TSG RAN Meeting #15

Cheju, Korea, 5 - 8 March 2002

Title: CRs (R'99 and Rel-4/Rel-5 Category A) to TS 25.133 (2)

Source: TSG RAN WG4

Agenda Item: 7.4.3

RAN4	Spec	CR	Rev	Phase	Title	Cat	Curr	New
Tdoc							Ver	Ver
R4-020451	25.133	250	1	R99	FDD/FDD Soft Handover delay test case	F	3.8.0	3.9.0
R4-020452	25.133	251	1	Rel-4	FDD/FDD Soft Handover delay test case	Α	4.3.0	4.4.0
R4-020453	25.133	252	1	Rel-5	FDD/FDD Soft Handover delay test case	Α	5.1.0	5.2.0
R4-020454	25.133	253	1	R99	Inter-frequency hard handover test case	F	3.8.0	3.9.0
R4-020455	25.133	254	1	Rel-4	Inter-frequency hard handover test case	Α	4.3.0	4.4.0
R4-020456	25.133	255	1	Rel-5	Inter-frequency hard handover test case	Α	5.1.0	5.2.0
R4-020457	25.133	262	1	R99	Inter-frequency measurements in CELL_FACH	F	3.8.0	3.9.0
R4-020458	25.133	263	1	Rel-4	Inter-frequency measurements in CELL_FACH	Α	4.3.0	4.4.0
R4-020459	25.133	264	1	Rel-5	Inter-frequency measurements in CELL_FACH	Α	5.1.0	5.2.0
R4-020478	25.133	277	1	R99	Corrections to RRC connection re-establishment requirement	F	3.8.0	3.9.0
R4-020479	25.133	278	1	Rel-4	Corrections to RRC connection re-establishment requirement	Α	4.3.0	4.4.0
R4-020486	25.133	279	1	Rel-5	Corrections to RRC connection re-establishment requirement	Α	5.1.0	5.2.0
R4-020480	25.133	280	1	R99	Corrections to RRC connection re-establishment test cases	F	3.8.0	3.9.0
R4-020481	25.133	281	1	Rel-4	Corrections to RRC connection re-establishment test cases	Α	4.3.0	4.4.0
R4-020482	25.133	282	1	Rel-5	Corrections to RRC connection re-establishment test cases	Α	5.1.0	5.2.0
R4-020483	25.133	283	1	R99	Correction of hard handover test cases	F	3.8.0	3.9.0
R4-020484	25.133	284	1	Rel-4	Correction of hard handover test cases	Α	4.3.0	4.4.0
R4-020485	25.133	285	1	Rel-5	Correction of hard handover test cases	A	5.1.0	5.2.0

RP-020021

R4-020451

Sophia Antipolis, France 28th January - 1st February 2002

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For HELP on usir	ng this for	m, see bottom	of this page	or look a	t the pop-up t	ext over	the	nbols.
Proposed change aff	fects: ೫	(U)SIM	ME/UE X	Radio	o Access Netw	/ork	Core Ne	twork
Title: ೫	FDD/FDD	Soft Handove	r delay test c	ase				
Source: ж ।	<mark>RAN WG</mark> ₄	1						
Work item code: ℜ					Date:	:	/2002	
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Other specs affected:	X Te	her core specifiest specification M Specification	าร	ж 34.1	121			
Other comments:	¥							

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.5.1 FDD/FDD Soft Handover

NOTE: This section is included for consistency with numbering with section 5; currently no test covering requirements in sections 5.1.2.1 and 5.1.2.2 exists.

A.5.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the soft handover delay in CELL DCH state specified in section 5.1.2.

The test parameters are given in Table A.x and A.y below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A 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 five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

Table A.x: General test parameters for Soft handover

Para	<u>meter</u>	<u>Unit</u>	Value	<u>Comment</u>
DCH parameter	ers		DL Reference Measurement	As specified in TS 25.101 section A.3.1
			Channel 12.2 kbps	
Power Control			<u>On</u>	
Target quality	<u>value on</u>	<u>BLER</u>	<u>0.01</u>	
DTCH	A (* 11		0.11.4	
Initial	Active cell		Cell 1	
conditions	Neighbouring cell		<u>Cell 2</u>	
Final condition	Active cell		Cell 2	
Reporting range	ge	dB	3	Applicable for event 1A and 1B
Hysteresis		dB	<u>0</u>	
<u>W</u>			<u>1</u>	Applicable for event 1A and 1B
Reporting dea	<u>ctivation</u>		<u>0</u>	Applicable for event 1A
<u>threshold</u>				
Time to Trigge	er	ms	<u>0</u>	
Filter coefficier	<u>nt</u>		<u>0</u>	
<u>T1</u>		<u>s</u>	<u>5</u>	
<u>T2</u>		<u>S</u>	3	
<u>T3</u>	<u>T3</u>		<u>0.5</u>	
<u>T4</u>		<u>ms</u>	<u>60</u>	This is the requirement on active set
				update delay, see section 5.1.2.2, where
				KC=1 and OC=0.
<u>T5</u>		<u>s</u>	2	

Parameter	Unit		<u>Cell 1</u> <u>Cell 2</u>					Cell 2		
		<u>T1</u>	<u>T2</u>	<u>T3 T4</u>	<u>T5</u>	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>T5</u>
CPICH_Ec/lor	<u>dB</u>			<u>-10</u>				<u>-10</u>		
PCCPCH_Ec/lor	dB			<u>-12</u>				<u>-12</u>		
SCH_Ec/lor	dB			<u>-12</u>				<u>-12</u>		
PICH_Ec/lor	dB			<u>-15</u>				<u>-15</u>		
DPCH_Ec/lor	<u>dB</u>	Note1	Note1	<u>Note1</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	Note3	No	te1
<u>DCNS</u>		Note2	Note2	Note2	<u>-0.941</u>	-0.941	<u>-0.941</u>	Note2	No	te2
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>0</u>	<u>2.91</u>	<u>2.91</u>	<u>2.91</u>	<u>-Inf</u>	<u>2.91</u>	<u>2.91</u>	<u>2.9</u>	<u>91</u>
I _{oc}	<u>dBm/</u> <u>3.84</u> <u>MHz</u>					<u>-70</u>				
<u>CPICH_Ec/lo</u>	<u>dB</u>	<u>-13</u>	<u>-14</u>	<u>-14</u>	-14	<u>-Inf</u>	<u>-14</u>	<u>-14</u>	-1	4
Propagation Condition					<u> </u>	<u>AWGN</u>				
Note 1: The DPCH	l level is co	ntrolled by	the powe	<u>r control loop</u>						
Note 2: The power	of the OC	NS channe	el that is ac	ded shall mak	e the total	power from	the cell to b	be equal to		
lote 3: The DPCH	l level is co	ntrolled by	the powe	r control loop.	The initial p	ower shall	be set equa	al to the DP	ČH Ec/lo	or of

Test procedure

1) The test is started at the beginning of T1.

- 2) During time period T2 an Event 1A triggered measurement report shall be sent by the UE containing the CFN-SFN observed time difference between cell 1 and cell 2.
- 3) At the beginning of T3 the downlink DPCH of cell 2 shall be activated.
- <u>4)</u> UTRAN shall send a Active Set Update command with activation time now 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 at the beginning of T4.
- 5) At the beginning of T5 the DPCH from cell 1 shall be switched off.

A.5.1.2 Test Requirements

The UE downlink BLER shall not exceed the downlink BLER target, i.e. 1%, during time period T5.

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

Sophia Antipolis, France 28th January - 1st February 2002

	CR-Form-v5
	CHANGE REQUEST
ж	25.133 CR 285 # rev 1 # Current version: 5.1.0 #
For <u>HELP</u> on us	sing this form, see bottom of this page or look at the pop-up text over the st symbols.
Proposed change a	nffects: ೫ (U)SIM ME/UE X Radio Access Network Core Network
Title: ೫	Correction of hard handover test cases
Source: ೫	RAN WG4
Work item code: ℜ	TEI Date: 米 1/2/2002
Category: ೫	ARelease: %Rel-5Use one of the following categories:Use one of the following releases:F (correction)2(GSM Phase 2)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 canREL-4(Release 4)be found in 3GPP TR 21.900.REL-5(Release 5)
Reason for change	 # In case of hard handover the resources in the prior serving cell are released. In table A5.0A and A5.0C a Note states, that the DPCH in the prior serving cell is still power controlled after the handover execution.
Summary of chang	e: # Correction of the Note on the power control of the DPCH related to the prior serving cell for the time period after the HO execution.
Consequences if not approved:	 Test cases will be incorrect and technically not feasible. <u>Isolated Impact Analysis:</u> This CR does not affect implementations, because it is a correction of test cases where the test cases were in contradiction to the general requirement or technically not feasible.
Clauses affected:	ដ <mark> A5.2</mark>
Other specs affected:	% Other core specifications % X Test specifications 34.121 - O&M Specifications
Other comments: How to create CRs	

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- 1) Fill out the above form. The symbols above marked # contain pop-up help information about the field that they are closest to.
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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

A.5.2 FDD/FDD Hard Handover

A.5.2.1 Handover to intra-frequency cell

A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.

The test parameters are given in Table A.5.0 and A.5.0A 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 timed 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 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration 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. The RRC procedure delay is defined [16].

Para	meter	Unit	Value	Comment
DCH paramet	ers		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Contro	l		On	
Target quality DTCH	value on	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbourin g cell		Cell 2	
Final condition	Active cell		Cell 2	
Reporting ran	ge	dB	3	Applicable for event 1A and 1B
Hysteresis		dB	0	
W			1	Applicable for event 1A and 1B
Reporting dea threshold	ictivation		0	Applicable for event 1A
Time to Trigge	er	ms	0	
Filter coefficient			0	
T1		S	5	
T2		S	5	
Т3		S	5	

Table A.5.0: General test parameters for Handover to intra-frequency cell

Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
CPICH_Ec/lor	dB		-10			-10	
PCCPCH_Ec/lor	dB		-12			-12	
SCH_Ec/lor	dB		-12			-12	
PICH_Ec/lor	dB		-15			-15	
DPCH_Ec/lor	dB	Note1	Note1	Note13	N/A	N/A	Note1
OCNS		Note2	Note2	Note2	-0.941	-0.941	Note2
\hat{I}_{or}/I_{oc}	dB	0	6	.97	-Infinity	5.	97
I _{oc}	dBm/ 3.84 MHz			-7	70		
CPICH_Ec/lo	dB		-13		-Infinity	-1	4
Propagation Condition				AW	/GN		
Note 1: The DPCH Note 2: The power					ower from the o	cell to be equal	to I _{or}

Note 3: The DPCH no more needs to be power controlled by the power control loop.

A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 70 ms from the beginning of time period T3. The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the dual carrier case reported in section 5.2.2.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.0B and A.5.0C 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. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of T2 with one active cell, cell 2. The Physical Channel reconfiguration 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. The RRC procedure delay is defined [16].

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Para	meter	Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Cont	rol		On	
Target quali DTCH	ity value on	BLER	0.01	
Compresse	d mode		A.22 set 1	As specified in TS 25.101 section A.5.
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold n frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting ra	ange	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 d threshold	eactivation		0	Applicable for event 1A
Time to Trig	lger	ms	0	
Filter coeffic	cient		0	
T1		S	10	
T2		S	5	

TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Ce	ll 1	Ce	11 2			
		T1	T2	T1	T2			
UTRA RF Channel Number		Char	nnel 1	Channel 2				
CPICH_Ec/lor	dB	-1	10	-1	10			
PCCPCH_Ec/lor	dB	-1	12	-1	12			
SCH_Ec/lor	dB	-1	2	-1	12			
PICH_Ec/lor	dB	-1	15	-1	15			
DPCH_Ec/lor	dB	Note1	Note 3	N/A	Note1			
OCNS		No	te 2	-0.941	Note 2			
\hat{I}_{or}/I_{oc}	dB	0	0	-1.8	-1.8			
I _{oc}	dBm/3.84 MHz		-7	70				
CPICH_Ec/lo	dB	-13	-13	-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 Note 3: The DPCH n		s to be power co	ntrolled by the p	ower control loo	<u>p.</u>			

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T2.

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

Sophia Antipolis, France 28th January - 1st February 2002

	CR-Form-v5
	CHANGE REQUEST
H	25.133 CR 284 # rev 1 # Current version: 4.3.0 #
For <u>HELP</u> on u	sing this form, see bottom of this page or look at the pop-up text over the $#$ symbols.
Proposed change a	affects: # (U)SIM ME/UE X Radio Access Network Core Network
Title: ¥	Correction of hard handover test cases
Source: ೫	RAN WG4
Work item code: ℜ	TEI Date: # 1/2/2002
Category: ₩	ARelease: %Rel-4Use one of the following categories:Use one of the following releases:F (correction)2A (corresponds to a correction in an earlier release)R96B (addition of feature),R97C (functional modification of feature)R98D (editorial modification)R99D tetailed explanations of the above categories canREL-4be found in 3GPP TR 21.900.REL-5
Reason for change	# In case of hard handover the resources in the prior serving cell are released. In table A5.0A and A5.0C a Note states, that the DPCH in the prior serving cell is still power controlled after the handover execution.
Summary of chang	re: # Deleting of the Note on the power control of the DPCH related to the prior serving cell for the time period after the HO execution.
Consequences if not approved:	 ⁹⁶ Test cases will be incorrect and technically not feasible. <u>Isolated Impact Analysis:</u> This CR does not affect implementations, because it is a correction of test cases where the test cases were in contradiction to the general requirement or technically not feasible.
Clauses affected:	¥ A5.2
Other specs affected:	% Other core specifications % X Test specifications 34.121 - O&M Specifications
Other comments:	*

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. Below is a brief summary:

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

A.5.2 FDD/FDD Hard Handover

A.5.2.1 Handover to intra-frequency cell

A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.

The test parameters are given in Table A.5.0 and A.5.0A 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 timed 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 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration 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. The RRC procedure delay is defined [16].

Para	meter	Unit	Value	Comment
DCH paramet	ers		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Contro	l		On	
Target quality DTCH	value on	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbourin g cell		Cell 2	
Final condition	Active cell		Cell 2	
Reporting ran	ge	dB	3	Applicable for event 1A and 1B
Hysteresis		dB	0	
W			1	Applicable for event 1A and 1B
Reporting dea threshold	ictivation		0	Applicable for event 1A
Time to Trigge	er	ms	0	
Filter coefficient			0	
T1		S	5	
T2		S	5	
Т3		S	5	

Table A.5.0: General test parameters for Handover to intra-frequency cell

Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
CPICH_Ec/lor	dB		-10			-10	
PCCPCH_Ec/lor	dB		-12			-12	
SCH_Ec/lor	dB		-12			-12	
PICH_Ec/lor	dB		-15			-15	
DPCH_Ec/lor	dB	Note1	Note1	Note34	N/A	N/A	Note1
OCNS		Note2	Note2	Note2	-0.941	-0.941	Note2
\hat{I}_{or}/I_{oc}	dB	0	6	.97	-Infinity	5.	97
I _{oc}	dBm/ 3.84 MHz			-7	70		
CPICH_Ec/lo	dB		-13		-Infinity	-1	4
Propagation Condition				AM	/GN		
Note 1: The DPCH Note 2: The power					ower from the o	cell to be equal	to I _{or.}

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Note 3: The DPCH may not be power controlled by the power control loop.

A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 70 ms from the beginning of time period T3. The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the dual carrier case reported in section 5.2.2.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.0B and A.5.0C 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. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of T2 with one active cell, cell 2. The Physical Channel reconfiguration 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. The RRC procedure delay is defined [16].

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Cont	rol		On	
Target quali DTCH	ity value on	BLER	0.01	
Compresse	d mode		A.22 set 1	As specified in TS 25.101 section A.5.
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold n frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting ra	ange	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	
T1		S	10	
T2		S	5	

TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Ce	ll 1	Ce	ll 2	
		T1	T2	T1	T2	
UTRA RF Channel Number		Char	nnel 1	Char	nnel 2	
CPICH_Ec/lor	dB	-1	10	-1	10	
PCCPCH_Ec/lor	dB	-1	12	-1	12	
SCH_Ec/lor	dB	-1	2	-1	12	
PICH_Ec/lor	dB	-1	15	-1	15	
DPCH_Ec/lor	dB	Note1	Note 3	N/A	Note1	
OCNS		No	te 2	-0.941	Note 2	
\hat{I}_{or}/I_{oc}	dB	0	0	-1.8	-1.8	
I _{oc}	dBm/3.84 MHz		-7	70		
CPICH_Ec/lo	dB	-13	-13	-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.} Note 3: The DPCH may not be power controlled by the power control loop.						

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T2.

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

Sophia Antipolis, France 28th January - 1st February 2002

	CR-Form-v5						
CHANGE REQUEST							
æ	25.133 CR 283 # rev 1 ^{# Current version: 3.8.0 [#]}						
For <u>HELP</u> on u	using this form, see bottom of this page or look at the pop-up text over the $#$ symbols.						
Proposed change	affects: # (U)SIM ME/UE X Radio Access Network Core Network						
Title: ೫	Correction of hard handover test cases						
Source: अ	RAN WG4						
Work item code: भ	Date: 米 1/2/2002						
Category: # F Release: # R99 Use one of the following categories: Ise one of the following releases: 2 (GSM Phase 2) 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-5 (Release 5)							
Summary of chang	A5.0A and A5.0C a Note states, that the DPCH in the prior serving cell is still power controlled after the handover execution.						
	serving cell for the time period after the HO execution.						
Consequences if not approved:	* Test cases will be incorrect and technically not feasible. <u>Isolated Impact Analysis:</u> This CR does not affect implementations, because it is a correction of test cases where the test cases were in contradiction to the general requirement or technically not feasible.						
Clauses affected:	<mark>፝</mark>						
Other specs affected:	%Other core specifications%XTest specifications34.121-O&M Specifications						
Other comments: How to create CRs	۲ using this form:						

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. 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 <u>ftp://www.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.5.2 FDD/FDD Hard Handover

A.5.2.1 Handover to intra-frequency cell

A.5.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the single carrier case reported in section 5.2.2.1.

The test parameters are given in Table A.5.0 and A.5.0A 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 timed 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 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration 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. The RRC procedure delay is defined [16].

Para	meter	Unit	Value	Comment
DCH paramet	DCH parameters		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Contro			On	
Target quality DTCH	value on	BLER	0.01	
Initial	Active cell		Cell 1	
conditions	Neighbourin g cell		Cell 2	
Final condition	Active cell		Cell 2	
Reporting ran	ge	dB	3	Applicable for event 1A and 1B
Hysteresis		dB	0	
W			1	Applicable for event 1A and 1B
Reporting dea threshold	Reporting deactivation threshold		0	Applicable for event 1A
Time to Trigger		ms	0	
Filter coefficient			0	
T1		S	5	
T2		S	5	
Т3		S	5	

Table A.5.0: General test parameters for Handover to intra-frequency cell

Table A.5.0A: Cell specific test parameters for Handover to intra-frequency cell

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
CPICH_Ec/lor	dB		-10			-10	
PCCPCH_Ec/lor	dB		-12			-12	
SCH_Ec/lor	dB		-12			-12	
PICH_Ec/lor	dB		-15			-15	
DPCH_Ec/lor	dB	Note1	Note1	Note34	N/A	N/A	Note1
OCNS		Note2	Note2	Note2	-0.941	-0.941	Note2
\hat{I}_{or}/I_{oc}	dB	0	6.97		-Infinity	5.97	
I _{oc}	dBm/ 3.84 MHz			-7	70		
CPICH_Ec/lo	dB	-13 -Infinity -14				4	
Propagation Condition		AWGN					
Note 1: The DPCH Note 2: The power					ower from the o	cell to be equal	to I _{or.}

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to Note 3: The DPCH may not be power controlled by the power control loop.

A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 70 ms from the beginning of time period T3. The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the hard handover delay in CELL_DCH state in the dual carrier case reported in section 5.2.2.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.0B and A.5.0C 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. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of T2 with one active cell, cell 2. The Physical Channel reconfiguration 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. The RRC procedure delay is defined [16].

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Parameter		Unit	Value	Comment
DCH parameters			DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Cont	rol		On	
Target quali DTCH	ity value on	BLER	0.01	
Compresse	d mode		A.22 set 1	As specified in TS 25.101 section A.5.
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold n frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting ra	ange	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	
T1		S	10	
T2		S	5	

TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell

Parameter	Unit	Ce	ll 1	Ce	ll 2	
		T1	T2	T1	T2	
UTRA RF Channel Number		Char	nnel 1	Char	nnel 2	
CPICH_Ec/lor	dB	-1	10	-1	10	
PCCPCH_Ec/lor	dB	-1	12	-1	12	
SCH_Ec/lor	dB	-1	2	-1	12	
PICH_Ec/lor	dB	-1	15	-1	15	
DPCH_Ec/lor	dB	Note1	Note 3	N/A	Note1	
OCNS		No	te 2	-0.941	Note 2	
\hat{I}_{or}/I_{oc}	dB	0	0	-1.8	-1.8	
I _{oc}	dBm/3.84 MHz		-7	70		
CPICH_Ec/lo	dB	-13	-13	-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.} Note 3: The DPCH may not be power controlled by the power control loop.						

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T2.

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

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			CHAN	NGE R	EQ	UEST	-			CR-Form-v
ж	25	<mark>.133</mark> Cl	R 28	<mark>2</mark> жr	ev	1 [#]	Current vers	sion:	5.1.0	ж
For <u>HELP</u> on	n using t	this form, s	see bottom	of this pag	ge or l	ook at th	e pop-up text	over th	ne X syı	nbols.
Proposed change		·	U)SIM				ccess Networ	k	Core Ne	etwork
Title:	<mark>೫ Co</mark> i	rrections to	RRC con	nection re-	estab	lishment	test cases			
Source:	<mark>೫ RA</mark>	N WG4								
Work item code:	<mark>೫ TE</mark> l						Date: ೫	1/2/2	2002	
Category:	Deta	 F (correction A (corresp B (addition C (function D (editoria) iled explana 	ollowing cate on) onds to a cc o of feature), oal modification ations of the TR 21.900	orrection in a ion of featur n) above cate	re)		Release: # Use <u>one</u> of 2 e) R96 R97 R98 R99 REL-4 REL-5	the follo (GSM I (Releas (Releas (Releas	owing rele Phase 2) se 1996) se 1997) se 1998) se 1999) se 4)	pases:
		-The defi requireme - Contrad	nition of	T _{si} is not ment relate	t inlin ed to (e with cell 2in T	a not correct. the definition est2.	n used	in the	genera
Summary of cha	nge: ¥	the RRC is added. modified.	e-establisr	ment delay ng of T _{SI} is	are u upda	pdated, ted. RF p	cluding N ₃₁₃ a in addition a l parameter of (es.	NOTE	on the ca	alculatio
Consequences if not approved:	f ¥	Contradi TS25.21	ction betw 4 and TS2 npact Analy	veen TS2 25.331. <u>ysis:</u> This	5.133	and th	remaining e descriptio affect impleme	n of th	nis proc	edure i
			of the test ca	ases <u>.</u>						
Clauses affected	l: X	A6								
Other specs affected:	ж	X Test s	core speci pecification Specification	ns	Ħ	34.121				
Other comments	: ¥									

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- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 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 <u>ftp://www.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.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 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.

Parameter		Unit	Value	Comment
DCH Pa	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	
	<u>Final</u> condition		<u>Cell 2</u>	
N3	13	Frames	20	
N3	15	Frames	20<u>1</u>	
T3	13	Seconds	0	
Т		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). Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331. Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SL} 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.
monito	Cell 2 included in monitored set		Included	Included in the monitored set.
Reporting		Seconds	4	
Т	1	<u>S</u>	10	
Т	2	<u>S</u>	6	

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

Parameter	Unit	Jnit Cell 1		Cell	2
		T1	T2	T1	T2
Cell Frequency	ChNr		1	1	
CPICH_Ec/lor	dB	-1	0	-1()
PCCPCH_Ec/lor	dB	-1	2	-12	2
SCH_Ec/lor	dB	-1	2	-12	
PICH_Ec/lor	dB	-1	5	-15	
DCH_Ec/lor	dB	-17	-Inf <u>inity</u>	Not applicable	
OCNS_Ec/lor	dB	-1.049	-0.941	-0.9	41
\hat{I}_{or}/I_{oc}	dB	2,39	<u>-Infinity</u>	4,3	9
I _{oc}	dBm/ 3.84 MHz		-7	0	
CPICH_Ec/lo	dB	-15	-Infinity	-13	3
Propagation Condition		AWGN			

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

A.6.1.1.2 TEST 2

1

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 I	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 C	Control		On	
Active cell	Initial condition		Cell 1	
	Final condition		<u>Cell 2</u>	
N31	13	Frames	20	
N31	15	Frames	201	
T31	13	Seconds	0	
<u>T313</u> 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).Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331. Note: Since 1280 ms is one of the typical values for repeating system information blocks, T _{SL} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms.
Monitored c			24	Monitored set shall include 2 additional frequencies.
Cell 2 inc monitor			Not Included	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 f	frequency	Seconds	4	
T1		<u>S</u>	10	
T2	2	<u>s</u>	6	

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

Parameter	Unit	Cell 1		Ce	ell 2
		T1	T2	T1	T2
Cell Frequency	ChNr		1	2	
CPICH_Ec/lor	dB	-	10	-'	10
PCCPCH_Ec/lor	dB	-	12	-'	12
SCH_Ec/lor	dB	-	12	-12	
PICH_Ec/lor	dB	-	15	-15	
DCH_Ec/lor	dB	-17	-Inf <u>inity</u>	Not applicable	
OCNS_Ec/lor	dB	-1.049	-0.941	-0.941	
\hat{I}_{or}/I_{oc}	dB	-3,35 <u>-Infinity</u>		<u>-Infinity</u>	0,02
I _{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/lo	dB	-15 -Infinity		-Infinity	-13
Propagation Condition		AWGN			

A.6.1.2 Test Requirements

A.6.1.2.1 Test 1

<u>The RRC</u> <u>Rr</u>e-establishment delay <u> $T_{RE-ESTABLISH}$ </u> to a known cell shall be less than <u>16701.9-ms</u>. 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

 $\underline{T}_{RE-ESTABLISH} = \underline{T}_{RRC-RE-ESTABLISH} + \underline{T}_{UE-RE-ESTABLISH-REQ-KNOWN}$

Where

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

 $\underline{T_{UE-RE-ESTABLISH_REQ-KNOWN}} = 50ms + \underline{T_{SL} + T_{RA}}$

<u>N₃₁₃=20</u>

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.

<u>A.6.1.2.2</u> Test 2

<u>The RRC R</u>re-establishment delay to an unknown cell shall be less than <u>39704.2</u>-ms. 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

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

<u>Where</u>

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

 $\underline{T_{UE-RE-ESTABLISH-REQ-UNKNOWN}} = 50 ms + \underline{T_{search} * NF} + \underline{T_{SL}} + \underline{T_{RA}}$

<u>N₃₁₃=20</u>

<u>T₃₁₃=0s</u>

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_{SL} 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.

Sophia Antipolis, France 28th January - 1st February 2002

ж	25.133 CR 281 # rev 1 ^{# Current version: 4.3.0 [#]}
For <u>HELP</u> on u	sing this form, see bottom of this page or look at the pop-up text over the $#$ symbols.
Proposed change a	affects: # (U)SIM ME/UE X Radio Access Network Core Network
Title: #	Corrections to RRC connection re-establishment test cases
Source: #	RAN WG4
Work item code: ℜ	TEI Date: 第 1/2/2002
Category: ⊮	ARelease: %Rel-4Use one of the following categories:Use one of the following releases:F (correction)2A (corresponds to a correction in an earlier release)R96B (addition of feature),R97C (functional modification of feature)R98D (editorial modification)R99D (editorial modifications of the above categories canREL-4be found in 3GPP TR 21.900.REL-5
	 The value for RRC re-establishment delay is not correct. The definition of T_{sl} is not inline with the definition used in the general requirement. Contradictory statement related to cell 2in Test2. The final status of the test is not clear.
Summary of chang	ye: X Clarification of the general test parameters including N ₃₁₃ and N ₃₁₅ . The values for the RRC re-establisment delay are updated, in addition a NOTE on the calculation is added. The wording of T _{SI} is updated. RF parameter of Cell1 during T2 are modified. Add implementation margin into the test cases.
Consequences if not approved:	[#] Unclear definitions and ambiguity remaining in the test cases Contradiction between TS25.133 and the description of this procedure in TS25.214 and TS25.331.
	Isolated Impact Analysis: This CR does not affect implementations, because it is a correction of the test cases.
Clauses affected:	ж <mark>Аб</mark>
Other specs affected:	%Other core specifications%XTest specifications34.121O&M Specifications
Other comments: How to create CRs	# using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. 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 <u>ftp://www.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.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 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.

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	
	<u>Final</u> condition		<u>Cell 2</u>	
N3	13	Frames	20	
N3	15	Frames	20<u>1</u>	
T3	13	Seconds	0	
Т		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). Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331. Note: Since 1280 ms is one of the typical values for repeating system information blocks, T_{SL} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms.
	cell list size		24	Monitored set shall only include intra frequency neighbours.
monito	cluded in red set		Included	Included in the monitored set.
Reporting		Seconds	4	
Т	1	<u>S</u>	10	
Т	2	<u>S</u>	6	

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

Parameter	Unit	Unit Cell 1		Cell	2
		T1	T2	T1	T2
Cell Frequency	ChNr		1	1	
CPICH_Ec/lor	dB	-1	0	-1()
PCCPCH_Ec/lor	dB	-1	2	-12	2
SCH_Ec/lor	dB	-1	2	-12	
PICH_Ec/lor	dB	-1	5	-15	
DCH_Ec/lor	dB	-17	-Inf <u>inity</u>	Not applicable	
OCNS_Ec/lor	dB	-1.049	-0.941	-0.941	
\hat{I}_{or}/I_{oc}	dB	2,39 <u>-Infinity</u>		4,3	9
I _{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/lo	dB	-15 -Infinity		-13	3
Propagation Condition		AWGN			

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

A.6.1.1.2 TEST 2

1

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 I	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 C	Control		On	
Active cell	Initial condition		Cell 1	
	Final condition		<u>Cell 2</u>	
N31	13	Frames	20	
N31	15	Frames	20 1	
T31	13	Seconds	0	
Τs		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).Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331. Note: Since 1280 ms is one of the typical values for repeating system information blocks, T _{SL} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms.
Monitored c			24	Monitored set shall include 2 additional frequencies.
Cell 2 inc monitor			Not Included	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 f	frequency	Seconds	4	
T1	1	<u>s</u>	10	
T2	2	<u>s</u>	6	

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

Parameter	Unit	Cell 1		Ce	11 2
		T1	T2	T1	T2
Cell Frequency	ChNr		1	2	
CPICH_Ec/lor	dB	-	10	-1	10
PCCPCH_Ec/lor	dB	-	12	-1	12
SCH_Ec/lor	dB	-	12	-12	
PICH_Ec/lor	dB	-	15	-15	
DCH_Ec/lor	dB	-17	-Inf <u>inity</u>	Not applicable	
OCNS_Ec/lor	dB	-1.049	-0.941	-0.941	
\hat{I}_{or}/I_{oc}	dB	-3,35 <u>-Infinity</u>		-Infinity 0,02	
I _{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/lo	dB	-15 -Infinity		-Infinity	-13
Propagation Condition		AWGN			

A.6.1.2 Test Requirements

A.6.1.2.1 Test 1

<u>The RRC</u> <u>Rr</u>e-establishment delay <u> $T_{RE-ESTABLISH}$ </u> to a known cell shall be less than <u>16701.9-ms</u>. 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

 $\underline{T}_{RE-ESTABLISH} = \underline{T}_{RRC-RE-ESTABLISH} + \underline{T}_{UE-RE-ESTABLISH-REQ-KNOWN}$

Where

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

 $\underline{T_{UE-RE-ESTABLISH_REQ-KNOWN}} = 50ms + \underline{T_{SL} + T_{RA}}$

<u>N₃₁₃=20</u>

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.

<u>A.6.1.2.2</u> Test 2

<u>The RRC R</u>re-establishment delay to an unknown cell shall be less than <u>39704.2</u>-ms. 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

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

<u>Where</u>

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

 $\underline{T_{UE-RE-ESTABLISH-REQ-UNKNOWN}} = 50 ms + \underline{T_{search} * NF} + \underline{T_{SL}} + \underline{T_{RA}}$

<u>N₃₁₃=20</u>

<u>T₃₁₃=0s</u>

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_{SL} 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.

Sophia Antipolis, France 28th January - 1st February 2002

ж	25.133 CR 280 # rev 1 ^{# Current version: 3.8.0 [#]}
For <u>HELP</u> on	using this form, see bottom of this page or look at the pop-up text over the X symbols.
Proposed change	e affects: # (U)SIM ME/UE X Radio Access Network Core Network
Title:	Corrections to RRC connection re-establishment test cases
Source:	# RAN WG4
Work item code:	₩ Date: ₩ 1/2/2002
Category:	FRelease: % R99 Use one of the following categories:Use one of the following releases: F (correction)2 A (corresponds to a correction in an earlier release)R96 B (addition of feature),R97 C (functional modification of feature)R98 D (editorial modification)R99 D (editorial modification)R99 D (editorial modification)R91 D (editorial modification)R92 D (editorial modification)R12-4 D (editorial modification)R21-5 D (editorial modification)R21-5 D (editorial modification)R21-5
	 The value for RRC re-establishment delay is not correct. The definition of T_{SI} is not inline with the definition used in the general requirement. Contradictory statement related to cell 2in Test2. The final status of the test is not clear.
Summary of char	nge: # Clarification of the general test parameters including N ₃₁₃ and N ₃₁₅ . The values for the RRC re-establisment delay are updated, in addition a NOTE on the calculation is added. The wording of T _{SI} is updated. RF parameter of Cell1 during T2 are modified. Add implementation margin into the test cases.
Consequences if not approved:	Contradiction between TS25.133 and the description of this procedure in TS25.214 and TS25.331.
	<u>Isolated Impact Analysis:</u> This CR does not affect implementations, because it is a correction of the test cases.
Clauses affected.	: ¥ A6
Other specs affected:	XOther core specificationsXXTest specifications34.121O&M Specifications
Other comments. How to create CR	

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. 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 <u>ftp://www.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.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 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.

Parameter		Unit	Value	Comment
DCH Pa	rameters		DL Reference	As specified in TS 25.101, section A.3.1
			measurement channel 12.2 kbps	
Power	Control		On	
	Initial		Cell 1	
Active cell	Initial condition		Cell I	
	Final condition		<u>Cell 2</u>	
N3	313	Frames	20	
N3	815	Frames	20<u>1</u>	
T3	313	Seconds	0	
	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). Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331.Note: Since 1280 ms is one of the typical values for repeating system information blocks.
Monitored	cell list size		24	Monitored set shall only include intra frequency neighbours.
	cluded in red set		Included	Included in the monitored set.
Reporting	frequency	Seconds	4	
Т	1	<u>S</u>	10	
Т	2	<u>S</u>	6	

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

Parameter	Unit	Unit Cell 1		Cell	2
		T1	T2	T1	T2
Cell Frequency	ChNr		1	1	
CPICH_Ec/lor	dB	-1	0	-1()
PCCPCH_Ec/lor	dB	-1	2	-12	2
SCH_Ec/lor	dB	-1	2	-12	
PICH_Ec/lor	dB	-1	5	-15	
DCH_Ec/lor	dB	-17	-Inf <u>inity</u>	Not applicable	
OCNS_Ec/lor	dB	-1.049	-0.941	-0.941	
\hat{I}_{or}/I_{oc}	dB	2,39 <u>-Infinity</u>		4,3	9
I _{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/lo	dB	-15 <u>-Infinity</u>		-13	3
Propagation Condition		AWGN			

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

A.6.1.1.2 TEST 2

1

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, T	est 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 C	Control		On	
Active cell	Initial condition		Cell 1	
	Final condition		<u>Cell 2</u>	
N31	3	Frames	20	
N31	5	Frames	20 1	
T31	3	Seconds	0	
Τsι		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).Maximum repetition period of all relevant system information blocks that needs to be received by the UE to camp on a cell. For information on the system information blocks that needs to be received by the UE, see TS 25.331. Note: Since 1280 ms is one of the typical values for repeating system information blocks, T _{SL} of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms.
Monitored ce			24	Monitored set shall include 2 additional frequencies.
Cell 2 incl monitore			Not Included	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 fr	requency	Seconds	4	
T1		<u>S</u>	10	
T2		S	6	

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

Parameter	Unit	Cell 1		Ce	ell 2
		T1	T2	T1	T2
Cell Frequency	ChNr		1		2
CPICH_Ec/lor	dB	-	10	-'	10
PCCPCH_Ec/lor	dB	-	12	-'	12
SCH_Ec/lor	dB	-12		-12	
PICH_Ec/lor	dB	-15		-15	
DCH_Ec/lor	dB	-17	-Inf <u>inity</u>	Not applicable	
OCNS_Ec/lor	dB	-1.049	-0.941	-0.941	
\hat{I}_{or}/I_{oc}	dB	-3,35	-Infinity	<u>-Infinity</u>	0,02
I _{oc}	dBm/ 3.84 MHz	-70			
CPICH_Ec/lo	dB	-15	-Infinity	-Infinity	-13
Propagation Condition			A	WGN	

A.6.1.2 Test Requirements

A.6.1.2.1 Test 1

<u>The RRC</u> <u>Rr</u>e-establishment delay <u> $T_{RE-ESTABLISH}$ </u> to a known cell shall be less than <u>16701.9-ms</u>. 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

 $\underline{T}_{RE-ESTABLISH} = \underline{T}_{RRC-RE-ESTABLISH} + \underline{T}_{UE-RE-ESTABLISH-REQ-KNOWN}$

Where

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

 $\underline{T_{UE-RE-ESTABLISH_REQ-KNOWN}} = 50ms + \underline{T_{SL} + T_{RA}}$

<u>N₃₁₃=20</u>

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.

<u>A.6.1.2.2</u> Test 2

<u>The RRC R</u>re-establishment delay to an unknown cell shall be less than <u>39704.2</u>-ms. 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

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

<u>Where</u>

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

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

<u>N₃₁₃=20</u>

<u>T₃₁₃=0s</u>

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_{SL} 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.

3GPP TSG RAN WG4 Meeting #21

Sophia Antipolis, France 28th January - 1st February 2002

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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 <u>ftp://www.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

6 RRC Connection Control

6.1 RRC Re-establishment

6.1.1 Introduction

RRC connection re-establishment is needed, when a UE in state CELL_DCH loses radio connection due to radio link failure. The procedure when a radio link failure occurs in CELL_DCH is specified in of TS 25.331.

6.1.2 Requirements

The requirements in this section are applicable when the UE performs a RRC Re-establishment to a cell belonging to any of the frequencies present in the previous (old) monitored set.

When the UE is in CELL_DCH state, the UE shall be capable of sending a CELL UPDATE message using the cause "radio link failure" within T_{RE-ESTABLISH} seconds from when the radio link failure occurred.

 $\underline{T_{RE-ESTABLISH}}$ equals the <u>RRC</u> procedure delay ($\underline{T_{RRC-RE-ESTABLISH}}$) according to TS25.331 plus the UE Re-establishment delay ($\underline{T_{UE-RE-ESTABLISH-REQ}}$), specified in 6.1.2.1.

 $\underline{T}_{RE-ESTABLISH} = \underline{T}_{RRC-RE-ESTABLISH} + \underline{T}_{UE-RE-ESTABLISH-REQ}$

6.1.2.1 UE Re-establishment delay requirement

The <u>UE</u> RRC Re-establishment delay requirement ($T_{UE-RE-ESTABLISH-REQ}$) is defined as the time between the moment when radio link failure-occurred is considered by the <u>UE</u>, to when the UE starts to send preambles on the PRACH. T_{UE-RE-ESTABLISH-REQ} is depending on whether the target cell is known by the UE or not. A cell is known if either or both of the following conditions are true:

- the UE has had radio links connected to the cell in the previous (old) active set

- the cell has been measured by the UE during the last 5 seconds.

And the phase reference is the primary CPICH.

The <u>RRC UE R</u>re-establishment delay requirement $\underline{T}_{UE-RE-ESTABLISH-REO}$ shall be less than $\underline{T}_{UE-RE-ESTABLISH-REO-KNOWN} \equiv 50 \text{ms} + T_{\text{search}} + T_{\text{SI}} + T_{\text{RA}}$

in case that the target cell is known, and

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

in case that the target cell is not known by the UE.

where T_{search} is the time it takes for the UE to search the cell.

 $T_{search} = 100 \text{ ms}$ if the target cell is known by the UE, and

 $T_{search} = 800 \text{ ms}$ if the target cell is not known by the UE.

where 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).

 $T_{\text{RA}}\!=\!$ The additional delay caused by the random access procedure.

NF is the number of different frequencies in the monitored set.

This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

3GPP TSG RAN WG4 Meeting #21

Sophia Antipolis, France 28th January - 1st February 2002

		C	HANGE	EREQ	UES	т			CR-Form-v5
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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.
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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 RRC Connection Control

6.1 RRC Re-establishment

6.1.1 Introduction

RRC connection re-establishment is needed, when a UE in state CELL_DCH loses radio connection due to radio link failure. The procedure when a radio link failure occurs in CELL_DCH is specified in of TS 25.331.

6.1.2 Requirements

The requirements in this section are applicable when the UE performs a RRC Re-establishment to a cell belonging to any of the frequencies present in the previous (old) monitored set.

When the UE is in CELL_DCH state, the UE shall be capable of sending a CELL UPDATE message using the cause "radio link failure" within T_{RE-ESTABLISH} seconds from when the radio link failure occurred.

 $\underline{T_{RE-ESTABLISH}}$ equals the <u>RRC</u> procedure delay ($\underline{T_{RRC-RE-ESTABLISH}}$) according to TS25.331 plus the UE Re-establishment delay ($\underline{T_{UE-RE-ESTABLISH-REQ}}$), specified in 6.1.2.1.

 $\underline{T}_{RE-ESTABLISH} = \underline{T}_{RRC-RE-ESTABLISH} + \underline{T}_{UE-RE-ESTABLISH-REQ}$

6.1.2.1 UE Re-establishment delay requirement

The <u>UE</u> RRC Re-establishment delay requirement ($T_{UE-RE-ESTABLISH-REQ}$) is defined as the time between the moment when radio link failure-occurred is considered by the <u>UE</u>, to when the UE starts to send preambles on the PRACH. T_{UE-RE-ESTABLISH-REQ} is depending on whether the target cell is known by the UE or not. A cell is known if either or both of the following conditions are true:

- the UE has had radio links connected to the cell in the previous (old) active set

- the cell has been measured by the UE during the last 5 seconds.

And the phase reference is the primary CPICH.

The <u>RRC UE R</u>re-establishment delay requirement $\underline{T}_{UE-RE-ESTABLISH-REO}$ shall be less than $\underline{T}_{UE-RE-ESTABLISH-REO-KNOWN} \equiv 50 \text{ms} + T_{\text{search}} + T_{\text{SI}} + T_{\text{RA}}$

in case that the target cell is known, and

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

in case that the target cell is not known by the UE.

where T_{search} is the time it takes for the UE to search the cell.

 $T_{search} = 100 \text{ ms}$ if the target cell is known by the UE, and

 $T_{search} = 800 \text{ ms}$ if the target cell is not known by the UE.

where 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).

 $T_{\text{RA}}\!=\!$ The additional delay caused by the random access procedure.

NF is the number of different frequencies in the monitored set.

This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

3GPP TSG RAN WG4 Meeting #21

Sophia Antipolis, France 28th January - 1st February 2002

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6 RRC Connection Control

6.1 RRC Re-establishment

6.1.1 Introduction

RRC connection re-establishment is needed, when a UE in state CELL_DCH loses radio connection due to radio link failure. The procedure when a radio link failure occurs in CELL_DCH is specified in of TS 25.331.

6.1.2 Requirements

The requirements in this section are applicable when the UE performs a RRC Re-establishment to a cell belonging to any of the frequencies present in the previous (old) monitored set.

When the UE is in CELL_DCH state, the UE shall be capable of sending a CELL UPDATE message using the cause "radio link failure" within T_{RE-ESTABLISH} seconds from when the radio link failure occurred.

 $\underline{T_{RE-ESTABLISH}}$ equals the <u>RRC</u> procedure delay ($\underline{T_{RRC-RE-ESTABLISH}}$) according to TS25.331 plus the UE Re-establishment delay ($\underline{T_{UE-RE-ESTABLISH-REQ}}$), specified in 6.1.2.1.

 $\underline{T}_{RE-ESTABLISH} = \underline{T}_{RRC-RE-ESTABLISH} + \underline{T}_{UE-RE-ESTABLISH-REQ}$

6.1.2.1 UE Re-establishment delay requirement

The <u>UE</u> **RRC** Re-establishment delay requirement ($T_{UE-RE-ESTABLISH-REQ}$) is defined as the time between the moment when radio link failure-occurred is considered by the <u>UE</u>, to when the UE starts to send preambles on the PRACH. T_{UE-RE-ESTABLISH-REQ} is depending on whether the target cell is known by the UE or not. A cell is known if either or both of the following conditions are true:

- the UE has had radio links connected to the cell in the previous (old) active set

- the cell has been measured by the UE during the last 5 seconds.

And the phase reference is the primary CPICH.

The <u>**RRC** UE R</u> re-establishment delay requirement $\underline{T_{UE-RE-ESTABLISH-REQ}}$ shall be less than $\underline{T_{UE-RE-ESTABLISH-REQ-KNOWN} = 50 \text{ms} + T_{\text{search}} + T_{\text{SI}} + T_{\text{RA}}$

in case that the target cell is known, and

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

in case that the target cell is not known by the UE.

where T_{search} is the time it takes for the UE to search the cell.

 $T_{search} = 100 \text{ ms}$ if the target cell is known by the UE, and

 $T_{search} = 800$ ms if the target cell is not known by the UE.

where 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).

 $T_{\text{RA}}\!=\!$ The additional delay caused by the random access procedure.

NF is the number of different frequencies in the monitored set.

This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

3GPP TSG RAN WG4 Meeting #21

R4-020459

Sophia Antipolis, France 28th January - 1st February 2002

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 Reason for change: # In 25.133, section 8.4.2 the measurement capabilities in the measurement occasions are specified. In that section it is required that M_REP=2^k where k=06. In 25.331, section 10.3.7.8 "FACH measurement occasion info", the signalling allows k to be between 1 and 12. Thus, there is an inconsistency between 25.331 and 25.133 which should be changed in 25.133. Furthermore with k=1, there will be a measurement occasion of lenght 1 TTI every second TTI. With a TTI of length 10 ms this means that every second frame in the downlink is used as a measurement occasion. Thereby, if the measurement shall be prioritised higher than RACH transmissions, meaning that the UE shall fulfill the measurement performance requirements defined in 25.133, there is no possibility to send a RACH, even with a TTI = 10 ms in the uplink and no time to read SFN. Also for some values of K and Ntti this would lead to lead to significant time between measurement periods used for re-selection, for example the current requirements proposes measurements which extend the measurement period to 5.12 sec (GSM by contrast has a single value of 480 ms) Long periods between measurement period for reselection would impact system performance and particular if this would allow to send RACH transmission on the wrong cells (if re-selection measurement are not up to date) and would reduce system capacity and interference performance. In general the network address this issue by not ensuring this long periods are used and so reduce the interference and then this would be an option the UE would need to support even if this is not used. However to support this un-used capability would require additional UE complexity 					
Summary of change: 8	Iimited as sh NTTI 1 2 4	own in the tab k 3,4,5,6		k value Ims and 640 ms Ims and 640 ms d 640 ms	ons in Cell_FACH is

	The tables 8.13 and 8.14 for GSM BSIC identification and reconfirmation are changed since the minimum Tmeas now is increased				
	Isolated Impact: There is an isolated impact of the scheduling of the measurements in Cell_FACH.				
Consequences if	It is not clear how to prioritise the RACH transmissions in relation with the				
not approved:	measurements on other frequencies.				
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8.4.2 Requirements

8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

- 32 intra frequency FDD cells and
- 32 inter frequency cells, including
 - FDD cells distributed on up to 2 additional FDD carriers and
 - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on CPICH Ec/Io and RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in TS 25.331 are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on an assumption that the time during the measurement occasions that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

For this three parameters are defined:

 N_{FDD} is 0 or 1. If there are inter-frequency FDD cells in the neighbour list $N_{FDD}=1$, otherwise $N_{FDD}=0$.

 N_{TDD} is 0 or 1. If the UE is capable of TDD and there are TDD cells in the neighbour list $N_{TDD}=1$ otherwise $N_{TDD}=0$.

 N_{GSM} is 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, $N_{GSM}=1$, otherwise $N_{GSM}=0$.

The measurement time T_{meas} is then defined as

$$T_{meas} = \left[\left(N_{FDD} + N_{TDD} + N_{GSM} \right) \cdot N_{TTI} \cdot M_\text{REP} \cdot 10 \right] \text{ms}$$

where

- M_REP is the Measurement Occasion cycle length wheren K is is given in Table X. 0,...6. K is the FACH measurement occasion length cofficient as specified in TS25.331
- The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.
- N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

Table X	
N _{TTI}	K
<u>1</u>	3,4,5,6
<u>2</u>	2,3,4,5
4	2,3,4
<u>8</u>	1,2,3

The UE is assumed to measure periodically once every time period T_{meas} on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers for which the corresponding parameter N_{FDD} , N_{TDD} and N_{GSM} is set to 1.

8.4.2.2 FDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

8.4.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, intra}} = Max \left\{ 800, \text{Ceil} \left\{ \frac{T_{\text{basic identify FDD, intra}}}{N_{\text{TTI}} \cdot (M_{\text{REP}} - 1) \cdot 10} \right\} \cdot N_{\text{TTI}} \cdot M_{\text{REP}} \cdot 10 \right\} \text{ ms}$$

where

T_{basic_identify_FDD, intra} is specified in section 8.1.2.2.2,

N_{TTI} and M_REP is specified in section 8.4.2.1.

A cell shall be considered detectable when CPICH Ec/Io \geq -20 dB, SCH_Ec/Io \geq -20 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 identified intrafrequency cells of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurement activated for the $Y_{measurement intra}$ strongest cells, where $Y_{measurement intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{measurement intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = Floor \begin{cases} X_{\text{basic measurement FDD}} \cdot \frac{T_{\text{Measurement_Period Intra}} - Ceil \left\{ \frac{T_{\text{Measurement_Period Intra}}}{N_{TTI} \cdot M _ REP \cdot 10 \text{ ms}} \right\} \cdot N_{TTI} \cdot 10 \text{ ms}} \\ T_{\text{Measurement_Period Intra}} \end{cases}$$

cells

where

X_{basic measurement FDD} is specified in section 8.1.2.2.2,

T_{Measurement Period Intra} is specified in section 8.1.2.2.2,

M_REP and N_{TTI} is specified in section 8.4.2.1.

8.4.2.2.3 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

8.4.2.3 FDD inter frequency measurements

In the CELL_FACH state when a measurement occasion cycle 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.

8.4.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, inter}} = Max \left\{ 5000, Ceil \left\{ \frac{T_{\text{basic identify FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, FDD} \right\} \text{ ms}$$

where

T_{basic_identify_FDD,inter} is specified in 8.1.2.3.2.

N_{Freq,FDD}: Number of FDD frequencies in the Inter-frequency cell info list

T_{Meas} and M_REP are specified in 8.4.2.1.

 $T_{\text{Inter FACH}} = (N_{\text{TTI}}*10 - 2*0.5) \text{ ms}$

A cell shall be considered detectable when CPICH Ec/Io \geq -20 dB, SCH_Ec/Io \geq -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4.2.3.2 UE CPICH measurement capability

When a measurement occasion cycle is scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.2 with measurement period is given by

$$T_{\text{measurement inter}} = Max \left\{ T_{\text{Measurement_Period Inter}}, 2 \cdot T_{\text{meas}}, Ceil \left\{ \frac{T_{\text{basic measurement FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, FDD} \right\} \text{ ms}$$

where

T_{basic_measurement_FDD,inter} is specified in section 8.1.2.3.2.

T_{Measurement_Period Inter} is specified in section 8.1.2.3.2.

T_{Meas} is specified in section 8.4.2.1.

 $N_{\mbox{Freq},\mbox{FDD}}$ and $T_{\mbox{Inter FACH}}$ are specified in section 8.4.2.3.1

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

The UE shall be capable of performing CPICH measurements for $X_{\text{basic measurement FDD inter}}$ inter-frequency cells per FDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{Measurement Inter.}}$

X_{basic measurement FDDinter} is defined in section 8.1.2.3.2

8.4.2.4 TDD measurements

The requirements in this section apply only to UE supporting both TDD and FDD mode.

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure detected inter frequency TDD cells and search for new TDD cells indicated in the measurement control information.

8.4.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable TDD cell belonging to the monitored set within

$$\mathbf{T}_{\text{identify, TDD}} = Max \left\{ 5000, Ceil \left\{ \frac{\mathbf{T}_{\text{basic identify TDD inter}}}{\mathbf{T}_{\text{Inter FACH}}} \right\} \cdot \mathbf{T}_{\text{meas}} \cdot N_{Freq, TDD} \right\} \text{ ms}$$

 $T_{\text{basic_identify}_TDD,\text{inter}}$ is specified in 8.1.2.4.2.

NFreq, TDD: Number of TDD frequencies in the Inter-frequency cell info list

 T_{Meas} is specified in section 8.4.2.1.

T_{Inter FACH} is specified in section 8.4.2.3.1

8.4.2.4.2 Measurement period

When a measurement occasion cycle as previously described is scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1 and 9.1.2 with measurement period is given by

$$T_{\text{measurement TDD}} = Max \left\{ T_{\text{Measurement_Period TDD inter}}, 2 \cdot T_{\text{meas}}, Ceil \left\{ \frac{T_{\text{basic measurement TDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, TDD} \right\}$$

where

 $T_{basic_measurement_TDD inter}$ is specified in section 8.1.2.4.2.

T_{Measurement_Period TDD inter} is specified in section 8.1.2.4.2.

 T_{Meas} is specified in section 8.4.2.1.

 $T_{\text{Inter FACH}}$ is specified in section 8.4.2.3.1

N_{Freq,TDD} is specified in section 8.4.2.4.1

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

8.4.2.5 GSM measurements

The requirements in this section apply only to UE supporting FDD and GSM.

To support cell reselection the UE shall always perform BSIC verification in Cell FACH state.

1) In CELL_FACH state when measurement occasions are provided by the UTRAN the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement occasion scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurements occasions scheduled for GSM measurements shall be used as follows. 3 occasions out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement occasions between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

2) If the UE does not need measurement occasions to perform GSM measurements:

- the UE shall measure all GSM cells present in the monitored set
- the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 45.008 shall apply. This is further detailed in the following sub-sections.

8.4.2.5.1 GSM carrier RSSI

1) For a UE requiring measurement occasions.

A UE supporting GSM measurements using measurement occasions shall meet the minimum number of GSM carrier RSSI measurements specified in Table 8.11. This measurement shall be based on measurement occasions allocated for GSM carrier RSSI measurements as described in 8.4.2.5. In the CELL_FACH state the measurement period for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008, when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Length of measurement occasion (frames)	Number of GSM carrier RSSI samples in each measurement occasion, N _{GSM carrier RSSI} .
1	16
2	32
4	64
8	128

Table	8.11	
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In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

2) For a UE not requiring measurement occasions

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.4.2.5.2 BSIC verification

1) For a UE requiring measurement occasions.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

Initial BSIC identification

Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the FDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement occasions used for GSM measurements as specified in 8.4.2.1. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.

BSIC re-confirmation

Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement occasions used for GSM as specified in 8.4.2.1. The requirements for BSIC re-confirmation can be found in 8.4.2.5.2.2.

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every 6 times $T_{re-confirm_GSM}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified".

 $T_{re-confirm_GSM}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC reconfirmation procedure according to section 8.4.2.5.2.2.

The UE shall be able to decode a BSIC within a measurement occasion when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement occasion is within the limits specified in table 8.12.

Measurement occasion length [frames]	Maximum time difference [µs]
1	± 4100
2	± 9100
4	± 19100
8	± 39100

Table 8.12: The measurement occasion length and maximum time difference for BSIC verification

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

2) For a UE not requiring measurement occasions

The UE shall attempt to check the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, it is considered as "verified", else it is considered as "non verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

8.4.2.5.2.1 Initial BSIC identification

This measurement shall be based on the measurement occasions allocated for Initial BSIC identification as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurements occasions allocated for GSM initial BSIC identification according section 8.4.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify, GSM}$ ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

 $T_{identify_GSM}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.13. The values given in table 8.13 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)
20	1040	-	-	-
40	1600	800	-	-
60	2880	-	-	-
80	2880	1280	640	-
120	5280	2640	-	-
160	7680	2880	1280	640
240	29760	5280	1920	-
320	14080	6400	2560	1280
480	34560	12480	3840	1920
640	34560	12800	5120	2560
960		24960	5760	2840
1280		20480	10240	5120
1920			15360	5680
2560				10240
3840				15360

Table 8.13: The worst-case time for identification of one previously not identified GSM cell

8.4.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

 $T_{re-confirm_GSM}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{re-confirm GSM}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	Tre-confirm,GSM (MS)	Tre-confirm,GSM (ms)	Tre-confirm,GSM (ms)	Tre-confirm,GSM (MS)
20	800	-	-	-
40	1360	640	-	-
60	2640	-	-	-
80	2880	1280	1280	-
120	5040	2400	-	-
160	6400	2880	2560	2560
240	17280	4800	3840	-
320	10880	6400	5120	5120
480	22080	9600	7680	7680
640	26880	12800	10240	10240
960		17280	15360	15360
1280		20480	20480	20480
1920			30720	30720
2560				40960
3840				61440

3GPP TSG RAN WG4 Meeting #21

R4-020458

Sophia Antipolis, France 28th January - 1st February 2002

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Proposed chang	Proposed change affects: # (U)SIM ME/UE X Radio Access Network Core Network					
Title:	೫ Inter∙	-frequency n	neasurements	in Cell-FAC	4	
Source:	ដ <mark>RAN</mark>	WG4				
Work item code	:೫ TEI				Date	: ೫ <mark>1/2/2002</mark>
Category:	F A B C D Detaile	(correction) (correspond (addition of t (functional n (editorial mo	nodification of fe dification) as of the above	n in an earlier r eature)	2 elease) R96 R97 R98 R99	e of the following releases: (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) -4 (Release 4)
 it is required that M_REP=2^k where k=06. In 25.331, section 10.3.7.8 "FACH measurement occasion info", the signalling allows k to be between 1 and 12. Thus, there is an inconsistency between 25.331 and 25.133 which should be changed in 25.133. Furthermore with k=1, there will be a measurement occasion of lenght 1 TTI every second TTI. With a TTI of length 10 ms this means that every second frame in the downlink is used as a measurement occasion. Thereby, the measurement shall be prioritised higher than RACH transmissions, meaning that the UE shall fulfill the measurement performance requirements defined in 25.133, there is no possibility to send a RACH, even with a TTI = 10 ms in the uplink and no time to read SFN. Also for some values of K and Ntti this would lead to lead to significant time between measurement periods use for re-selection, for example the current requirements proposes measurements which extend the measurement period to 5.12 sec (GSM by contrast has a single value of 480 ms) Long periods between measurement period for reselection would impact system performance and particular if this would allow to send RACH transmission on the wrong cells (if re-selection measurement are not up to date and would reduce system capacity and interference performance. In general the network address this issue by not ensuring this long periods are used and so reduce the interference and then this would be an option the UE would need to support even if this is not used. However to support this un-used capability would require additional UE complexity 						
Summary of cha	-		of the paramet nown in the tak	<mark>le below</mark> T _{meas} for each	k value	sions in Cell_FACH is
		2	3,4,5,6 2,3,4,5	80ms, 160ms, 32 80ms, 160ms, 32 160ms, 320 ms au	0ms and 640 ms	
	E		2,3,4 1,2,3	160ms, 320 ms at		
1						

	The tables 8.13 and 8.14 for GSM BSIC identification and reconfirmation are changed since the minimum Tmeas now is increased				
	Isolated Impact: There is an isolated impact of the scheduling of the measurements in Cell_FACH.				
Consequences if	It is not clear how to prioritise the RACH transmissions in relation with the				
not approved:	measurements on other frequencies.				
Clauses affected:	¥ 8.4.2				
Other specs	% Other core specifications				
•					
affected:	Test specifications				
	O&M Specifications				
Other comments:	¥				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.

8.4.2 Requirements

8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

- 32 intra frequency FDD cells and
- 32 inter frequency cells, including
 - FDD cells distributed on up to 2 additional FDD carriers and
 - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on CPICH Ec/Io and RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in TS 25.331 are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on an assumption that the time during the measurement occasions that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

For this three parameters are defined:

 N_{FDD} is 0 or 1. If there are inter-frequency FDD cells in the neighbour list $N_{FDD}=1$, otherwise $N_{FDD}=0$.

 N_{TDD} is 0 or 1. If the UE is capable of TDD and there are TDD cells in the neighbour list $N_{TDD}=1$ otherwise $N_{TDD}=0$.

 N_{GSM} is 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, $N_{GSM}=1$, otherwise $N_{GSM}=0$.

The measurement time T_{meas} is then defined as

$$T_{meas} = \left[\left(N_{FDD} + N_{TDD} + N_{GSM} \right) \cdot N_{TTI} \cdot M_REP \cdot 10 \right] ms$$

where

- M_REP is the Measurement Occasion cycle length whe<u>ren</u> K is <u>given in Table X. 0,...6</u>. K is the FACH measurement occasion length cofficient as specified in TS25.331
- The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.
- N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

Table X	
<u>N</u> TTI	K
1	3,4,5,6
<u>2</u>	2,3,4,5
4	2,3,4
<u>8</u>	1,2,3

The UE is assumed to measure periodically once every time period T_{meas} on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers for which the corresponding parameter N_{FDD} , N_{TDD} and N_{GSM} is set to 1.

8.4.2.2 FDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

8.4.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, intra}} = Max \left\{ 800, \text{Ceil} \left\{ \frac{T_{\text{basic identify FDD, intra}}}{N_{\text{TTI}} \cdot (M_{\text{REP}} - 1) \cdot 10} \right\} \cdot N_{\text{TTI}} \cdot M_{\text{REP}} \cdot 10 \right\} \text{ ms}$$

where

T_{basic_identify_FDD, intra} is specified in section 8.1.2.2.2,

N_{TTI} and M_REP is specified in section 8.4.2.1.

A cell shall be considered detectable when CPICH Ec/Io \geq -20 dB, SCH_Ec/Io \geq -20 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 identified intrafrequency cells of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurement activated for the $Y_{measurement intra}$ strongest cells, where $Y_{measurement intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{measurement intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = Floor \begin{cases} X_{\text{basic measurement FDD}} \cdot \frac{T_{\text{Measurement_Period Intra}} - Ceil \left\{ \frac{T_{\text{Measurement_Period Intra}}}{N_{TTI} \cdot M _ REP \cdot 10 \text{ ms}} \right\} \cdot N_{TTI} \cdot 10 \text{ ms}} \\ T_{\text{Measurement_Period Intra}} \end{cases}$$

cells

where

X_{basic measurement FDD} is specified in section 8.1.2.2.2,

T_{Measurement Period Intra} is specified in section 8.1.2.2.2,

M_REP and N_{TTI} is specified in section 8.4.2.1.

8.4.2.2.3 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

8.4.2.3 FDD inter frequency measurements

In the CELL_FACH state when a measurement occasion cycle 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.

8.4.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, inter}} = Max \left\{ 5000, Ceil \left\{ \frac{T_{\text{basic identify FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, FDD} \right\} \text{ ms}$$

where

T_{basic_identify_FDD,inter} is specified in 8.1.2.3.2.

N_{Freq,FDD}: Number of FDD frequencies in the Inter-frequency cell info list

T_{Meas} and M_REP are specified in 8.4.2.1.

 $T_{\text{Inter FACH}} = (N_{\text{TTI}}*10 - 2*0.5) \text{ ms}$

A cell shall be considered detectable when CPICH Ec/Io \geq -20 dB, SCH_Ec/Io \geq -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4.2.3.2 UE CPICH measurement capability

When a measurement occasion cycle is scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.2 with measurement period is given by

$$T_{\text{measurement inter}} = Max \left\{ T_{\text{Measurement_Period Inter}}, 2 \cdot T_{\text{meas}}, Ceil \left\{ \frac{T_{\text{basic measurement FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, FDD} \right\} \text{ ms}$$

where

T_{basic_measurement_FDD,inter} is specified in section 8.1.2.3.2.

T_{Measurement_Period Inter} is specified in section 8.1.2.3.2.

T_{Meas} is specified in section 8.4.2.1.

 $N_{Freq,FDD}$ and $T_{Inter FACH}$ are specified in section 8.4.2.3.1

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

The UE shall be capable of performing CPICH measurements for $X_{\text{basic measurement FDD inter}}$ inter-frequency cells per FDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{Measurement Inter.}}$

X_{basic measurement FDDinter} is defined in section 8.1.2.3.2

8.4.2.4 TDD measurements

The requirements in this section apply only to UE supporting both TDD and FDD mode.

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure detected inter frequency TDD cells and search for new TDD cells indicated in the measurement control information.

8.4.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable TDD cell belonging to the monitored set within

$$\mathbf{T}_{\text{identify, TDD}} = Max \left\{ 5000, Ceil \left\{ \frac{\mathbf{T}_{\text{basic identify TDD inter}}}{\mathbf{T}_{\text{Inter FACH}}} \right\} \cdot \mathbf{T}_{\text{meas}} \cdot N_{Freq, TDD} \right\} \text{ ms}$$

 $T_{\text{basic_identify}_TDD,\text{inter}}$ is specified in 8.1.2.4.2.

N_{Freq,TDD}: Number of TDD frequencies in the Inter-frequency cell info list

 T_{Meas} is specified in section 8.4.2.1.

T_{Inter FACH} is specified in section 8.4.2.3.1

8.4.2.4.2 Measurement period

When a measurement occasion cycle as previously described is scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1 and 9.1.2 with measurement period is given by

$$T_{\text{measurement TDD}} = Max \left\{ T_{\text{Measurement_Period TDD inter}}, 2 \cdot T_{\text{meas}}, Ceil \left\{ \frac{T_{\text{basic measurement TDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, TDD} \right\}$$

where

 $T_{basic_measurement_TDD inter}$ is specified in section 8.1.2.4.2.

T_{Measurement_Period TDD inter} is specified in section 8.1.2.4.2.

T_{Meas} is specified in section 8.4.2.1.

 $T_{\text{Inter FACH}}$ is specified in section 8.4.2.3.1

N_{Freq,TDD} is specified in section 8.4.2.4.1

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

8.4.2.5 GSM measurements

The requirements in this section apply only to UE supporting FDD and GSM.

To support cell reselection the UE shall always perform BSIC verification in Cell FACH state.

1) In CELL_FACH state when measurement occasions are provided by the UTRAN the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement occasion scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurements occasions scheduled for GSM measurements shall be used as follows. 3 occasions out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement occasions between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

- 2) If the UE does not need measurement occasions to perform GSM measurements:
 - the UE shall measure all GSM cells present in the monitored set
 - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 45.008 shall apply. This is further detailed in the following sub-sections.

8.4.2.5.1 GSM carrier RSSI

1) For a UE requiring measurement occasions.

A UE supporting GSM measurements using measurement occasions shall meet the minimum number of GSM carrier RSSI measurements specified in Table 8.11. This measurement shall be based on measurement occasions allocated for GSM carrier RSSI measurements as described in 8.4.2.5. In the CELL_FACH state the measurement period for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008, when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Length of measurement occasion (frames)	Number of GSM carrier RSSI samples in each measurement
	occasion, N _{GSM carrier RSSI} .
1	16
2	32
4	64
8	128

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

2) For a UE not requiring measurement occasions

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.4.2.5.2 BSIC verification

1) For a UE requiring measurement occasions.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

Initial BSIC identification

Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the FDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement occasions used for GSM measurements as specified in 8.4.2.1. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.

BSIC re-confirmation

Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement occasions used for GSM as specified in 8.4.2.1. The requirements for BSIC re-confirmation can be found in 8.4.2.5.2.2.

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every 6 times $T_{re-confirm_GSM}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified".

 $T_{re-confirm_GSM}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC reconfirmation procedure according to section 8.4.2.5.2.2.

The UE shall be able to decode a BSIC within a measurement occasion when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement occasion is within the limits specified in table 8.12.

Measurement occasion length [frames]	Maximum time difference [µs]
1	± 4100
2	± 9100
4	± 19100
8	± 39100

Table 8.12: The measurement occasion length and maximum time difference for BSIC verification

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

2) For a UE not requiring measurement occasions

The UE shall attempt to check the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, it is considered as "verified", else it is considered as "non verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

8.4.2.5.2.1 Initial BSIC identification

This measurement shall be based on the measurement occasions allocated for Initial BSIC identification as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurements occasions allocated for GSM initial BSIC identification according section 8.4.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify, GSM}$ ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

 $T_{identify_GSM}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.13. The values given in table 8.13 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)
20	1040	-	-	-
40	1600	800	-	-
60	2880	-	-	-
80	2880	1280	640	-
120	5280	2640	-	-
160	7680	2880	1280	640
240	29760	5280	1920	-
320	14080	6400	2560	1280
480	34560	12480	3840	1920
640	34560	12800	5120	2560
960		24960	5760	2840
1280		20480	10240	5120
1920			15360	5680
2560				10240
3840				15360

Table 8.13: The worst-case time for identification of one previously not identified GSM cell

8.4.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

 $T_{re-confirm_GSM}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{re-confirm GSM}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	Tre-confirm,GSM (MS)	Tre-confirm,GSM (MS)	Tre-confirm,GSM (MS)	Tre-confirm,GSM (MS)
20	800	-	-	-
40	1360	640	-	-
60	2640	-	-	-
80	2880	1280	1280	-
120	5040	2400	-	-
160	6400	2880	2560	2560
240	17280	4800	3840	-
320	10880	6400	5120	5120
480	22080	9600	7680	7680
640	26880	12800	10240	10240
960		17280	15360	15360
1280		20480	20480	20480
1920			30720	30720
2560				40960
3840				61440

Table 8.14: The worst-case time for reconfirmation of one	previously identified GSM cell

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	The tables 8.13 and 8.14 for GSM BSIC identification and reconfirmation are changed since the minimum Tmeas now is increased				
	Isolated Impact: There is an isolated impact of the scheduling of the measurements in Cell_FACH.				
Consequences if	# It is not clear how to prioritise the RACH transmissions and SFN decoding in				
not approved:	relation with the measurements on other frequencies.				
Clauses affected:	第 8.4.2				
Other specs affected:	# Other core specifications # Test specifications 0&M Specifications				
Other comments:	¥				

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

8.4.2 Requirements

8.4.2.1 UE Measurement Capability

In CELL_FACH state, the UE shall be able to monitor up to

- 32 intra frequency FDD cells and
- 32 inter frequency cells, including
 - FDD cells distributed on up to 2 additional FDD carriers and
 - Depending on UE Capability, TDD mode cells, distributed on up to 3 TDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on CPICH Ec/Io and RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in TS 25.331 are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on an assumption that the time during the measurement occasions that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

For this three parameters are defined:

 N_{FDD} is 0 or 1. If there are inter-frequency FDD cells in the neighbour list $N_{FDD}=1$, otherwise $N_{FDD}=0$.

 N_{TDD} is 0 or 1. If the UE is capable of TDD and there are TDD cells in the neighbour list $N_{TDD}=1$ otherwise $N_{TDD}=0$.

 N_{GSM} is 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, $N_{GSM}=1$, otherwise $N_{GSM}=0$.

The measurement time T_{meas} is then defined as

$$T_{meas} = \left[\left(N_{FDD} + N_{TDD} + N_{GSM} \right) \cdot N_{TTI} \cdot M_\text{REP} \cdot 10 \right] \text{ms}$$

where

- M_REP is the Measurement Occasion cycle length where n K is given in Table X. 0,...6. K is the FACH measurement occasion length cofficient as specified in TS25.331
- The FACH Measurement Occasion of N_{TTI} frames will be repeated every N_{TTI} * M_REP frame.
- N_{TTI} is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE.

Table X	
N _{TTI}	K
1	<u>3,4,5,6</u>
<u>2</u>	2,3,4,5
4	2,3,4
<u>8</u>	<u>1,2,3</u>

The UE is assumed to measure periodically once every time period T_{meas} on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers for which the corresponding parameter N_{FDD} , N_{TDD} and N_{GSM} is set to 1.

8.4.2.2 FDD intra frequency measurements

During the CELL_FACH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitoring set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

8.4.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify, intra} = Max \left\{ 800, Ceil \left\{ \frac{T_{basic identify FDD, intra}}{N_{TTI} \cdot (M_REP - 1) \cdot 10} \right\} \cdot N_{TTI} \cdot M_REP \cdot 10 \right\} ms$$

where

T_{basic_identify_FDD, intra} is specified in section 8.1.2.2.2,

N_{TTI} and M_REP is specified in section 8.4.2.1.

A cell shall be considered detectable when CPICH Ec/Io \geq -20 dB, SCH_Ec/Io \geq -20 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4.2.2.2 UE CPICH measurement capability

In the CELL_FACH state the measurement period for intra frequency measurements is 200 ms. When no measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for 8 identified intra-frequency cells of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurement period of 200 ms. When a measurement occasion cycle is activated, the UE shall be capable of performing CPICH measurements for the $Y_{measurement intra}$ strongest cells, where $Y_{measurement intra}$ is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.1 and 9.1.2. If the UE has identified more than $Y_{measurement intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of CPICH measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = Floor \begin{cases} X_{\text{basic measurement FDD}} \cdot \frac{T_{\text{Measurement_Period Intra}} - Ceil \left\{ \frac{T_{\text{Measurement_Period Intra}}}{N_{TTI} \cdot M _ REP \cdot 10 \text{ ms}} \right\} \cdot N_{TTI} \cdot 10 \text{ ms}} \\ T_{\text{Measurement_Period Intra}} \end{cases}$$

cells

where

X_{basic measurement FDD} is specified in section 8.1.2.2.2,

T_{Measurement Period Intra} is specified in section 8.1.2.2.2,

M_REP and N_{TTI} is specified in section 8.4.2.1.

8.4.2.2.3 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

8.4.2.3 FDD inter frequency measurements

In the CELL_FACH state when a measurement occasion cycle 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.

8.4.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, inter}} = Max \left\{ 5000, Ceil \left\{ \frac{T_{\text{basic identify FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, FDD} \right\} \text{ ms}$$

where

T_{basic_identify_FDD,inter} is specified in 8.1.2.3.2.

N_{Freq,FDD}: Number of FDD frequencies in the Inter-frequency cell info list

T_{Meas} and M_REP are specified in 8.4.2.1.

 $T_{\text{Inter FACH}} = (N_{\text{TTI}}*10 - 2*0.5) \text{ ms}$

A cell shall be considered detectable when CPICH Ec/Io \geq -20 dB, SCH_Ec/Io \geq -17 dB and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

8.4.2.3.2 UE CPICH measurement capability

When a measurement occasion cycle is scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.2 with measurement period is given by

$$T_{\text{measurement inter}} = Max \left\{ T_{\text{Measurement_Period Inter}}, 2 \cdot T_{\text{meas}}, Ceil \left\{ \frac{T_{\text{basic measurement FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, FDD} \right\} \text{ ms}$$

where

T_{basic_measurement_FDD,inter} is specified in section 8.1.2.3.2.

T_{Measurement_Period Inter} is specified in section 8.1.2.3.2.

T_{Meas} is specified in section 8.4.2.1.

 $N_{\mbox{Freq},\mbox{FDD}}$ and $T_{\mbox{Inter FACH}}$ are specified in section 8.4.2.3.1

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

The UE shall be capable of performing CPICH measurements for $X_{\text{basic measurement FDD inter}}$ inter-frequency cells per FDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{Measurement Inter.}}$

X_{basic measurement FDDinter} is defined in section 8.1.2.3.2

8.4.2.4 TDD measurements

The requirements in this section apply only to UE supporting both TDD and FDD mode.

In the CELL_FACH state when a measurement occasion cycle is provided by the network the UE shall continuously measure detected inter frequency TDD cells and search for new TDD cells indicated in the measurement control information.

8.4.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable TDD cell belonging to the monitored set within

$$\mathbf{T}_{\text{identify, TDD}} = Max \left\{ 5000, Ceil \left\{ \frac{\mathbf{T}_{\text{basic identify TDD inter}}}{\mathbf{T}_{\text{Inter FACH}}} \right\} \cdot \mathbf{T}_{\text{meas}} \cdot N_{Freq, TDD} \right\} \text{ ms}$$

 $T_{\text{basic_identify}_TDD,\text{inter}}$ is specified in 8.1.2.4.2.

N_{Freq,TDD}: Number of TDD frequencies in the Inter-frequency cell info list

 T_{Meas} is specified in section 8.4.2.1.

T_{Inter FACH} is specified in section 8.4.2.3.1

8.4.2.4.2 Measurement period

When a measurement occasion cycle as previously described is scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1 and 9.1.2 with measurement period is given by

$$T_{\text{measurement TDD}} = Max \left\{ T_{\text{Measurement_Period TDD inter}}, 2 \cdot T_{\text{meas}}, Ceil \left\{ \frac{T_{\text{basic measurement TDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{Freq, TDD} \right\}$$

where

 $T_{basic_measurement_TDD inter}$ is specified in section 8.1.2.4.2.

T_{Measurement_Period TDD inter} is specified in section 8.1.2.4.2.

T_{Meas} is specified in section 8.4.2.1.

 $T_{\text{Inter FACH}}$ is specified in section 8.4.2.3.1

N_{Freq,TDD} is specified in section 8.4.2.4.1

If the UE does not need measurement occasions to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480 ms.

8.4.2.5 GSM measurements

The requirements in this section apply only to UE supporting FDD and GSM.

To support cell reselection the UE shall always perform BSIC verification in Cell FACH state.

a) In CELL_FACH state when measurement occasions are provided by the UTRAN the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement occasion scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurements occasions scheduled for GSM measurements shall be used as follows. 3 occasions out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement occasions between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

- b) If the UE does not need measurement occasions to perform GSM measurements:
 - the UE shall measure all GSM cells present in the monitored set
 - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 05.08 shall apply. This is further detailed in the following sub-sections.

8.4.2.5.1 GSM carrier RSSI

a) For a UE requiring measurement occasions.

A UE supporting GSM measurements using measurement occasions shall meet the minimum number of GSM carrier RSSI measurements specified in Table 8.11. This measurement shall be based on measurement occasions allocated for GSM carrier RSSI measurements as described in 8.4.2.5. In the CELL_FACH state the measurement period for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 05.08, when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Length of measurement occasion (frames)	Number of GSM carrier RSSI samples in each measurement
	occasion, N _{GSM carrier RSSI} .
1	16
2	32
4	64
8	128

Table	8.11	
-------	------	--

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

b) For a UE not requiring measurement occasions

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.4.2.5.2 BSIC verification

a) For a UE requiring measurement occasions.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

Initial BSIC identification

Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the FDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement occasions used for GSM measurements as specified in 8.4.2.1. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.

BSIC re-confirmation

Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement occasions used for GSM as specified in 8.4.2.1. The requirements for BSIC re-confirmation can be found in 8.4.2.5.2.2.

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every 6 times $T_{re-confirm_GSM}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified".

 $T_{re-confirm_GSM}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC reconfirmation procedure according to section 8.4.2.5.2.2.

The UE shall be able to decode a BSIC within a measurement occasion when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement occasion is within the limits specified in table 8.12.

Measurement occasion length [frames]	Maximum time difference [μs]
1	± 4100
2	± 9100
4	± 19100
8	± 39100

Table 8.12: The measurement occasion length and maximum time difference for BSIC verification

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 05.05.

b) For a UE not requiring measurement occasions

The UE shall attempt to check the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, it is considered as "verified", else it is considered as "non verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 05.05.

8.4.2.5.2.1 Initial BSIC identification

This measurement shall be based on the measurement occasions allocated for Initial BSIC identification as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurements occasions allocated for GSM initial BSIC identification according section 8.4.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify, GSM}$ ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

 $T_{identify_GSM}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.13. The values given in table 8.13 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)	T _{identify,GSM} (ms)
20	1040	-	-	-
40	1600	800	-	-
60	2880	-	-	-
80	2880	1280	640	-
120	5280	2640	-	-
160	7680	2880	1280	640
240	29760	5280	1920	-
320	14080	6400	2560	1280
480	34560	12480	3840	1920
640	34560	12800	5120	2560
960		24960	5760	2840
1280		20480	10240	5120
1920			15360	5680
2560				10240
3840				15360

Table 8.13: The worst-case time for identification of one previously not identified GSM cell

8.4.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement occasion allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC falling within the measurement occasion duration according to table 8.12. When the UE has to select one out of several possible GSM cells to reconfirm within the possible allocation of measurement occasions, according to 8.4.2.5, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

 $T_{re-confirm_GSM}$ is given for the combinations of T_{meas} and N_{TTI} that are given in table 8.14. The values given in table 8.14 represent the number of patterns required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. Different values for $T_{re-confirm GSM}$ might apply when more than one GSM cell is in the BSIC reconfirmation procedure at the same time.

T_meas	N_TTI=1 frame	N_TTI=2 frames	N_TTI=4 frames	N_TTI=8 frames
(ms)	Tre-confirm,GSM (MS)	Tre-confirm,GSM (ms)	Tre-confirm,GSM (ms)	Tre-confirm,GSM (MS)
20	800	-	-	-
40	1360	640	-	-
60	2640	-	-	-
80	2880	1280	1280	-
120	5040	2400	-	-
160	6400	2880	2560	2560
240	17280	4800	3840	-
320	10880	6400	5120	5120
480	22080	9600	7680	7680
640	26880	12800	10240	10240
960		17280	15360	15360
1280		20480	20480	20480
1920			30720	30720
2560				40960
3840				61440

Table 8.14: The worst-case time for reconfirmation of one previously identified GSM cell
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Sophia Antipolis, France 28th January - 1st February 2002

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A.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the <u>inter-frequency</u> hard handover delay in CELL_DCH state in the dual carrier case reported as specified in section 5.2.2.1.

The test consists of three wo successive time periods, with a time duration T1, T2 and T32. The test parameters are given in tables A.5.0B and A.5.0C 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. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of $-T_{32}$ with one active cell, cell 2. The Physical Channel reconfiguration 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 T_{32} . The RRC procedure delay is defined [16].

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Para	meter	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 qualit DTCH	ty value on	BLER	0.01	
Compressed	d mode		A.22 set 1	As specified in TS 25.101 section A.5.
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold no frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting ra	inge	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 de threshold	eactivation		0	Applicable for event 1A
Time to Trig	ger	ms	0	
Filter coefficient			0	
<u>T1</u>		S	5	
T <u>2</u> 4		S	10	
T <u>3</u> 2		S	5	

Parameter	Unit		Cell 1			Cell 2	
		T1	<u>T2</u>	T <u>3</u> 2	T1	<u>T2</u>	T <u>3</u> 2
UTRA RF Channel Number		Channel 1			Channel 2		
CPICH_Ec/lor	dB		-10			-10	
PCCPCH_Ec/lor	dB		-12			-12	
SCH_Ec/lor	dB		-12			-12	
PICH_Ec/lor	dB	-15				-15	
DPCH_Ec/lor	dB		Note1		N/A	N/A	Note1
OCNS			Note 2		-0.941	-0.941	Note 2
\hat{I}_{or}/I_{oc}	dB	0		- Infinity <mark>1.8</mark>	-1.8	-1.8	
I _{oc}	dBm/3.84 MHz	-70					
CPICH_Ec/lo	dB	-13 -13			- Infinity <mark>14</mark>	<u>-14</u>	-14
Propagation Condition		AWGN					
Note 1: The DPCH le Note 2: The power of be equal t	f the OCNS ch					power from	the cell to

TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T $\underline{32}$.

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

R4-020455

Sophia Antipolis, France 28th January - 1st February 2002

	CR-Form-v5							
	CHANGE REQUEST							
¥	25.133 CR 254 # rev 1 ^{# Current version: 4.3.0 [#]}							
For <u>HELP</u> on us	sing this form, see bottom of this page or look at the pop-up text over the $#$ symbols.							
Proposed change a	Proposed change affects: # (U)SIM ME/UE X Radio Access Network Core Network							
Title: ೫	Inter-frequency hard handover test case							
Source: ೫	RAN WG4							
Work item code: %	TEI Date: ₩ 1/2/2002							
	handover test case, event 2C may not be triggered during time period T1. It is proposed to align the test set-up with the test of intra-frequency hard handover by adding a time period before T1 where the initial conditions are set to gurantee that event 2C will be triggered during the test.							
Consequences if	 Bolated impact Analysis, Modification of a test case. Change in the test cases does not affect the function or the requirement. Depending on initial conditions the test case may not work properly. 							
not approved:								
Clauses affected:	# A.5.2.2.							
Other specs affected:	X Other core specifications % X Test specifications 34.121 O&M Specifications 34.121							
Other comments:	Corresponding R99 CR is in Tdoc R4-020454							

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. Below is a brief summary:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the <u>inter-frequency</u> hard handover delay in CELL_DCH state in the dual carrier case reported as specified in section 5.2.2.1.

The test consists of three wo successive time periods, with a time duration T1, T2 and T32. The test parameters are given in tables A.5.0B and A.5.0C 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. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of $-T_{32}$ with one active cell, cell 2. The Physical Channel reconfiguration 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 T_{32} . The RRC procedure delay is defined [16].

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Para	meter	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 qualit	ty value on	BLER	0.01	
Compressed	d mode		A.22 set 1	As specified in TS 25.101 section A.5.
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold ne frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting ra	inge	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 Trig	ger	ms	0	
Filter coefficient			0	
<u>T1</u>		S	5	
T <u>2</u> 4		S	10	
T <u>3</u> 2		S	5	

Parameter	Unit	Cell 1			Cell 2		
		T1	<u>T2</u>	T <u>3</u> 2	T1	<u>T2</u>	T <u>3</u> 2
UTRA RF Channel Number		Channel 1			Channel 2		
CPICH_Ec/lor	dB		-10			-10	
PCCPCH_Ec/lor	dB		-12			-12	
SCH_Ec/lor	dB		-12			-12	
PICH_Ec/lor	dB	-15				-15	
DPCH_Ec/lor	dB	Note1			N/A	<u>N/A</u>	Note1
OCNS			Note 2		-0.941	<u>-0.941</u>	Note 2
\hat{I}_{or}/I_{oc}	dB	0			- Infinity <mark>1.8</mark>	<u>-1.8</u>	-1.8
I _{oc}	dBm/3.84 MHz	-70					
CPICH_Ec/lo	dB	-13 -13			- Infinity14	<u>-14</u>	-14
Propagation Condition		AWGN					
Note 1: The DPCH le Note 2: The power o	f the OCNS cl					power from	the cell to
be equal t	o I _{or}						

TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T32.

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

R4-020454

Sophia Antipolis, France 28th January - 1st February 2002

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		CHANG	E REQ	UEST	•	
^ж 2	<mark>5.133</mark> CI	R <mark>253</mark>	жrev	1 [#]	Current versior	^{a:} 3.8.0 [#]
For <u>HELP</u> on using	g this form, s	see bottom of th	nis page or	look at th	e pop-up text ov	er the X symbols.
Proposed change affe	ects: ೫ (U)SIM N	IE/UE X	Radio Ad	ccess Network	Core Network
Title: ೫ Ir	nter-frequenc	<mark>cy hard handov</mark>	er test case	e		
Source: ೫ R	RAN WG4					
Work item code: ℜ					Date: ೫ 1	1/2/2002
De	 and of the formation of the	onds to a correct of feature), al modification of modification) ations of the above P TR 21.900. The set case, even to align the te g a time period at 2C will be trig of a time period	ion in an ear f feature) ve categorie: nditions who ent 2C may st set-up w before T1 ggered duri d before T1	s can en perforr not be tri ith the tes where the ng the tes to set the	Use <u>one</u> of the 2 (G e) R96 (R R97 (R R98 (R R99 (R REL-4 (R REL-5 (R ning the inter-fre ggered during tir st of intra-frequer e initial condition	ne period T1. It is ncy hard handover s are set to gurantee
Consequences if not approved:		affect the func			ent. may not work p	roperly.
Clauses affected:	₩ <mark>A.5.2.2.</mark>					
	₩ Other X Test s	core specificat pecifications Specifications	ions X	34.121		
Other comments:	ж					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. Below is a brief summary:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.5.2.2 Handover to inter-frequency cell

A.5.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the <u>inter-frequency</u> hard handover delay in CELL_DCH state in the dual carrier case reported as specified in section 5.2.2.1.

The test consists of three wo successive time periods, with a time duration T1, T2 and T32. The test parameters are given in tables A.5.0B and A.5.0C 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. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time at beginning of $-T_{32}$ with one active cell, cell 2. The Physical Channel reconfiguration 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 T_{32} . The RRC procedure delay is defined [16].

Table A.5.0B: General test parameters for Handover to inter-frequency cell

Para	meter	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 qualit	ty value on	BLER	0.01	
Compressed	d mode		A.22 set 1	As specified in TS 25.101 section A.5.
Initial	Active cell		Cell 1	
conditions	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Threshold ne frequency	on used	dB	-18	Absolute Ec/I0 threshold for event 2C
Reporting ra	inge	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 Trig	ger	ms	0	
Filter coefficient			0	
<u>T1</u>		S	5	
T <u>2</u> 4		S	10	
T <u>3</u> 2		S	5	

Parameter	Unit		Cell 1			Cell 2		
		T1	<u>T2</u>	T <u>3</u> 2	T1	<u>T2</u>	T <u>3</u> 2	
UTRA RF Channel Number		Channel 1			Channel 2			
CPICH_Ec/lor	dB		-10			-10		
PCCPCH_Ec/lor	dB		-12			-12		
SCH_Ec/lor	dB	-12				-12		
PICH_Ec/lor	dB		-15		-15			
DPCH_Ec/lor	dB	Note1		N/A	<u>N/A</u>	Note1		
OCNS		Note 2			-0.941	<u>-0.941</u>	Note 2	
\hat{I}_{or}/I_{oc}	dB	0 0		- Infinity <mark>1.8</mark>	<u>-1.8</u>	-1.8		
I _{oc}	dBm/3.84 MHz	-70						
CPICH_Ec/lo	dB	-13 -13		- Infinity <mark>14</mark>	<u>-14</u>	-14		
Propagation Condition					AWGN			
Note 1: The DPCH le Note 2: The power o be equal t	f the OCNS cl					power from	the cell to	

TableA.5.0C: Cell Specific parameters for Handover to inter-frequency cell

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 100 ms from the beginning of time period T32.

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

R4-020453

Sophia Antipolis, France 28th January - 1st February 2002

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ж	25.	<mark>133</mark>	CR	252		жrev	1	ж	Current ver	rsion:	5.1.0	ж
For <u>HELP</u> on us	sing tl	nis for	m, see	e bottom	of this	page o	r look	at th	e pop-up tex	kt over	r the ¥ sy	mbols.
Proposed change a	affect	s: #	(U)	SIM	ME	UE X	Rac	dio A	ccess Netwo	ork	Core No	etwork
Title: ೫	FDD	/FDD	Soft H	landove	r delay	/ test ca	se					
Source: अ	RAN	<mark>I WG</mark> 4	1									
Work item code: %	TEI								Date:	₭ <mark>1/2</mark>	2/2002	
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Reason for change. Summary of change		requi also the te A tes requi	remen tested sts in t set-u remen	t in anne and as 34.121 t p and pr t.	ex A of FSG T he tes ocedu	25.133 WG1 s t set-up re is de	It is for a line of a line	belive Ilow s to I for th	he FDD/FDD ed important the annex in be defined in he FDD/FDD case. Chang	that t 25.13 the a Soft h	he require 33 when d nnex A of nandover o	ment is efining 25.133. delay
Consequences if not approved:	ж	The iteste		ements o	n the F	-DD/FD	D Sof	t har	ndover delay	requi	rement wil	l not be
not approved.		lesie	u.									
Clauses affected:	¥,	A.5.1										
Other specs affected:	ж	<mark>Χ</mark> Τε	est spe	re specification	าร	าร ส	€ 34	.121				
Other comments:	Ħ	Corre	espond	ding R99	CR in	Tdoc R	<mark>4-020</mark>)451				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. Below is a brief summary:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.5.1 FDD/FDD Soft Handover

NOTE: This section is included for consistency with numbering with section 5; currently no test covering requirements in sections 5.1.2.1 and 5.1.2.2 exists.

A.5.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the soft handover delay in CELL DCH state specified in section 5.1.2.

The test parameters are given in Table A.x and A.y below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A 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 five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

Para	meter	Unit	Value	Comment
DCH paramete	ers		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control			On	
Target quality DTCH	value on	<u>BLER</u>	0.01	
Initial	Active cell		<u>Cell 1</u>	
conditions	<u>Neighbouring</u> <u>cell</u>		<u>Cell 2</u>	
Final condition	Active cell		Cell 2	
Reporting range	<u>ae</u>	<u>dB</u>	<u>3</u>	Applicable for event 1A and 1B
<u>Hysteresis</u>		<u>dB</u>	<u>0</u>	
<u>W</u>			<u>1</u>	Applicable for event 1A and 1B
Reporting dea threshold	<u>ctivation</u>		<u>0</u>	Applicable for event 1A
Time to Trigge	er	ms	<u>0</u>	
Filter coefficier	<u>nt</u>		<u>0</u>	
<u>T1</u>		<u>s</u>	<u>5</u>	
<u>T2</u>		<u>s</u>	3	
<u>T3</u>		<u>s</u>	<u>0.5</u>	
<u>T4</u>		<u>ms</u>	<u>60</u>	This is the requirement on active set update delay, see section 5.1.2.2, where KC=1 and OC=0.
<u>T5</u>		<u>s</u>	2	

Table A.x: General test parameters for Soft handover

Parameter	Unit			<u>Cell 1</u>			Cell 2					
		<u>T1</u>	<u>T2</u>	<u>T3</u> <u>T</u> 4	<u>T5</u>	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>T5</u>		
CPICH_Ec/lor	<u>dB</u>			<u>-10</u>				<u>-10</u>				
PCCPCH_Ec/lor	dB			<u>-12</u>				<u>-12</u>				
SCH_Ec/lor	dB			<u>-12</u>				<u>-12</u>				
PICH_Ec/lor	dB			<u>-15</u>				<u>-15</u>				
DPCH_Ec/lor	<u>dB</u>	Note1	Note1 Note1		<u>N/A</u>	N/A	<u>N/A</u>	Note3	Note1			
<u>DCNS</u>		Note2	Note2	Note2	<u>-0.941</u>	-0.941	<u>-0.941</u>	Note2	No	te2		
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>0</u>	<u>2.91</u>	<u>2.91</u>	<u>2.91</u>	<u>-Inf</u>	<u>2.91</u>	<u>2.91</u>	<u>2.91</u>			
I _{oc}	<u>dBm/</u> <u>3.84</u> <u>MHz</u>					<u>-70</u>						
CPICH_Ec/lo	<u>dB</u>	<u>-13</u>	<u>-14</u>	<u>-14</u>	<u>-14</u>	<u>-Inf</u>	<u>-14</u>	<u>-14</u>	-14			
Propagation Condition						<u>AWGN</u>						
Note 1: The DPCH	l level is co	ntrolled by	the powe	r control loop	<u>c</u>							
Note 2: The power	of the OC	NS channe	el that is ac	ded shall m	ake the total	power from	n the cell to l	be equal to				
lote 3: The DPCH	l level is co	ntrolled by	the powe	r control loor	o. The initial	power shall	be set equa	al to the DP	ČH Ec/l	or of		

Test procedure

1) The test is started at the beginning of T1.

- 2) During time period T2 an Event 1A triggered measurement report shall be sent by the UE containing the CFN-SFN observed time difference between cell 1 and cell 2.
- 3) At the beginning of T3 the downlink DPCH of cell 2 shall be activated.
- <u>4)</u> UTRAN shall send a Active Set Update command with activation time now 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 at the beginning of T4.
- 5) At the beginning of T5 the DPCH from cell 1 shall be switched off.

A.5.1.2 Test Requirements

The UE downlink BLER shall not exceed the downlink BLER target, i.e. 1%, during time period T5.

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

R4-020452

Sophia Antipolis, France 28th January - 1st February 2002

					CR-Form-v5
		CHANGE R	EQUEST		
ж	<mark>25.133</mark> CR	251 # r	ev <mark>1</mark> ^{ж Cu}	urrent version: 4	<mark>.3.0</mark> [#]
For <u>HELP</u> on u	ng this form, se	e bottom of this pag	e or look at the p	op-up text over th	е ж symbols.
Proposed change	fects:	SIM ME/UE	X Radio Acces	ss Network	Core Network
Title: %	FDD/FDD Soft	Handover delay tes	t case		
Source: अ	RAN WG4				
Work item code: %	TEI			Date: ೫ 1/2/2	002
Category: ₩	 F (correction A (corresporting B (addition of C (functional D (editorial not 	ds to a correction in a f feature), modification of featur nodification) ons of the above cate	an earlier release) e)	R96 (Releas R97 (Releas R98 (Releas	wing releases: Phase 2) e 1996) e 1997) e 1998) e 1999) e 4)
Reason for change	requirement also tested	here is no test setu nt in annex A of 25. and as TSG T WG 34.121 the test set	133. It is belived in a shall follow the	mportant that the annex in 25.133	requirement is when defining
Summary of chang	requirement Isolated Im	up and procedure is nt. <u>ppact Analysis:</u> Add he function or the re	ition of a test case		
Consequences if	# The requir tested.	ements on the FDD	/FDD Soft handov	ver delay requiren	nent will not be
not approved:	lested.				
Clauses affected:	¥ A.5.1				
Other specs affected:	X Test sp	ore specifications ecifications pecifications	¥ 34.121		
Other comments:	ж Correspon	ding R99 CR in Tdo	oc R4-020451		

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G_Specs/CRs.htm</u>. Below is a brief summary:

- 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 <u>ftp://ftp.3gpp.org/specs/</u> 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.5.1 FDD/FDD Soft Handover

NOTE: This section is included for consistency with numbering with section 5; currently no test covering requirements in sections 5.1.2.1 and 5.1.2.2 exists.

A.5.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the soft handover delay in CELL DCH state specified in section 5.1.2.

The test parameters are given in Table A.x and A.y below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1A 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 five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

Para	meter	Unit	Value	Comment
DCH paramete	ers		DL Reference Measurement Channel 12.2 kbps	As specified in TS 25.101 section A.3.1
Power Control			On	
Target quality DTCH	value on	<u>BLER</u>	0.01	
Initial	Active cell		<u>Cell 1</u>	
conditions	<u>Neighbouring</u> <u>cell</u>		<u>Cell 2</u>	
Final condition	Active cell		Cell 2	
Reporting range	<u>ae</u>	<u>dB</u>	<u>3</u>	Applicable for event 1A and 1B
<u>Hysteresis</u>		<u>dB</u>	<u>0</u>	
<u>W</u>			<u>1</u>	Applicable for event 1A and 1B
Reporting dea threshold	<u>ctivation</u>		<u>0</u>	Applicable for event 1A
Time to Trigge	er	ms	<u>0</u>	
Filter coefficier	<u>nt</u>		<u>0</u>	
<u>T1</u>		<u>s</u>	<u>5</u>	
<u>T2</u>		<u>s</u>	3	
<u>T3</u>		<u>s</u>	<u>0.5</u>	
<u>T4</u>		<u>ms</u>	<u>60</u>	This is the requirement on active set update delay, see section 5.1.2.2, where KC=1 and OC=0.
<u>T5</u>		<u>s</u>	2	

Table A.x: General test parameters for Soft handover

Parameter Parameter	Unit			<u>Cell 1</u>	Cell 2					
		<u>T1</u>	<u>T2</u>	<u>T3</u> <u>T4</u>	<u>T5</u>	<u>T1</u>	<u>T2</u>	<u>T3</u>	<u>T4</u>	<u>T5</u>
CPICH_Ec/lor	<u>dB</u>			<u>-10</u>	-10					
PCCPCH_Ec/lor	dB			<u>-12</u>				<u>-12</u>		
SCH_Ec/lor	dB			<u>-12</u>				<u>-12</u>		
PICH_Ec/lor	dB			<u>-15</u>			<u>-15</u>			
DPCH_Ec/lor	<u>dB</u>	Note1 Note1 Note1 N			<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	Note3	Note	<u>ə1</u>
<u>OCNS</u>		Note2 Note2 Note2			<u>-0.941</u>	-0.941	<u>-0.941</u>	Note2	Note2	
\hat{I}_{or}/I_{oc}	<u>dB</u>	<u>0</u>	<u>2.91</u>	<u>2.91</u>	<u>2.91</u>	<u>-Inf</u>	<u>2.91</u>	<u>2.91</u>	<u>2.9</u>	<u>1</u>
I _{oc}	<u>dBm/</u> <u>3.84</u> MHz					<u>-70</u>				
CPICH_Ec/lo	dB	<u>-13</u>	-14	-14	-14	-Inf	-14	-14	-14	1
Propagation Condition			AWGN							
Note 1: The DPCH	level is co	ntrolled by	/ the powe	r control loop						
Note 2: The power	of the OC	NS channe	el that is ad	dded shall ma	ke the total	power from	the cell to l	be equal to		
Note 3: The DPCH Cell 1 at th	level is co	ntrolled by							-01	<u>r of</u>

Table A.v: Cell specific test parameters for Soft handover

Test procedure

1) The test is started at the beginning of T1.

- 2) During time period T2 an Event 1A triggered measurement report shall be sent by the UE containing the CFN-SFN observed time difference between cell 1 and cell 2.
- 3) At the beginning of T3 the downlink DPCH of cell 2 shall be activated.
- <u>4)</u> UTRAN shall send a Active Set Update command with activation time now 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 at the beginning of T4.
- 5) At the beginning of T5 the DPCH from cell 1 shall be switched off.

A.5.1.2 Test Requirements

The UE downlink BLER shall not exceed the downlink BLER target, i.e. 1%, during time period T5.

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