TSG-RAN Meeting #13 ***RP-010531***
Beijing, China, 18 - 21, September, 2001

Title: **Agreed CRs (Rel-4) to TS 25.224**

Source: **TSG-RAN WG1**

Agenda item: **8.1.4**

No.	Spec	CR	Rev	R1 T-doc	Subject	Release	Cat	W/I Code	V_old	V_new
1	25.224	060	-	R1-01-0786	Corrections for TS 25.224	REL-4	F	LCRTDD-Phys	4.1.0	4.2.0
2	25.224	062	1	R1-01-0895	Corrections of Annex E in 25.224	REL-4	F	LCRTDD-Phys	4.1.0	4.2.0
3	25.224	061	-	R1-01-0813	Corrections and Clarifications for calculation of idle period position in subclause 4.10.3 in 25.224	REL-4	F	LCS1-UEpos	4.1.0	4.2.0

3GPP TSG RAN Meeting #13
Beijing, China, 18th – 21st , September, 2001

R1-01-0786

CR-Form-v3

CHANGE REQUEST

⌘	**25.224**	**CR**	**060**	⌘ rev	**-**	⌘ Current version:	**4.1.0**	⌘

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

Title:	⌘	Corrections for TS 25.224		
Source:	⌘	TSG RAN WG1		
Work item code:	⌘	LCRTDD-Phys	***Date:*** ⌘	22.08.2001
Category:	⌘	**F**	***Release:*** ⌘	REL-4
		Use one of the following categories: ***F*** *(essential correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(Addition of feature),* ***C*** *(Functional modification of feature)* ***D*** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change:	⌘	Some inconsistencies between WG1 and WG2 are removed
Summary of change:	⌘	Some small corrections
Consequences if not approved:	⌘	Remaining inconsistencies between WG1 and WG2 specs

Clauses affected:	⌘	5.1.1.4, 5.2.4, 5.6.1, 5.6.2, 5.6.4	
Other specs affected:	⌘	[ ] Other core specifications [ ] Test specifications [ ] O&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.

5.1.1.4 DPCH and PUSCH

The closed loop power control makes use of layer 1 symbol in the DPCH. The power control step can take the values 1,2,3 dB within the overall dynamic range 80dB. The initial transmission power of the uplink Dedicated Physical Channel is signalled by ~~the UTRAN~~higher layers.

Closed-loop TPC is based on SIR and the TPC processing procedures are described in this section.

The node B should estimate signal-to-interference ratio SIR_{est} of the received uplink DPCH. The node B should then generate TPC commands and transmit the commands according to the following rule: if $SIR_{est} > SIR_{target}$ then the TPC command to transmit is "down", while if $SIR_{est} < SIR_{target}$ then the TPC command to transmit is "up".

At the UE, soft decision on the TPC bits is performed, and when it is judged as ‘down’, the mobile transmit power shall be reduced by one power control step, whereas if it is judged as ‘up’, the mobile transmit power shall be raised by one power control step. A higher layer outer loop adjusts the target SIR. This scheme allows quality based power control.

The closed loop power control procedure for UL DPCH is not affected by the use of TSTD.

An example of UL power control procedure for DPCH is given in Annex A.3.

5.2.4 DPCH and PUSCH

The closed loop uplink synchronisation control uses layer 1 symbols (SS commands) for DPCH and PUSCH. After establishment of the uplink synchronisation, NodeB and UE start to use the closed loop UL synchronisation control procedure. This procedure is continuous during connected mode.

The Node B will continuously measure the timing of the UE and send the necessary synchronisation shift commands in each sub-frame. On receipt of these synchronisation shift commands the UE shall adjust the timing of its transmissions accordingly, in steps of ±k/8 chips or do nothing, each M sub-frames.

The default value of M (1-8) and k (1-8) is ~~broadcast in the BCH~~is configured by higher layers. ~~The value of M and k can also be adjusted during call setup or readjusted during the call.~~

During a 1,28 Mcps TDD to 1,28 Mcps TDD hand-over the UE shall transmit in the new cell with timing advance TA adjusted by the relative timing difference Δt between the new and the old cell if indicated by higher layers:

$TA_{new} = TA_{old} + 2\Delta t$.

5.6 Random Access Procedure

The physical random access procedure described below is invoked whenever a higher layer requests transmission of a message on the RACH. The physical random access procedure is controlled by primitives from RRC and MAC.

5.6.1 Definitions

$FPACH_i$: FPACH number i

L_i : Length of RACH ~~message~~ transport blocks associated to $FPACH_i$ in sub-frames

N_{RACHi} : The number of PRACHs associated to the i^{th} FPACH

n_{RACHi} : The number of a PRACH associated to the i^{th} FPACH ranging from 0 to N_{RACHi}-1

M : Maximum number transmissions in the UpPCH

WT : Maximum number of sub-frames to wait for the network acknowledgement to a sent signature

SFN' : The sub-frame number counting the sub-frames. At the beginning of the frame with the system frame number SFN=0 the sub-frame number is set to zero.

5.6.2 Preparation of random access

When the UE is in Idle mode, it will keep the downlink synchronisation and read the ~~cell broadcast~~system information. From the used SYNC-DL code in DwPCH, the UE will get the code set of 8 SYNC-UL codes (signatures) assigned to UpPCH for random access.

The description (codes, spreading factor, midambles, time slots) of the P-RACH, FPACH, and S-CCPCH (carrying the FACH ~~logical~~ transport channel) channel is broadcast on the BCH.

Thus, when sending a SYNC-UL sequence, the UE knows which FPACH resources, P-RACH resources and CCPCH resources will be used for the access.

~~The UE needs to decode the BCH information regarding the random access prior to transmission on the UpPCH.~~

The physical random access procedure described in this sub-clause is initiated upon request of a PHY-Data-REQ primitive from the MAC sub-layer (see [18] and [19]).

Before the physical random-access procedure can be initiated, Layer 1 shall receive the following information by a CPHY-TrCH-Config-REQ from the RRC layer:

- The association between which signatures and which FPACHs; which FPACHs and which PRACHs; which PRACHs and which CCPCHs; including the parameter values for each listed physical channel.
- The length L_i of a RACH message associated to $FPACH_i$ can be configured to be either 1 or 2 or 4 sub-frames corresponding to a length in time of either 5 ms or 10 ms or 20 ms.

NOTE 1: N_{RACHi} PRACHs can be associated with to $FPACH_i$. The maximum allowed

N_{RACHi} is L_i.

- The available UpPCH sub-channels for each Access Service Class (ASC);

NOTE 2: An UpPCH sub-channel is defined by a (sub-set of) signature(s) and sub-frame numbers.

- The set of Transport Format parameters for the PRACH message;
- The "M" maximum number transmissions in the UpPCH;
- The "WT" maximum number of sub-frames to wait for the network acknowledgement to a sent signature; (1..4) the maximum value supported by Layer 1 is 4 sub-frames.
- The initial signature power "Signature_Initial_Power";

NOTE 2: The above parameters may be updated from higher layers before each physical random access procedure is initiated.

At each initiation of the physical random access procedure, Layer 1 shall receive the following information from the higher layers (MAC):

- The Transport Format to be used for the specific PRACH message;
- The ASC for the specific Random Access procedure with the timing and power level indication;
- The data to be transmitted (Transport Block Set).

5.6.4 Random access collision

When a collision is very likely or in bad propagation environment, the Node B does not transmit the FPACH or cannot receive the SYNC-UL. In this case, the UE will not get any response from the Node B. Thus the UE will have to adjust its Tx time and Tx power level based on a new measurement and send a SYNC-UL again after a random delay.

Note that at each (re-)transmission, the SYNC-UL sequence will be randomly selected again by the UE.

Note: Due to the two-step approach a collision most likely happens on the UpPCH. The resources allocated to PRACH RUs are virtually collision free. This two-step approach will guarantee that the RACH RUs resources can be handled with conventional traffic on the same UL time slots.

3GPP TSG RAN Meeting #13 ***R1-01-0813***

CR-Form-v4

CHANGE REQUEST

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

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

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

Title: ⌘	Corrections and Clarifications for calculation of idle period position in subclause 4.10.3 in 25.224
Source: ⌘	TSG RAN WG1
Work item code: ⌘	LCS1-UEpos
Date: ⌘	Aug.20th, 2001
Category: ⌘	**F**
Release: ⌘	*REL-4*

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘	There is inconsistency between the text and the example figure Figure7 in calculation of idle period position in subclause 4.10.3.
Summary of change: ⌘	Corrections and clarifications are made in subclause 4.10.3.
Consequences if not approved: ⌘	Inconsistency will cause confusion.

Clauses affected: ⌘	4.10.3
Other specs affected: ⌘	[ ] Other core specifications ⌘ [ ] Test specifications [ ] O&M Specifications
Other comments: ⌘	

Beijing, China, 18th – 21st , September, 2001

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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.

4.10.3 Calculation of idle period position

In burst mode, ~~the first~~ burst #0 starts in the radio frame with SFN = 256×Burst_Start. ~~The n^{th} b~~Burst #n starts in the radio frame with SFN = 256×Burst_Start + n×256×Burst_Freq (n = 0,1,2, …). The sequence of bursts according to this formula continues up to and including the radio frame with SFN = 4095. At the start of the radio frame with SFN = 0, the burst sequence is terminated (no idle periods are generated) and at SFN = 256×Burst_Start the burst sequence is restarted with ~~the first~~ burst #0 followed by ~~the second~~ burst #1 etc., as described above.

Continuous mode is equivalent to burst mode, with only one burst spanning the whole SFN cycle of 4096 radio frames, this burst starts in the radio frame with SFN = 0. In case of continuous mode the parameter IP_Start defines the first frame with idle periods.

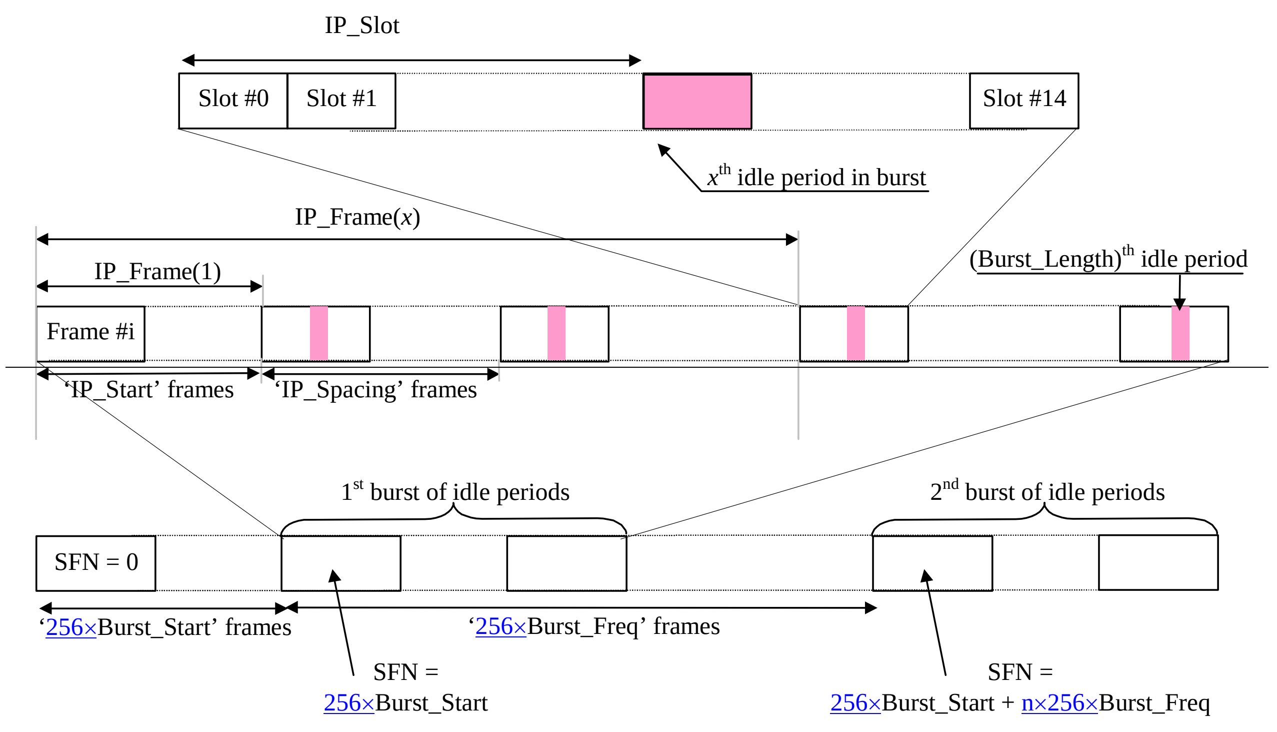
The position of an idle period is defined by two values: IP_Frame(x) and IP_Slot. IP_Frame(x) defines the x^{th} frame within a burst that contains the idle period. IP_Slot defines the slot in that frame during which no transmission takes place except for the SCH.

The actual frame with idle periods within a burst is calculated as follows:

IP_Frame(x) = IP_Start + (x-1) × IP_Spacing with x = 1, 2, 3, ...

If the parameter IP_PCCPCH is set to 1, then the P-CCPCH will not be transmitted in the frame IP_Frame(x) +1 within a burst.

Figure 7 below illustrates the idle periods for the burst mode case, if the IP_P-CCPCH parameter is set to 0.



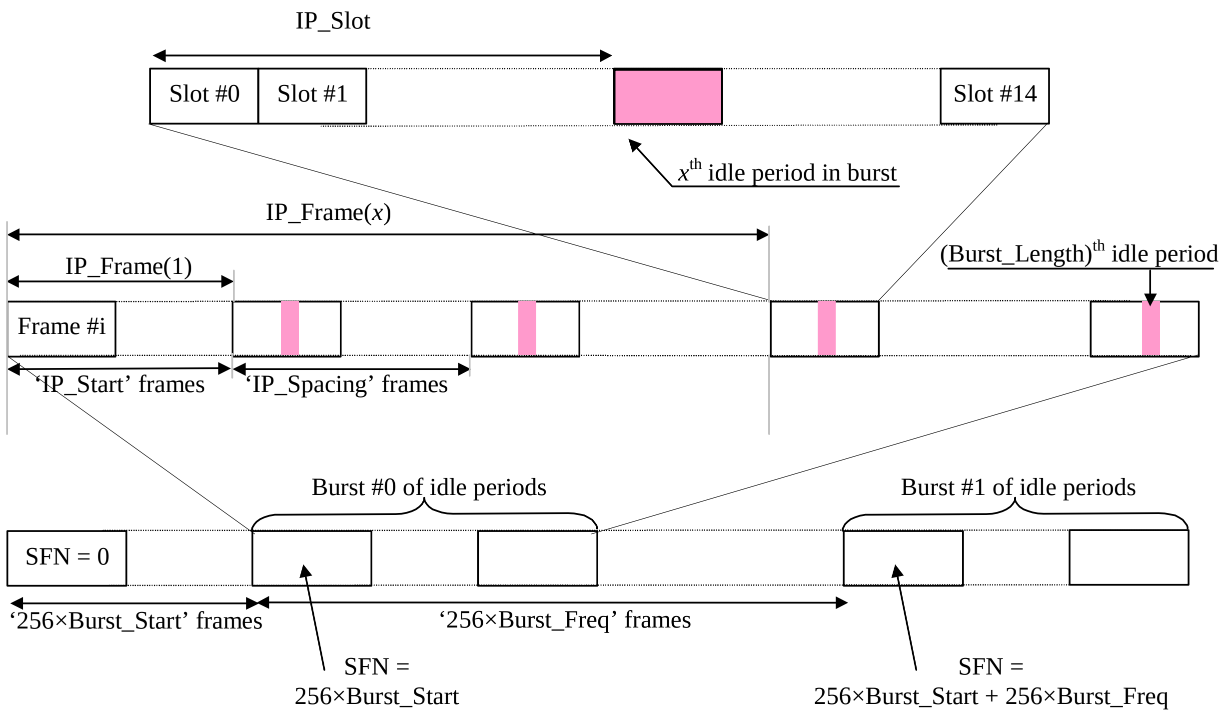


Figure 7: Idle Period placement in the case of burst mode operation with IP_P-CCPCH parameter set to 0

3GPP TSG RAN Meeting #13 ***R1-01-0895***

CR-Form-v4

CHANGE REQUEST

⌘	**25.224**	**CR**	**062**	⌘ rev	**1**	⌘ Current version:	**4.1.0** ⌘

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

Title: ⌘	Corrections of Annex E in 25.224		
Source: ⌘	TSG RAN WG1		
Work item code: ⌘	LCRTDD-Phys	***Date:*** ⌘	Aug. 20th, 2001
Category: ⌘	**F**	***Release:*** ⌘	REL-4
	Use one of the following categories: ***F*** *(correction)* ***A*** *(corresponds to a correction in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.		*Use one of the following releases:* 2 *(GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change: ⌘	There are some inconsistencies in the descriptions below Table E-1 to E-4 in Annex E.
Summary of change: ⌘	The inconsistencies in the descriptions below Table E-1 to E-4 in Annex E are corrected.
Consequences if not approved: ⌘	The inconsistency will cause confusion.

Clauses affected: ⌘	Annex E	
Other specs affected: ⌘	[ ] Other core specifications [ ] Test specifications [ ] O&M Specifications	⌘
Other comments: ⌘		

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Annex E (informative): Examples random access procedure for 1,28 Mcps TDD

Table E-1: ~~Single burst~~One PRACH, TTI=5ms, WT=4, L =1, SF4 PRACH

Sub-frame Number	0	1	2	3	4	5	6	7	8	9	10
Users sending on UpPCH	1 2	3 4	5 6	7 8							
Acknowledged user on FPACH		1	2	3	4	5	6	7			
User sending on PRACH 0				1	2	3	4	5	6	7	

User 8 is not granted because more than 5 sub-frames would have passed since the UpPCH.

Table E-2: Two ~~burst~~ PRACHs, TTI=10ms, WT=4, L =2, SF8 PRACH

Sub-frame Number	0	1	2	3	4	5	6	7	8	9	10	11
Users sending on UpPCH	1 2	3 4	5 6	7 8								
Acknowledged user on FPACH		1	2	3	4	5	6	7				
User sending on PRACH 0					2	2	4	4	6	6		
User sending on PRACH 1					1	1	3	3	5	5	7	7

User 8 is not granted because more than 5 sub-frames would have passed since the UpPCH.

Table E-3: four ~~burst~~ PRACHs, TTI=20ms, WT=4, L =4, SF16 PRACH

Sub-frame Number	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Users sending on UpPCH	1 2	3 4	5 6	7 8										
Acknowledged user on FPACH		1	2	3	4	5	6	7						
User sending on PRACH 0							4	4	4	4				
User sending on PRACH 1					1	1	1	1	5	5	5	5		
User sending on PRACH 2					2	2	2	2	6	6	6	6		
User sending on PRACH 3							3	3	3	3	7	7	7	7

User 8 is not granted because more than 5 sub-frames would have passed since the UpPCH.

Table E-4: ~~four~~Two ~~burst~~ PRACHs, TTI=20ms, WT=4, L =4, SF16 PRACH

Sub-frame Number	0	1	2	3	4	5	6	7	8	9	10	11	12
Users sending on UpPCH	1 2	3 4	5 6	7 8									
Acknowledged user on FPACH	X	1			2	3			X	X			
User sending on PRACH 0							2	2	2	2			
User sending on PRACH 1					1	1	1	1	3	3	3	3	

The FPACH is used ONLY in sub-frames 0, 1, 4, 5, 8, 9,… because they correspond to the used RACH resources.

The FPACH in sub-frame 0 is not used because no UpPCH is preceding.

The FPACH in sub-frames 8,9 is not used because no UpPCH is preceding in the last 4 sub-frames.

In contrast to the previous examples users 4,5,6,7 are not granted because they would no lead to a RACH anyway. In this example their grand would come too late.

User 8 is not granted because more than 4 sub-frames would have passed since the UpPCH.