
$I_{oc}$	dBm/3.84 MHz	-70							
CPICH_Ec/Io	dBdB	-13	-13	-13	-13	-Infinity	-14	-14	-Infinity
Propagation Condition		AWGN							
<p>Note 1: <a href="#">The DPCH level is controlled by the power control loop</a></p> <p>Note 2: <a href="#">The power of the OCNS channel that is added shall make the total power from the cell to be equal to <math>I_{nr}</math></a></p>									

[The test shall be performed in the following way:](#)

#### [During time period T1:](#)

[The test is started at the beginning of T1 with cell 1 active.](#)

#### [During time period T2:](#)

[UTRAN shall after the Event 1A triggered measurement is reported send an Active Set Update command with activation time “start of T3” adding cell 2 to the active set.](#)

[The Active Set Update message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3.](#)

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### 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%.

### 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 CPICH Ec/Io and SFN-CFN observed time difference shall be reported together with Event 1A.](#) The test

consists of four successive time periods, with a time duration of T1, T2, T3, ~~and~~ T4, T5 and T6 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	140	
T3	S	105	
T4	S	540	
T5	s	1	
T6	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	<u>I</u> <u>2</u>	<u>I3</u> <u>T2</u>	<u>I4</u> <u>T4</u>	<u>I5</u> <u>T3</u>	<u>I6</u> <u>T4</u>	T1	<u>I</u> <u>2</u>	<u>I3</u> <u>T2</u>	<u>I</u> <u>4</u>	<u>I5</u> <u>T3</u>	<u>I6</u> <u>T4</u>	T1	<u>I</u> <u>2</u>	<u>I3</u> <u>T2</u>	<u>I4</u> <u>T4</u>	<u>I5</u> <u>T3</u>	<u>I6</u> <u>T4</u>	
CPICH_Ec/lor	DBdB	-10						-10						-10						
PCCPCH_Ec/lor	DBdB	-12						-12						-12						
SCH_Ec/lor	DBdB	-12						-12						-12						
PICH_Ec/lor	DBdB	-15						-15						-15						
DPCH_Ec/lor	DBdB	Note 1-17						N/A						N/A	Note 1			N/A		
OCNS_Ec/lor	DBdB	Note 2-1.049						-0.941						-0.941	Note 2			-0.941		
$\hat{I}_{or}/I_{oc}$	DBdB	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/lor	DBdB	-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  $I_{or}$ .

The test shall be performed in the following way:

**During time period T1:**

The test is started at the beginning of T1 with cell 1 active.

UTRAN shall after the Event 1A triggered measurement is reported send an Active Set Update command with activation time “start of T2” adding cell 2 to the active set.

The Active Set Update message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T2.

#### **During time period T4:**

UTRAN shall after the Event 1B triggered measurement is reported send an Active Set Update command with activation time “start of T5” removing cell 2 from the active set.

The Active Set Update message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T5.

### 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 T~~3~~<sup>2</sup>.
- 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 T~~3~~<sup>2</sup>.
- 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 T~~4~~<sup>3</sup>.
- 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 T~~6~~<sup>4</sup>.
- g) The UE may send one Event 1C triggered measurement report for Cell2 after the beginning of the time period T~~6~~<sup>4</sup>.
- h) The UE may send one Event 1C triggered measurement report for Cell3 after the beginning of the time period T~~6~~<sup>4</sup>.
- 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%.

### 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 CPICH Ec/Io and SFN-CFN observed time difference shall be reported together with Event 1A. The test consists of four successive time periods, with a time duration of T1, T2, T3, ~~and~~ T4 and T5 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	1	
T4	s	10	
T5	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	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
CPICH_Ec/lor	dBB	-10					-10					-10				
PCCPCH_Ec/lor	dBB	-12					-12					-12				
SCH_Ec/lor	dBB	-12					-12					-12				
PICH_Ec/lor	dBB	-15					-15					-15				
DPCH_Ec/lor	dBB	Note 1-47					N/A					Note 1				
OCNS_Ec/lor	dBB	Note 2-4.049					-0.941					Note 2				
$\hat{I}_{or}/I_{oc}$	dBB	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/lo	dBB	-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  $I_{or}$

The test shall be performed in the following way:

**During time period T1:**

The test is started at the beginning of T1 with cell 1 active.

**During time period T2:**

UTRAN shall after the Event 1A triggered measurement is reported send an Active Set Update command with activation time “start of T3” adding cell 2 to the active set.

The Active Set Update message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T3.

✚

### 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 T~~4~~3.
- 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 T~~5~~4.
- 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%.

### 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 and that CPICH Ec/Io and SFN-CFN observed time difference shall be reported together with Event 1A. The test consists of two successive time periods, each with a time duration of T1, ~~and~~ T2 and T3 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	1	
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	<del>T2</del>	<del>T3</del>	T1	<del>T2</del>	<del>T3</del>
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	<a href="#">Note 1-47</a>			N/A	<a href="#">Note 1</a>	
OCNS		<a href="#">Note 2-4.049</a>			-0.941	<a href="#">Note 2</a>	
$\hat{I}_{or}/I_{oc}$	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						
<a href="#">Note 1: The DPCH level is controlled by the power control loop.</a>							
<a href="#">Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to <math>I_{or}</math>.</a>							

[The test shall be performed in the following way:](#)

**[During time period T1:](#)**

[The test is started at the beginning of T1 with cell 1 active.](#)

[UTRAN shall during T1 send an Active Set Update command with activation time “start of T2” adding cell 2 to the active set.](#)

[The Active Set Update message shall be sent to the UE so that the whole message is available at the UE the RRC procedure delay prior to the beginning of T2.](#)

#### A.8.1.4.2 Test Requirements

- The number of received event 1A reports during time period T1 shall be less than 60.
- During the first 1 s of time period ~~T3~~ no event reports shall be counted.
- The number of received event 1B reports counted from 1s after the beginning of time period ~~T3~~ until the end of time period ~~T3~~ shall be less than 60.

Beijing, China 10 - 14 May 2004

CR-Form-v7

**CHANGE REQUEST**⌘ **25.133 CR 673** ⌘ rev **1** ⌘ Current version: **3.17.0** ⌘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  Radio Access Network  Core Network 

<b>Title:</b>	⌘ Correction of erroneous implementation of CR#211		
<b>Source:</b>	⌘ RAN WG4		
<b>Work item code:</b>	⌘ TEI	<b>Date:</b>	⌘ 24/05/2004
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ A change in CR211 (R4-011631, RP-010791) was not incorporated to v3.8.0 of the specification after RAN#14. Reason for change in CR211 was as follows: The current text of the UE transmit timing adjustment requirement unintentionally limits optimal transmit timing adjustments in all environments when the UE adjust its transmit timing with smaller steps than ¼ chip.
<b>Summary of change:</b>	⌘ The requirement of UE transmit timing adjustment is corrected to allow smaller steps than ¼ chip. The ¼ value is corrected to "d" as in CR211. <u>Isolated Impact Analysis (taken from CR211):</u> The UE transmit timing adjustment correction allows more optimal implementation for UE transmit timing adjustments. The correction does not affect the network since the current text already allows more than one adjustment in 200 ms as long as the UE transmit timing shall not change in excess of +/-1/4 chip from the timing at the beginning of this 200 ms period.
<b>Consequences if not approved:</b>	⌘ A CR is misimplemented, the specification as it is now is not coherent. Taken from CR211:Optimal UE performance is not allowed in all environments for terminals using smaller than ¼ chip step for transmit timing adjustment.

<b>Clauses affected:</b>	⌘ 7.1.2								
<b>Other specs affected:</b>	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>X</td> <td></td> </tr> </table>	Y	N			X		Other core specifications	⌘ 34.121
Y	N								
X									
		Test specifications							

O&M Specifications

**Other comments:** ⌘ No CRs to Rel-4 onwards needed, the error appears only in Rel-99

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## 7 Timing and Signalling characteristics

### 7.1 UE Transmit Timing

#### 7.1.1 Introduction

The UE shall have capability to follow the frame timing change of the connected Node B. The uplink DPCCH/DPDCH frame transmission takes place approximately  $T_0$  chips after the reception of the first detected path (in time) of the corresponding downlink DPCCH/DPDCH frame from the reference cell.  $T_0$  is defined in [2]. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are defined in the following requirements.

#### 7.1.2 Requirements

The UE initial transmission timing error shall be less than or equal to  $\pm 1.5$  Chip. The reference point for the UE initial transmit timing control requirement shall be the time when the first detected path (in time) of the corresponding downlink DPCCH/DPDCH frame is received from the reference cell plus  $T_0$  chips.  $T_0$  is defined in [2].

When the UE is not in soft handover, the reference cell shall be the one the UE has in the active set. The cell, which is selected as a reference cell, shall remain as a reference cell even if other cells are added to the active set. In case that the reference cell is removed from the active set the UE shall start adjusting its transmit timing no later than the time when the whole active set update message is available at the UE taking the RRC procedure delay into account.

The UE shall be capable of changing the transmission timing according the received downlink DPCCH/DPDCH frame. The maximum amount of the timing change in one adjustment shall be  $\frac{1}{4}$  Chip.

The minimum adjustment rate shall be 233ns per second. The maximum adjustment rate shall be  $\frac{1}{4}$  chip per 200ms. In particular, within any given  $800 \cdot d$  ms period, the UE transmit timing shall not change in excess of  $\pm \frac{1}{4} \cdot d$  chip from the timing at the beginning of this  $800 \cdot d$  ms period, where  $0 \leq d \leq 1/4$ .