TSG-RAN Meeting #13 *RP-010541*
Beijing, China, 18 - 21 September 2001

Title: **Agreed CRs (Release ’99 and Rel-4 category A) to TS 25.321**

Source: **TSG-RAN WG2**

Agenda item: **8.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-012021	agreed	25.321	084	1	R99	Setting of UE Id in MAC	F	3.8.0	3.9.0
R2-012022	agreed	25.321	085		Rel-4	Setting of UE Id in MAC	A	4.1.0	4.2.0
R2-011858	agreed	25.321	086		R99	MAC ASC selection operation when access class is used to determine ASC	F	3.8.0	3.9.0
R2-012023	agreed	25.321	087		Rel-4	MAC ASC selection operation when access class is used to determine ASC	A	4.1.0	4.2.0
R2-012024	agreed	25.321	088	1	R99	Addition of neighbour cell BCH to MAC-b model for the UE	F	3.8.0	3.9.0
R2-012025	agreed	25.321	089		Rel-4	Addition of neighbour cell BCH to MAC-b model for the UE	A	4.1.0	4.2.0
R2-012101	agreed	25.321	090	1	R99	Cautionary Note for Interfrequency Measurements in Cell-FACH	F	3.8.0	3.9.0
R2-012135	agreed	25.321	091		Rel-4	Cautionary Note for Interfrequency Measurements in Cell-FACH	A	4.1.0	4.2.0
R2-012155	agreed	25.321	092	2	R99	Clarification on TFC selection	F	3.8.0	3.9.0
R2-012191	agreed	25.321	093	1	Rel-4	Clarification on TFC selection	A	4.1.0	4.2.0

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27 - 31 August 2001

R2-012021

CR-Form-v4

CHANGE REQUEST

⌘ **25.321 CR 084** ⌘ ev **r1** ⌘ Current version: **3.8.0** ⌘

*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:	⌘	Setting of UE Id in MAC
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	26.07.2001
Category:	⌘	**F**
Release:	⌘	R99

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

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

Reason for change: ⌘ There is no clear definition which UE identification is supposed to be used in the MAC header. E.g. 25.401 suggests that the C-RNTI is only used for special messages on common messages (i.e. on DCCH in downlink).

Summary of change: ⌘ It is clarified that the UE always sets the C-RNTI as identification on common channels.

Consequences if not approved: ⌘ Different usage of UE identification in uplink. Undesirable behaviour of UEs possible which impacts the sizes of RLC PDUs that are used by the UE.

Impact analysis:

Feature: Setting of UE id in MAC for common channels.

UEs not implementing this change could possibly use the U-RNTI. This impacts the the sizes that are available for RLC PDUs. In case of AM for example this could lead to unsynchronised configuration of RLC in UE and UTRAN.

- « Correction to a function where the specification was :
  - ambiguous or not sufficiently explicit.

Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise. »

Clauses affected: ⌘ 8.2.2, 9.2.1

Other specs affected: ⌘ ☐ Other core specifications ⌘ 25.321 v4.1.0, CR 085
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘

How to create CRs using this form:

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

8.2.2 Parameters

a) Data:

- it contains the RLC layer messages (RLC-PDU) to be transmitted, or the RLC layer messages that have been received by the MAC sub-layer.

b) Number of transmitted transport blocks (No_TB) :

- indicates the number of transport blocks transmitted by the peer entity within the transmission time interval, based on the TFI value.

c) Buffer Occupancy (BO):

- the parameter Buffer Occupancy (BO) indicates for each logical channel the amount of data in number of bytes that is available for transmission and retransmission in RLC layer. When MAC is connected to an AM RLC entity, control PDUs to be transmitted and RLC PDUs outside the RLC Tx window shall also be included in the BO. RLC PDUs that have been transmitted but not negatively acknowledged by the peer entity shall not be included in the BO.

d) RX Timing Deviation (TD), TDD only:

- it contains the RX Timing Deviation as measured by the physical layer for the physical resources carrying the data of the Message Unit. This parameter is optional and only for Indication. It is needed for the transfer of the RX Timing Deviation measurement of RACH transmissions carrying CCCH data to RRC.

e) Number of PDU (No_PDU):

- specifies the number of PDUs that the RLC is permitted to transfer to MAC within a transmission time interval.

f) PDU Size (PDU_Size):

- specifies the size of PDU that can be transferred to MAC within a transmission time interval.

g) UE-ID Type Indicator:

- indicates the UE-ID type to be included ~~o~~in MAC for a DCCH when it is mapped onto a common transport channel (i.e. FACH, RACH, DSCH in FDD or CPCH). On the UE side UE-ID Type Indicator shall always be set to C-RNTI.

h) TX status:

- when set to value "transmission unsuccessful" this parameter indicates to RLC that transmission of an RLC PDU failed in the previous Transmission Time Interval, when set to value "transmission successful" this parameter indicates to RLC that the requested RLC PDU(s) has been submitted for transmission by the physical layer.

i) RLC Entity Info

- indicates to MAC the configuration parameters that are critical to TFC selection depending on its mode and the amount of data that could be transmitted at the next TTI. This primitive is meant to insure that MAC can perform TFC selection (see subclause 11.4).

j) Error indication

- When a MAC SDU is delivered to upper layer, an error indication is given for the SDU to upper layer if an error indication for the SDU has been received from lower layer.

9.2.1 MAC Data PDU: Parameters of the MAC header

The following fields are defined for the MAC header:

- Target Channel Type Field
  The TCTF field is a flag that provides identification of the logical channel class on FACH and RACH transport channels, i.e. whether it carries BCCH, CCCH, CTCH, SHCCH or dedicated logical channel information. The size and coding of TCTF for FDD and TDD are shown in tables 9.2.1.1, 9.2.1.2, 9.2.1.3, 9.2.1.4 and 9.2.1.5. Note that the size of the TCTF field of FACH for FDD is either 2 or 8 bits depending of the value of the 2 most significant bits and for TDD is either 3 or 5 bits depending on the value of the 3 most significant bits. The TCTF of the RACH for TDD is either 2 or 4 bits depending on the value of the 2 most significant bits.

Table 9.2.1.1: Coding of the Target Channel Type Field on FACH for TDD

TCTF	Designation
000	BCCH
001	CCCH
010	CTCH
01100	DCCH or DTCH over FACH
01101-01111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
100	SHCCH
101-111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Table 9.2.1.2: Coding of the Target Channel Type Field on FACH for FDD

TCTF	Designation
00	BCCH
01000000	CCCH
01000001-01111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10000000	CTCH
10000001-10111111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	DCCH or DTCH over FACH

Table 9.2.1.3: Coding of the Target Channel Type Field on USCH or DSCH (TDD only)

TCTF	Designation
0	SHCCH
1	DCCH or DTCH over USCH or DSCH

Table 9.2.1.4: Coding of the Target Channel Type Field on RACH for FDD

TCTF	Designation
00	CCCH
01	DCCH or DTCH over RACH
10-11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Table 9.2.1.5: Coding of the Target Channel Type Field on RACH for TDD

TCTF	Designation
00	CCCH
0100	DCCH or DTCH Over RACH
0101-0111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10	SHCCH
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

- C/T field
  The C/T field provides identification of the logical channel instance when multiple logical channels are carried on the same transport channel. The C/T field is used also to provide identification of the logical channel type on dedicated transport channels and on FACH and RACH when used for user data transmission. The size of the C/T field is fixed to 4 bits for both common transport channels and dedicated transport channels. Table 9.2.1.5a shows the 4-bit C/T field.

Table 9.2.1.5a: Structure of the C/T field

C/T field	Designation
0000	Logical channel 1
0001	Logical channel 2
...	...
1110	Logical channel 15
1111	Reserved (PDUs with this coding will be discarded by this version of the protocol)

- UE-Id
  The UE-Id field provides an identifier of the UE on common transport channels. The following types of UE-Id used on MAC are defined:

  - UTRAN Radio Network Temporary Identity (U-RNTI) may be used in the MAC header of DCCH when mapped onto common transport channels in downlink direction; the U-RNTI is never used in uplink direction

  - Cell Radio Network Temporary Identity (C-RNTI) is used on DTCH~~, DSCH in FDD mode~~ and DCCH in uplink, and may be used on DCCH in downlink and is used on DTCH in downlink~~,~~ when mapped onto common transport channels

  - the UE id to be used by MAC is configured through the MAC control SAP. The lengths of the UE-id field of the MAC header are given in table 9.2.1.6.

Table 9.2.1.6: Lengths of UE Id field

UE Id type	Length of UE Id field
U-RNTI	32 bits
C-RNTI	16 bits

- UE-Id Type
  The UE-Id Type field is needed to ensure correct decoding of the UE-Id field in MAC Headers.

Table 9.2.1.7: UE-Id Type field definition

UE-Id Type field 2 bits	UE-Id Type
00	U-RNTI
01	C-RNTI
10	Reserved (PDUs with this coding will be discarded by this version of the protocol)
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

3GPP TSG-RAN WG2 Meeting #23
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R2-012022

CR-Form-v4

CHANGE REQUEST

⌘ **25.321 CR 085** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

Title:	⌘	Setting of UE Id in MAC
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	26.07.2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
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Reason for change: ⌘ There is no clear definition which UE identification is supposed to be used in the MAC header. E.g. 25.401 suggests that the C-RNTI is only used for special messages on common messages (i.e. on DCCH in downlink).

Summary of change: ⌘ It is clarified that the UE always sets the C-RNTI as identification on common channels.

Consequences if not approved: ⌘ Different usage of UE identification in uplink. Undesirable behaviour of UEs possible which impacts the sizes of RLC PDUs that are used by the UE.

Impact analysis:

Feature: Setting of UE id in MAC for common channels.

UEs not implementing this change could possibly use the U-RNTI. This impacts the the sizes that are available for RLC PDUs. In case of AM for example this could lead to unsynchronised configuration of RLC in UE and UTRAN.

- « Correction to a function where the specification was :
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Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise. »

Clauses affected: ⌘ 8.2.2, 9.2.1

Other specs affected: ⌘
☐ Other core specifications ⌘ 25.321 v3.8.0, CR 084r1
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘

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8.2.2 Parameters

a) Data:

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b) Number of transmitted transport blocks (No_TB) :

- indicates the number of transport blocks transmitted by the peer entity within the transmission time interval, based on the TFI value.

c) Buffer Occupancy (BO):

- the parameter Buffer Occupancy (BO) indicates for each logical channel the amount of data in number of bytes that is available for transmission and retransmission in RLC layer. When MAC is connected to an AM RLC entity, control PDUs to be transmitted and RLC PDUs outside the RLC Tx window shall also be included in the BO. RLC PDUs that have been transmitted but not negatively acknowledged by the peer entity shall not be included in the BO.

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h) TX status:

- when set to value "transmission unsuccessful" this parameter indicates to RLC that transmission of an RLC PDU failed in the previous Transmission Time Interval, when set to value "transmission successful" this parameter indicates to RLC that the requested RLC PDU(s) has been submitted for transmission by the physical layer.

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- indicates to MAC the configuration parameters that are critical to TFC selection depending on its mode and the amount of data that could be transmitted at the next TTI. This primitive is meant to insure that MAC can perform TFC selection (see subclause 11.4).

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Table 9.2.1.2: Coding of the Target Channel Type Field on FACH for FDD

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10000000	CTCH
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11	DCCH or DTCH over FACH

Table 9.2.1.3: Coding of the Target Channel Type Field on USCH or DSCH (TDD only)

TCTF	Designation
0	SHCCH
1	DCCH or DTCH over USCH or DSCH

Table 9.2.1.4: Coding of the Target Channel Type Field on RACH for FDD

TCTF	Designation
00	CCCH
01	DCCH or DTCH over RACH
10-11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

Table 9.2.1.5: Coding of the Target Channel Type Field on RACH for TDD

TCTF	Designation
00	CCCH
0100	DCCH or DTCH Over RACH
0101-0111	Reserved (PDUs with this coding will be discarded by this version of the protocol)
10	SHCCH
11	Reserved (PDUs with this coding will be discarded by this version of the protocol)

- C/T field
  The C/T field provides identification of the logical channel instance when multiple logical channels are carried on the same transport channel. The C/T field is used also to provide identification of the logical channel type on dedicated transport channels and on FACH and RACH when used for user data transmission. The size of the C/T field is fixed to 4 bits for both common transport channels and dedicated transport channels. Table 9.2.1.5a shows the 4-bit C/T field.

Table 9.2.1.5a: Structure of the C/T field

C/T field	Designation
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  - the UE id to be used by MAC is configured through the MAC control SAP. The lengths of the UE-id field of the MAC header are given in table 9.2.1.6.

Table 9.2.1.6: Lengths of UE Id field

UE Id type	Length of UE Id field
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- UE-Id Type
  The UE-Id Type field is needed to ensure correct decoding of the UE-Id field in MAC Headers.

Table 9.2.1.7: UE-Id Type field definition

UE-Id Type field 2 bits	UE-Id Type
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3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27–31 August 2001

Tdoc R2-011858

CR-Form-v4

CHANGE REQUEST

⌘ **25.321** **CR** **086** ⌘ ev **-** ⌘ Current version: **3.8.0** ⌘

*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:	⌘	MAC ASC selection operation when access class is used to determine ASC
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	27 August 2001
Category:	⌘	**F**
Release:	⌘	R99

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

Reason for change: ⌘ When an access attempt is made, i.e. UE sends an RRC CONNECTION REQUEST message; the RRC selects ASC based on access classes. The CMAC-CONFIG-REQ primitive does not allow ASC to be signalled at present to the MAC. Also there is no procedure defined for the MAC when the RRC selects the ASC.

Summary of change: ⌘

- In section defining MAC-c/sh functionality a statement clarifying ASC selection in the MAC is added.
- ASC is added to the parameter list for CMAC-CONFIG-REQ
- A description of MAC operation when the RRC has selected ASC is provided in 11.2.1

Isolated Impact Analysis:

- Correction to a function where the specification was :
  - ambiguous or not sufficiently explicit.
  - Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

Affected function: ASC selection in MAC when RRC selects ASC based on Access Class

It is proposed that the ASC selected by RRC is passed to MAC by CMAC-CONFIG-REQ.

The CR intends to clarify behaviour that has very likely been assumed in most implementations.

Consequences if not approved: ⌘ Incorrect implementations are possible as MAC procedures are not specified when RRC selects ASC.

Clauses affected:	⌘	4.2.3.1, 8.3.2, 11.2.1			
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.321 v4.1.0, CR 087	
Other comments:	⌘				

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4.2.3.1 MAC-c/sh entity – UE Side

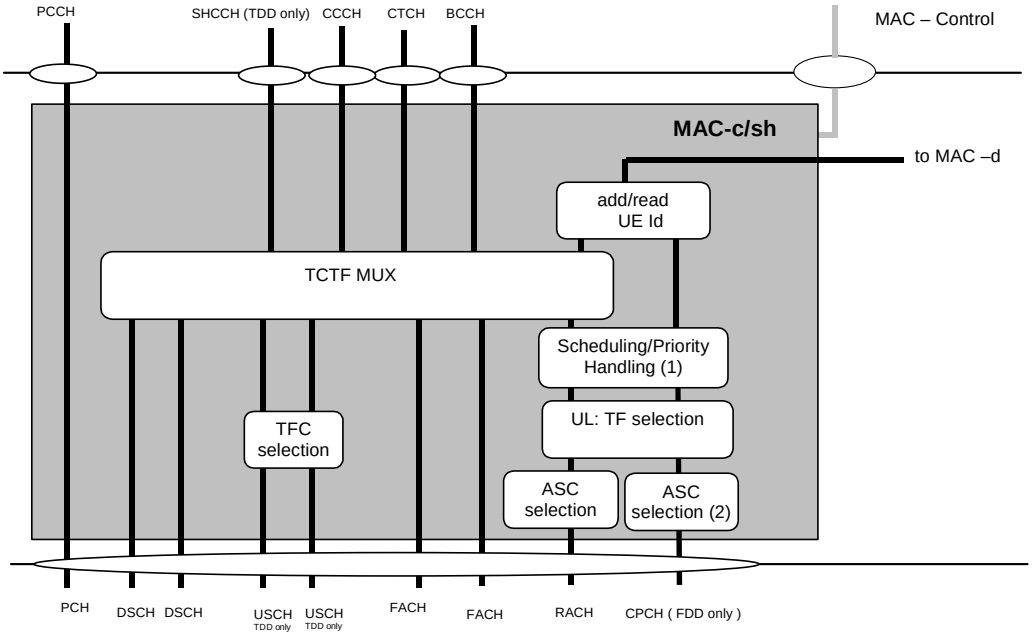
Figure 4.2.3.1.1 shows the UE side MAC-c/sh entity.

The following functionality is covered:

- TCTF MUX:
  - this function represents the handling (insertion for uplink channels and detection and deletion for downlink channels) of the TCTF field in the MAC header, and the respective mapping between logical and transport channels.
    The TCTF field indicates the common logical channel type, or if a dedicated logical channel is used;
- add/read UE Id:
  - the UE Id is added for CPCH and RACH transmissions
  - the UE Id, when present, identifies data to this UE.
- UL: TF selection:
  - in the uplink, the possibility of transport format selection exists.
    In case of CPCH transmission, a TF is selected based on TF availability determined from status information on the CSICH;
- ASC selection:
  - For RACH, MAC indicates the ASC associated with the PDU to the physical layer. For CPCH, MAC may indicate the ASC associated with the PDU to the Physical Layer. This is to ensure that RACH and CPCH messages associated with a given Access Service Class (ASC) are sent on the appropriate signature(s) and time slot(s). MAC also applies the appropriate back-off parameter(s) associated with the given ASC. When sending an RRC CONNECTION REQUEST message, RRC will determine the ASC in all other cases MAC selects the ASC;
- scheduling /priority handling
  - this functionality is used to transmit the information received from MAC-d on RACH and CPCH based on logical channel priorities. This function is related to TF selection.
- TFC selection
  - transport format and transport format combination selection according to the transport format combination set (or transport format combination subset) configured by RRC is performed,

The RLC provides RLC-PDUs to the MAC, which fit into the available transport blocks on the transport channels.

There is one MAC-c/sh entity in each UE.



Note 1: Scheduling /Priority handling is applicable for CPCH.
Note 2: In case of CPCH, ASC selection may be applicable for AP preamble.

Figure 4.2.3.1.1: UE side MAC architecture / MAC-c/sh details

8.3.2 Parameters

See [7] for a detailed description of the UE, RB and TrCH information elements.

a) UE information elements
   S-RNTI
   SRNC identity
   C-RNTI
   Activation time

b) RB information elements
   RB multiplexing info (Transport channel identity, Logical channel identity, MAC logical channel priority)

c) TrCH information elements
   Transport Format Combination Set

d) Measurement information elements
   Mode (Periodical, Event Trigger)
   Reporting Quantity identifiers
   Time interval to take an average or a variance (applicable when Average or Variance is Reporting Quantity)
   Reporting Interval (applicable when mode is Periodical)
   Upper and Lower Thresholds, TH_U and TH_L (applicable when mode is Event Trigger)

e) Measurement result
   Mode
   Reporting Quantity
   Event ID, 4a or 4b (applicable when mode is Event Trigger)

f) Status info
   when set to value ""transmission unsuccessful"" this parameter indicates to RRC that transmission of a TM RLC PDU failed (due to e.g. Maximum number of preamble ramping cycles reached for RACH in FDD), when set to value "transmission successful" this parameter indicates to RRC that the requested TM RLC PDU(s) has been submitted for transmission by the physical layer..

g) RACH transmission control elements
   Set of ASC parameters (identifier for PRACH partitions, persistence values)
   Maximum number of preamble ramping cycles M_{max}
   Minimum and maximum number of time units between two preamble ramping cycles, N_{BO1min} and N_{BO1max}
   ASC for RRC CONNECTION REQUEST message

h) Ciphering elements
   Ciphering mode
   Ciphering key
   Ciphering sequence number

i) CPCH transmission control elements
   CPCH persistency value, P for each Transport Format
   Maximum number of preamble ramping cycles $N_{\_access\_fails}$
   NF_max (Maximum number of frames for CPCH transmission for each Transport Format)
   N_EOT (Number of EOT for release of CPCH transmission)
   Backoff control timer parameters
   Transport Format Set
   Initial Priority Delays
   Channel Assignment Active indication

11.2.1 Access Service Class selection

The physical RACH resources (i.e. access slots and preamble signatures for FDD, timeslot and channelisation code for TDD) may be divided between different Access Service Classes in order to provide different priorities of RACH usage. It is possible for more than one ASC or for all ASCs to be assigned to the same access slot/signature space.

Access Service Classes are numbered in the range $0 \leq i \leq \text{NumASC} \leq 7$ (i.e. the maximum number of ASCs is NumASC+1 = 8). An ASC is defined by an identifier i that defines a certain partition of the PRACH resources and an associated persistence value P_i. A set of ASC parameters consists of NumASC+1 such parameters (i, P_i), i = 0, …, NumASC. The PRACH partitions and the persistence values P_i are derived by the RRC protocol from system information (see [7]). The set of ASC parameters is provided to MAC with the CMAC-Config-REQ primitive. The ASC enumeration is such that it corresponds to the order of priority (ASC 0 = highest priority, ASC 7 = lowest priority). ASC 0 shall be used in case of Emergency Call or for reasons with equivalent priority.

At radio bearer setup/reconfiguration each involved logical channel is assigned a MAC Logical channel Priority (MLP) in the range 1,…,8. When the MAC sublayer is configured for RACH transmission in the UE, these MLP levels shall be employed for ASC selection on MAC.

The following ASC selection scheme shall be applied, where NumASC is the highest available ASC number and MinMLP the highest logical channel priority assigned to one logical channel:

- in case all TBs in the TB set have the same MLP, select ASC = min(NumASC, MLP);
- in case TBs in a TB set have different priority, determine the highest priority level MinMLP and select ASC = min(NumASC, MinMLP).

When an RRC CONNECTION REQUEST message is sent RRC determines ASC by means of the access class [7]. The ASC to be used in these circumstances is signalled to MAC by means of the CMAC-CONFIG-REQ message.

If MAC has knowledge of a U-RNTI then the ASC is determined in the MAC entity. If no U-RNTI has been indicated to MAC then MAC will use the ASC indicated in the CMAC-CONFIG-REQ primitive.

3GPP TSG-RAN WG2 Meeting #23
Helsinki, Finland, 27–31 August 2001

Tdoc R2-012023

CR-Form-v4

CHANGE REQUEST

⌘ **25.321** **CR** **087** ⌘ ev **-** ⌘ 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:	⌘	MAC ASC selection operation when access class is used to determine ASC
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	27 August 2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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: ⌘ When an access attempt is made, i.e. UE sends an RRC CONNECTION REQUEST message; the RRC selects ASC based on access classes. The CMAC-CONFIG-REQ primitive does not allow ASC to be signalled at present to the MAC. Also there is no procedure defined for the MAC when the RRC selects the ASC.

Summary of change: ⌘

- In section defining MAC-c/sh functionality a statement clarifying ASC selection in the MAC is added.
- ASC is added to the parameter list for CMAC-CONFIG-REQ
- A description of MAC operation when the RRC has selected ASC is provided in 11.2.1

Isolated Impact Analysis:

- Correction to a function where the specification was :
  - ambiguous or not sufficiently explicit.
  - Would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.

Affected function: ASC selection in MAC when RRC selects ASC based on Access Class

It is proposed that the ASC selected by RRC is passed to MAC by CMAC-CONFIG-REQ.

The CR intends to clarify behaviour that has very likely been assumed in most implementations.

Consequences if not approved: ⌘ Incorrect implementations are possible as MAC procedures are not specified when RRC selects ASC.

Clauses affected:	⌘	4.2.3.1, 8.3.2, 11.2.1		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.321 v3.8.0, CR 086
Other comments:	⌘			

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.2.3.1 MAC-c/sh entity – UE Side

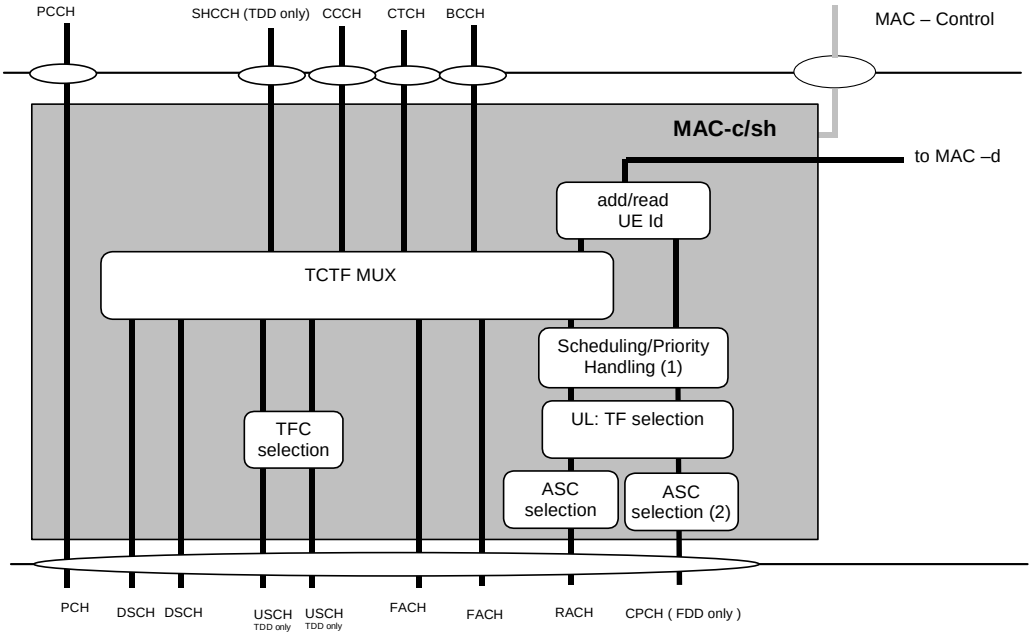
Figure 4.2.3.1.1 shows the UE side MAC-c/sh entity.

The following functionality is covered:

- TCTF MUX:
  - this function represents the handling (insertion for uplink channels and detection and deletion for downlink channels) of the TCTF field in the MAC header, and the respective mapping between logical and transport channels.
    The TCTF field indicates the common logical channel type, or if a dedicated logical channel is used;
- add/read UE Id:
  - the UE Id is added for CPCH and RACH transmissions
  - the UE Id, when present, identifies data to this UE.
- UL: TF selection:
  - in the uplink, the possibility of transport format selection exists.
    In case of CPCH transmission, a TF is selected based on TF availability determined from status information on the CSICH;
- ASC selection:
  - For RACH, MAC indicates the ASC associated with the PDU to the physical layer. For CPCH, MAC may indicate the ASC associated with the PDU to the Physical Layer. This is to ensure that RACH and CPCH messages associated with a given Access Service Class (ASC) are sent on the appropriate signature(s) and time slot(s). MAC also applies the appropriate back-off parameter(s) associated with the given ASC. When sending an RRC CONNECTION REQUEST message, RRC will determine the ASC in all other cases MAC selects the ASC;
- scheduling /priority handling
  - this functionality is used to transmit the information received from MAC-d on RACH and CPCH based on logical channel priorities. This function is related to TF selection.
- TFC selection
  - transport format and transport format combination selection according to the transport format combination set (or transport format combination subset) configured by RRC is performed,

The RLC provides RLC-PDUs to the MAC, which fit into the available transport blocks on the transport channels.

There is one MAC-c/sh entity in each UE.



Note 1: Scheduling /Priority handling is applicable for CPCH.
Note 2: In case of CPCH, ASC selection may be applicable for AP preamble.

Figure 4.2.3.1.1: UE side MAC architecture / MAC-c/sh details

8.3.2 Parameters

See [7] for a detailed description of the UE, RB and TrCH information elements.

a) UE information elements
S-RNTI
SRNC identity
C-RNTI
Activation time

b) RB information elements
RB multiplexing info (Transport channel identity, Logical channel identity, MAC logical channel priority)

c) TrCH information elements
Transport Format Combination Set

d) Measurement information elements
Mode (Periodical, Event Trigger)
Reporting Quantity identifiers
Time interval to take an average or a variance (applicable when Average or Variance is Reporting Quantity)
Reporting Interval (applicable when mode is Periodical)
Upper and Lower Thresholds, TH_U and TH_L (applicable when mode is Event Trigger)

e) Measurement result
Mode
Reporting Quantity
Event ID, 4a or 4b (applicable when mode is Event Trigger)

f) Status info
when set to value ""transmission unsuccessful"" this parameter indicates to RRC that transmission of a TM RLC PDU failed (due to e.g. Maximum number of preamble ramping cycles reached for RACH in FDD), when set to value "transmission successful" this parameter indicates to RRC that the requested TM RLC PDU(s) has been submitted for transmission by the physical layer..

g) RACH transmission control elements
Set of ASC parameters (identifier for PRACH partitions, persistence values)
Maximum number of preamble ramping cycles (FDD) or synchronisation attempts (1.28Mcps TDD) M_{max}
Minimum and maximum number of time units between two preamble ramping cycles, N_{BO1min} and N_{BO1max} (FDD only)
ASC for RRC CONNECTION REQUEST message

h) Ciphering elements
Ciphering mode
Ciphering key
Ciphering sequence number

i) CPCH transmission control elements
CPCH persistency value, P for each Transport Format
Maximum number of preamble ramping cycles $N_{\_access\_fails}$
NF_max (Maximum number of frames for CPCH transmission for each Transport Format)
N_EOT (Number of EOT for release of CPCH transmission)
Backoff control timer parameters
Transport Format Set
Initial Priority Delays
Channel Assignment Active indication

11.2.1 Access Service Class selection

The physical RACH resources (i.e. access slots and preamble signatures for FDD, timeslot and channelisation code for 3.84 Mcps TDD, SYNC1 code for 1.28 Mcps TDD) may be divided between different Access Service Classes in order to provide different priorities of RACH usage. It is possible for more than one ASC or for all ASCs to be assigned to the same access slot/signature space or SYNC1 code.

Access Service Classes are numbered in the range $0 \le i \le \text{NumASC} \le 7$ (i.e. the maximum number of ASCs is NumASC+1 = 8). An ASC is defined by an identifier i that defines a certain partition of the PRACH resources and an associated persistence value P_i. A set of ASC parameters consists of NumASC+1 such parameters (i, P_i), i = 0, …, NumASC. The PRACH partitions and the persistence values P_i are derived by the RRC protocol from system information (see [7]). The set of ASC parameters is provided to MAC with the CMAC-Config-REQ primitive. The ASC enumeration is such that it corresponds to the order of priority (ASC 0 = highest priority, ASC 7 = lowest priority). ASC 0 shall be used in case of Emergency Call or for reasons with equivalent priority.

At radio bearer setup/reconfiguration each involved logical channel is assigned a MAC Logical channel Priority (MLP) in the range 1,…,8. When the MAC sublayer is configured for RACH transmission in the UE, these MLP levels shall be employed for ASC selection on MAC.

The following ASC selection scheme shall be applied, where NumASC is the highest available ASC number and MinMLP the highest logical channel priority assigned to one logical channel:

- in case all TBs in the TB set have the same MLP, select ASC = min(NumASC, MLP);
- in case TBs in a TB set have different priority, determine the highest priority level MinMLP and select ASC = min(NumASC, MinMLP).

When an RRC CONNECTION REQUEST message is sent RRC determines ASC by means of the access class [7]. The ASC to be used in these circumstances is signalled to MAC by means of the CMAC-CONFIG-REQ message.

If MAC has knowledge of a U-RNTI then the ASC is determined in the MAC entity. If no U-RNTI has been indicated to MAC then MAC will use the ASC indicated in the CMAC-CONFIG-REQ primitive.

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Tdoc R2-012024

CR-Form-v4

CHANGE REQUEST

⌘ **25.321 CR 088** ⌘ ev **-** ⌘ Current version: **3.8.0** ⌘

*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 ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	Addition of neighbour cell BCH to MAC-b model for the UE
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	01-07-03
Category:	⌘	**F**
Release:	⌘	R99

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

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

Reason for change:	⌘	In order to measure the SFN-SFN observed time difference it is necessary for the UE that it can hear the BCH of the serving cell and in parallel the BCH of the neighbour cells. Since the SFN is contained in the message SYSTEM INFORMATION it is not accessible to the physical layer, and hence has to be evaluated in higher layers, i.e. there is a need for MAC-b entities also serving neighbour cells.
Summary of change:	⌘	Clarifying text is added indicating one or several MAC-b entities in the UE. Isolated impact analysis: Proposed changes align the MAC model with the physical channel combinations already described in 25.302.
Consequences if not approved:	⌘	Unclear specification

Clauses affected:	⌘	4.2.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.321 v4.1.0, CR 089
Other comments:	⌘			

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

4.2.2 MAC-b

The following diagram illustrates the connectivity of the MAC-b entity in a UE and in each cell of the UTRAN.
MAC-b represents the control entity for the broadcast channel (BCH).
There is one (current cell) or multiple (current and neighbour cells) MAC-b entitiesy in each UE and one MAC-b in the UTRAN for each cell.
The MAC Control SAP is used to transfer Control information to MAC-b.
The MAC-b entity is located in the Node B.

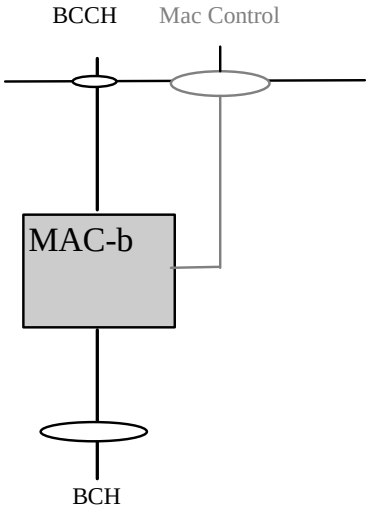

Figure 4.2.2.1: UTRAN side architecture

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Helsinki, Finland, Aug 27-31, 2001

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CHANGE REQUEST

⌘ **25.321 CR 089** ⌘ ev **-** ⌘ 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 ☐ Radio Access Network **X** Core Network ☐

Title:	⌘	Addition of neighbour cell BCH to MAC-b model for the UE
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	01-07-03
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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:	⌘	In order to measure the SFN-SFN observed time difference it is necessary for the UE that it can hear the BCH of the serving cell and in parallel the BCH of the neighbour cells. Since the SFN is contained in the message SYSTEM INFORMATION it is not accessible to the physical layer, and hence has to be evaluated in higher layers, i.e. there is a need for MAC-b entities also serving neighbour cells.
Summary of change:	⌘	Clarifying text is added indicating one or several MAC-b entities in the UE. Isolated impact analysis: Proposed changes align the MAC model with the physical channel combinations already described in 25.302.
Consequences if not approved:	⌘	Unclear specification

Clauses affected:	⌘	4.2.2		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.321 v3.8.0, CR 088r1
Other comments:	⌘			

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

4.2.2 MAC-b

The following diagram illustrates the connectivity of the MAC-b entity in a UE and in each cell of the UTRAN.
MAC-b represents the control entity for the broadcast channel (BCH).
There is one (current cell) or multiple (current and neighbour cells) MAC-b entitiesy in each UE and one MAC-b in the UTRAN for each cell.
The MAC Control SAP is used to transfer Control information to MAC-b.
The MAC-b entity is located in the Node B.

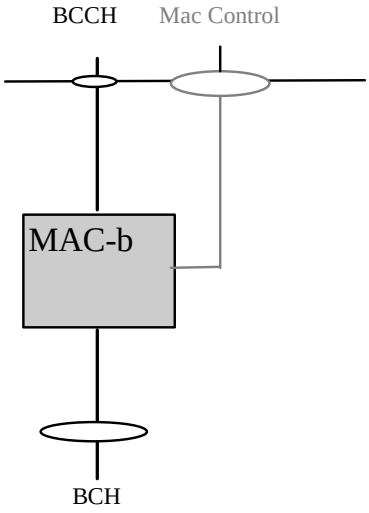

Figure 4.2.2.1: UTRAN side architecture

3GPP TSG RAN2 Meeting #23
Helsinki, Finland, Aug 27-31, 2001

R2-012101

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CHANGE REQUEST

⌘ **25.321** **CR** **090** ⌘ ev **r1** ⌘ Current version: **3.8.0** ⌘

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

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

Title:	⌘	Cautionary note for Inter-frequency Measurements in Cell FACH state
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	21 Aug 2001
Category:	⌘	**F**
Release:	⌘	R99

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

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change:	⌘	At RAN2#22 in Berlin, RAN2 discussed R2-011642 which described the possible conflict of UL transmissions in Cell-FACH state with the inter-frequency measurements scheduled during FACH measurement occasions. It was agreed to add a warning note in the RAN2 specifications. This CR provides such notes for TS25.321.
Summary of change:	⌘	Notes are added to procedures referencing control of UL transmission in Cell FACH state.
Consequences if not approved:	⌘	UEs may not coordinate UL transmission and measurement schedules and may degrade cell reselection performance.

Clauses affected:	⌘	11.2.2, 11.3		
Other specs affected:	⌘	**X** Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.321 v4.1.0, CR 091
Other comments:	⌘			

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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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

11.2.2 Control of RACH transmissions for FDD mode

The RACH transmissions are controlled by the UE MAC sublayer as outlined in figure 11.2.2.1.

NOTE: The figure shall illustrate the operation of the transmission control procedure as specified below. It shall not impose restrictions on implementation. MAC controls the timing of each initial preamble ramping cycle as well as successive preamble ramping cycles in case that none or a negative acknowledgement is received on AICH.

NOTE: In Cell-FACH state, the UE should coordinate the UL transmission schedule with the measurement schedule in FACH measurement occasions so as to minimize any delays associated with inter-frequency measurements.

MAC receives the following RACH transmission control parameters from RRC with the CMAC-CONFIG-Req primitive:

- a set of Access Service Class (ASC) parameters, which includes for each ASC, i=0,…,NumASC an identification of a PRACH partition and a persistence value P_i (transmission probability);
- maximum number of preamble ramping cycles M_{max};
- range of backoff interval for timer T_{BO1}, given in terms of numbers of transmission 10 ms time intervals N_{BO1max} and N_{BO1min}, applicable when negative acknowledgement on AICH is received.

When there is data to be transmitted, MAC selects the ASC from the available set of ASCs, which consists of an identifier *i* of a certain PRACH partition and an associated persistence value P_i. The procedure to be applied for ASC selection is described in subclause 11.2.1.

Based on the persistence value P_i, the UE decides whether to start the L1 PRACH transmission procedure (see [13]) in the present transmission time interval or not. If transmission is allowed, the PRACH transmission procedure (starting with a preamble power ramping cycle) is initiated by sending of a PHY-ACCESS-REQ primitive. MAC then waits for access information from L1 via PHY-ACCESS-CNF primitive. If transmission is not allowed, a new persistency check is performed in the next transmission time interval. The persistency check is repeated until transmission is permitted.

When the preamble has been acknowledged on AICH, L1 access information with parameter value "ready for data transmission" is indicated to MAC with PHY-ACCESS-CNF primitive. Then data transmission is requested with PHY-DATA-REQ primitive, and the PRACH transmission procedure shall be completed with transmission of the PRACH message part according to L1 specifications. Successful completion (TX status) of the MAC transmission control procedure shall be indicated to higher layer.

When PHY indicates that no acknowledgement on AICH is received while the maximum number of preamble retransmissions is reached (defined by parameter Preamble_Retrans_Max on L1), a new persistency test is performed in the next transmission time interval. The timer T_2 ensures that two successive persistency tests are separated by at least one 10 ms time interval.

In case that a negative acknowledgement has been received on AICH a backoff timer T_{BO1} is started. After expiry of the timer, persistence check is performed again. Backoff timer T_{BO1} is set to an integer number N_{BO1} of 10 ms time intervals, randomly drawn within an interval $0 \le N_{BO1min} \le N_{BO1} \le N_{BO1max}$ (with uniform distribution). N_{BO1min} and N_{BO1max} may be set equal when a fixed delay is desired, and even to zero when no delay other than the one due to persistency is desired.

Before a persistency test is performed it shall be checked whether any new RACH transmission control parameters have been received from RRC with CMAC-CONFIG-Req primitive. The latest set of RACH transmission control parameters shall be applied.

If the maximum number of preamble ramping cycles M_{max} is exceeded, failure of RACH transmission shall be reported to higher layer.

Both, transmission failure and successful completion of the MAC transmission control procedure, shall be indicated individually for each logical channel of which data was included in the transport block set of that access attempt. When transparent mode RLC is employed (i.e. for CCCH), transmission status is reported to RRC with CMAC-STATUS-Ind

primitive. For logical channels employing acknowledged or unacknowledged mode RLC, transmission status is reported to RLC with MAC-STATUS-Ind primitive.

11.3 Control of CPCH transmissions for FDD

The MAC layer controls the timing of CPCH transmissions on transmission time interval level (i.e. on 10, 20, 40 or 80 ms level); the timing on access slot level is controlled by L1. MAC controls the timing of each initial preamble ramping cycle as well as successive preamble ramping cycles. Note that retransmissions in case of erroneously received CPCH message part are under control of higher layers. The CPCH transmissions are performed by the UE as illustrated in figures 11.3.1 and 11.3.2. Figure 11.3.1 procedure is used for access to CPCH channel. Figure 11.3.2 procedure is used for CPCH Message transmission on the CPCH channel obtained using the access procedure.

NOTE: In Cell-FACH state, the UE should coordinate the UL transmission schedule with the measurement schedule in FACH measurement occasions so as to minimize any delays associated with inter-frequency measurements.

MAC receives the following CPCH transmission control parameters from RRC with the CMAC-Config-REQ primitive:

- persistence values, P (transmission probability for each Transport Format (TF));
- N_access_fails, maximum number of preamble ramping cycles;
- NF_max, maximum number of frames for CPCH transmission for each TF;
- N_EOT (Number of EOT for release of CPCH transmission);
- Backoff control timer parameters;
- Transport Format Set;
- Initial Priority Delays;
- Channel Assignment Active indication.

The MAC procedure for CPCH access shall be invoked when the UE has data to transmit. The steps for this procedure are listed here:

1. the UE shall get all UL transmit parameters (CPCH Set Info, P values, Initial Priority Delays, N_access_fails, NF_max, N_EOT etc) from RRC;
2. the UE shall reset counter M, EOT counter and Frame Count Transmitted (FCT) upon entry to the initial access procedure;
3. if counter M is equal to N_access_fails, the UE shall indicate an access failure error to higher layer and the CPCH access procedure ends. Access failure is reported to RLC with MAC-STATUS-Ind primitive individually for each logical channel of which data was included in the transport block set that could not be transmitted. If counter M is less than N_access_fails, the UE shall send a PHY-CPCH_Status-REQ to Layer 1 to obtain CPCH TF subset status. If Layer 1 returns an error message, the UE shall increment counter M and the procedure shall continue from step 3. If Layer 1 returns a PHY-CPCH_Status-CNF message, which includes a TF subset indicating the currently available TFs of the requested TF subset, the procedure shall continue from step 4;
4. the UE shall initialise the Busy Table with the CPCH TF subset status from Layer 1. Those TFs in the TF subset of the Layer 1 PHY-CPCH_Status-CNF response will be marked available. All other TFs will be marked busy;
5. if all TFs are not marked busy, the procedure shall proceed from step 6. If all TFs are marked busy, the UE shall reset and start timer Tboc1, wait until timer expiry, and increment counter M. The procedure shall continue from step 3;
6. the UE shall update all UL transmit parameters from RRC;
7. UE shall select a TF from the set of available TFs listed in the Busy Table. UE shall use the CPCH channel capacity (transport block set size, NF_max, and TTI interval), and Busy Table information to select one CPCH TF for L1 to access. The UE may select a TF, which uses a lower data rate and a lower UL Tx power than the maximum UL Tx power allowed. UE shall implement a test based on the Persistence value (P) to determine

whether to attempt access to the selected CPCH TF. If access is allowed, the procedure shall continue from step 9. If the P test does not allow access, the procedure shall continue from step 8;

8. the selected CPCH TF shall be marked busy in the Busy Table. If all TFs are marked busy, the UE shall reset and start timer Tboc1, wait until timer expiry, increment counter M, and continue from step 3. If all TFs are not marked busy, the UE shall resume the procedure from step 6;

9. the UE may implement an initial delay based on ASC of the data to be transmitted, then shall send a PHY-Access-REQ with the selected TF to L1 for CPCH access. After the UE has sent the access request to L1 , L1 shall return a PHY-Access-CNF including one of five access indications to MAC as shown in figure 11.3.1. If the L1 access indication is that access is granted, then UE shall continue from step 14. For the cases of the other Layer 1 responses, the procedure shall continue from step 10, 11, or 12 respectively.

10. if L1 access indication is no AP-AICH received or no CD-AICH received, the UE shall reset and start timer Tboc3, wait until timer expiry, and increment counter M. The UE shall proceed from step 3;

11. if L1 access indication is AP-AICH_nak received, the UE shall reset and start timer Tboc2, wait until timer expiry. If Channel Assignment (CA) is active, the UE shall proceed from step 13. If Channel Assignment (CA) is not active, the procedure shall continue from step 8;

12. if L1 access indication is CD-AICH signature mismatch, the UE shall reset and start timer Tboc4, wait until timer expiry, and increment counter M. The procedure shall continue from step 3;

13. the UE shall increment counter M. The procedure shall continue from step 3.

14. the UE shall build a transport block set for the next TTI;

15. if the sum of the Frame Count Transmitted counter plus N_TTI (the number of frames in the next TTI) is greater than NF_max, the UE shall exit this procedure and start the MAC procedure for CPCH transmission of the first TTI. This shall release the CPCH channel in use and the UE will contend again for a new CPCH channel to continue transmission. If the sum of the Frame Count Transmitted counter plus N_TTI is less than or equal to NF_max, the UE shall send a PHY-Data-REQ with the transport block set to L1 to continue transmission on the CPCH channel which has previously been accessed;

16. if the L1 returns PHY-Status-IND indicating normal transmission, the procedure shall continue from step 17. If L1 returns PHY-Status-IND indicating abnormal situation the UE shall execute an abnormal situation handling procedure and the CPCH message transmission procedure ends. Reasons for abnormal situation may include the following:

    - emergency stop was received;
    - start of Message Indicator was not received;
    - L1 hardware failure has occurred;
    - out of synch has occurred;

17. the UE shall increment the Frame Count Transmitted (FCT) counter by N_TTI just transmitted and indicate TX Status "transmission successful" to RLC individually for each logical channel of which data was included in the transport block set. If the UE has more data to transmit, the procedure shall continue from step 14;

18. the UE shall build the next TTI with zero sized transport block set. If the sum of the Frame Count Transmitted counter plus N_TTI is less than or equal to NF_max and if the sum of the EOT counter plus N_TTI is less than or equal to N_EOT, the procedure shall continue from step 19. Otherwise, the procedure ends;

19. UE shall send a PHY-Data-REQ with zero sized transport block set to L1 to stop transmission on the CPCH channel which has previously been accessed, both the EOT and the FCT counters shall be incremented by N_TTI and the procedure shall continue from step 18.

Table 11.3: CPCH Backoff Delay Timer Values

Timer	Based on parameter	Fixed/random
T_{BOC1} (all Busy)	NF_bo_all_busy	Random
T_{BOC2} (channel Busy)	NS_bo_busy	Fixed
T_{BOC3} (no AICH)	NF_bo_no_aich	Fixed
T_{BOC4} (mismatch)	NF_bo_mismatch	Random

For $T_{BOC4,}$ UE shall randomly select a timer value at each execution of the timer. A uniform random draw shall be made to select an integer number of frames within the range [0, NF_bo_mismatch]. For $T_{BOC1,}$ UE would randomly select a timer value at each execution of the timer. A uniform random draw shall be made to select an integer number of frames within the range [0, NF_bo_all busy].

NOTE: Backoff parameter range and units are specified in [7], RRC Protocol Specification.

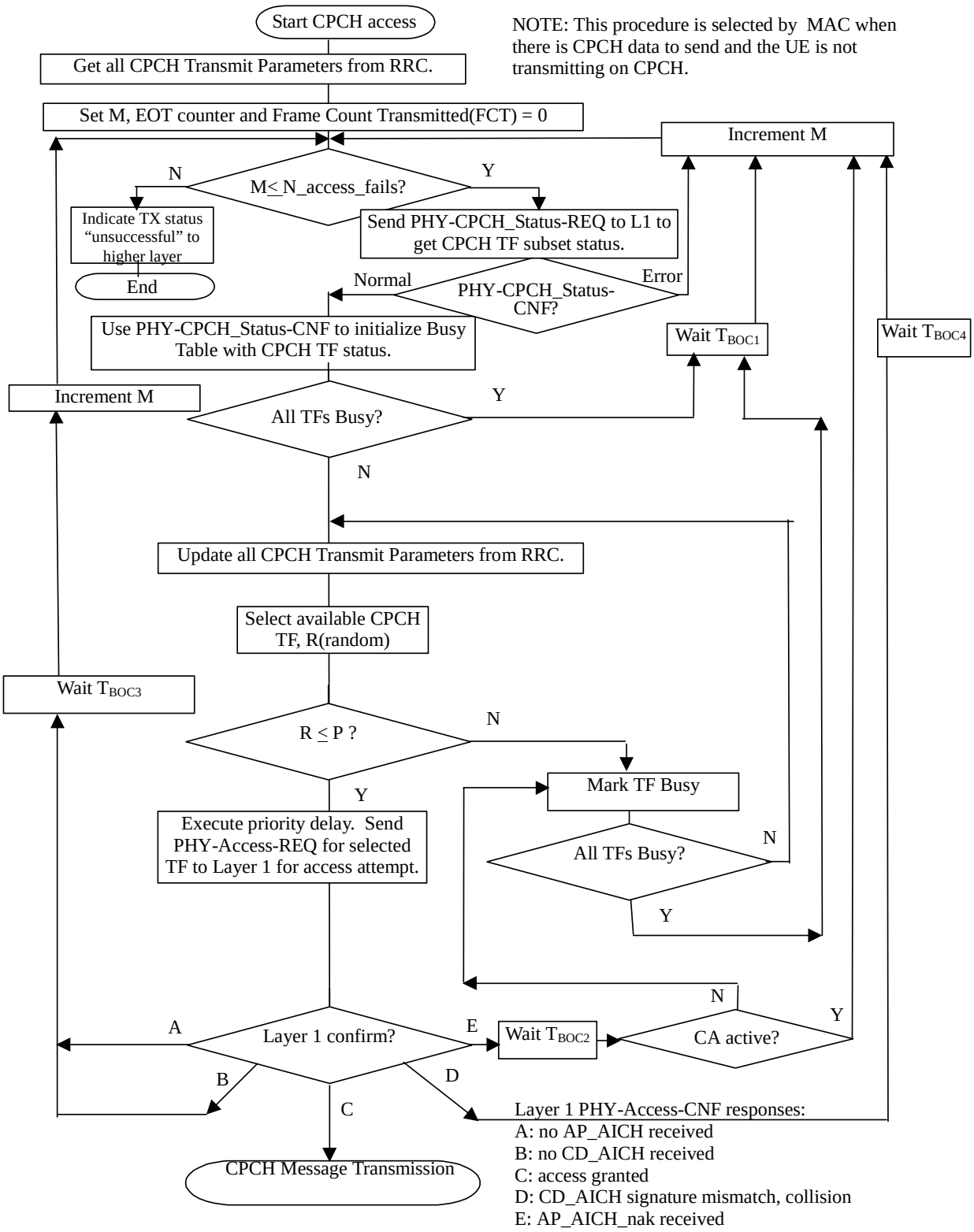

Figure 11.3.1: CPCH transmission control procedure for access (informative)

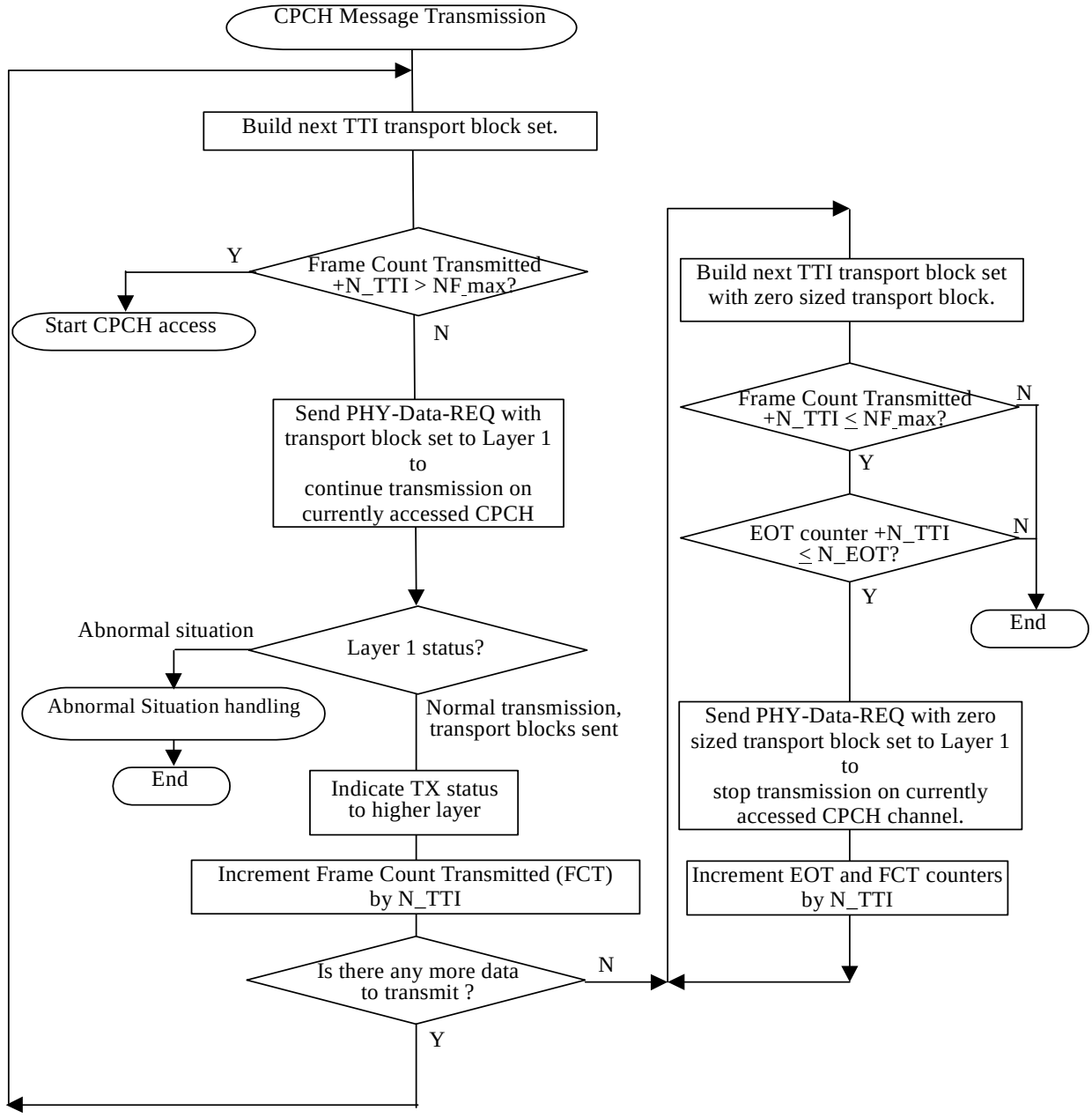

Figure 11.3.2: CPCH transmission control procedure for CPCH Message Transmission (informative)

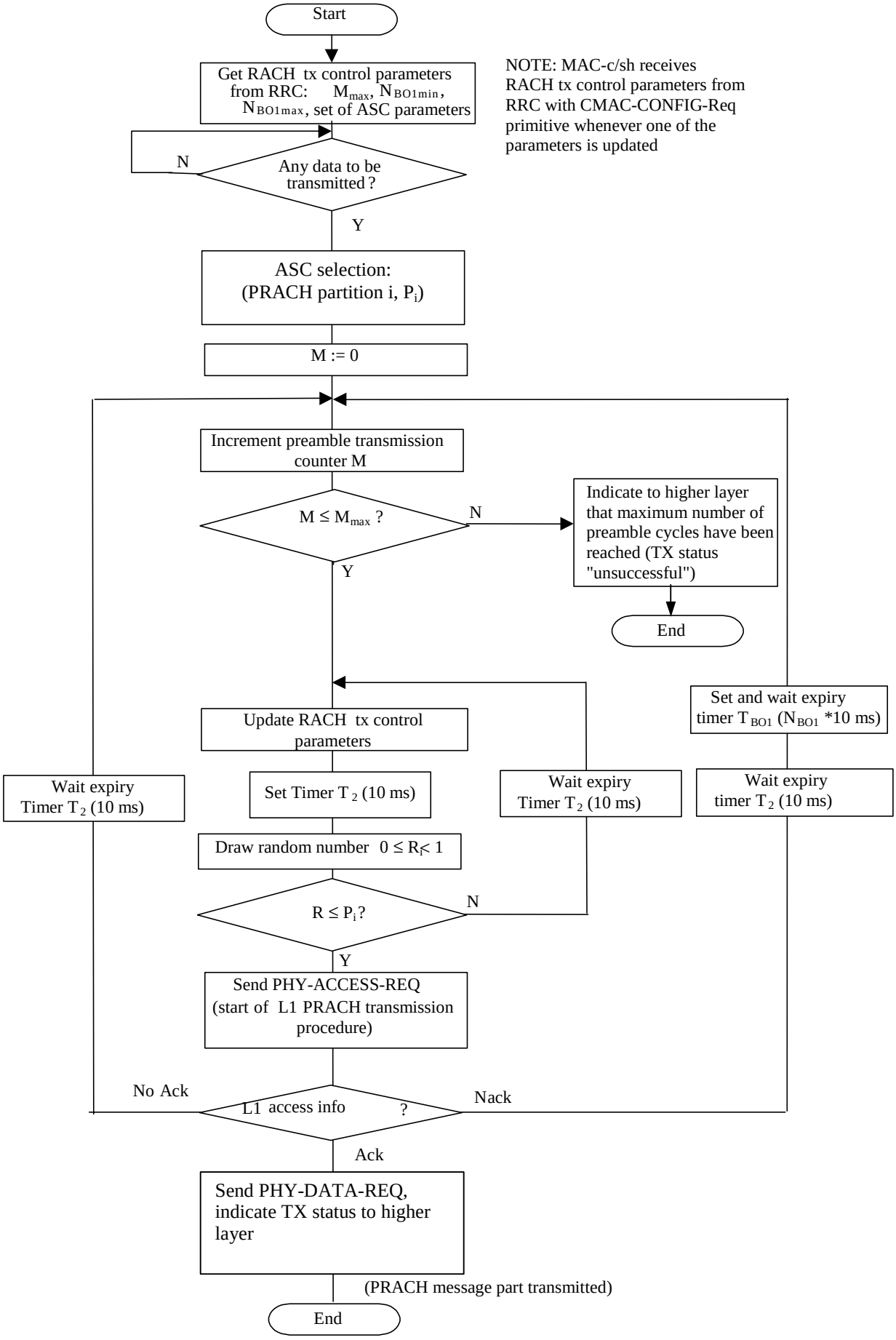

Figure 11.2.2.1: RACH transmission control procedure (UE side, informative)

3GPP TSG RAN2 Meeting #23
Helsinki, Finland, Aug 27-31, 2001

R2-012135

CR-Form-v4

CHANGE REQUEST

⌘ **25.321** **CR** **091** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

Title:	⌘	Cautionary note for Inter-frequency Measurements in Cell FACH state
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	30 Aug 2001
Category:	⌘	**A**
Release:	⌘	REL-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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:	⌘	At RAN2#22 in Berlin, RAN2 discussed R2-011642 which described the possible conflict of UL transmissions in Cell-FACH state with the inter-frequency measurements scheduled during FACH measurement occasions. It was agreed to add a warning note in the RAN2 specifications. This CR provides such notes for TS25.321.
Summary of change:	⌘	Notes are added to procedures referencing control of UL transmission in Cell FACH state.
Consequences if not approved:	⌘	UEs may not coordinate UL transmission and measurement schedules and may degrade cell reselection performance.

Clauses affected:	⌘	11.2.2, 11.3		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	25.321 v3.8.0, CR 090r1
Other comments:	⌘			

How to create CRs using this form:
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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification

11.2.2 Control of RACH transmissions for FDD mode

The RACH transmissions are controlled by the UE MAC sublayer as outlined in figure 11.2.2.1.

NOTE: The figure shall illustrate the operation of the transmission control procedure as specified below. It shall not impose restrictions on implementation. MAC controls the timing of each initial preamble ramping cycle as well as successive preamble ramping cycles in case that none or a negative acknowledgement is received on AICH.

NOTE: In Cell-FACH state, the UE should coordinate the UL transmission schedule with the measurement schedule in FACH measurement occasions so as to minimize any delays associated with inter-frequency measurements.

MAC receives the following RACH transmission control parameters from RRC with the CMAC-CONFIG-Req primitive:

- a set of Access Service Class (ASC) parameters, which includes for each ASC, i=0,…,NumASC an identification of a PRACH partition and a persistence value P_i (transmission probability);
- maximum number of preamble ramping cycles M_{max};
- range of backoff interval for timer $T_{BO1,}$ given in terms of numbers of transmission 10 ms time intervals N_{BO1max} and N_{BO1min}, applicable when negative acknowledgement on AICH is received.

When there is data to be transmitted, MAC selects the ASC from the available set of ASCs, which consists of an identifier *i* of a certain PRACH partition and an associated persistence value P_i. The procedure to be applied for ASC selection is described in subclause 11.2.1.

Based on the persistence value P_i, the UE decides whether to start the L1 PRACH transmission procedure (see [13]) in the present transmission time interval or not. If transmission is allowed, the PRACH transmission procedure (starting with a preamble power ramping cycle) is initiated by sending of a PHY-ACCESS-REQ primitive. MAC then waits for access information from L1 via PHY-ACCESS-CNF primitive. If transmission is not allowed, a new persistency check is performed in the next transmission time interval. The persistency check is repeated until transmission is permitted.

When the preamble has been acknowledged on AICH, L1 access information with parameter value "ready for data transmission" is indicated to MAC with PHY-ACCESS-CNF primitive. Then data transmission is requested with PHY-DATA-REQ primitive, and the PRACH transmission procedure shall be completed with transmission of the PRACH message part according to L1 specifications. Successful completion (TX status) of the MAC transmission control procedure shall be indicated to higher layer.

When PHY indicates that no acknowledgement on AICH is received while the maximum number of preamble retransmissions is reached (defined by parameter Preamble_Retrans_Max on L1), a new persistency test is performed in the next transmission time interval. The timer T_2 ensures that two successive persistency tests are separated by at least one 10 ms time interval.

In case that a negative acknowledgement has been received on AICH a backoff timer T_{BO1} is started. After expiry of the timer, persistence check is performed again. Backoff timer T_{BO1} is set to an integer number N_{BO1} of 10 ms time intervals, randomly drawn within an interval $0 \le N_{BO1min} \le N_{BO1} \le N_{BO1max}$ (with uniform distribution). N_{BO1min} and N_{BO1max} may be set equal when a fixed delay is desired, and even to zero when no delay other than the one due to persistency is desired.

Before a persistency test is performed it shall be checked whether any new RACH transmission control parameters have been received from RRC with CMAC-CONFIG-Req primitive. The latest set of RACH transmission control parameters shall be applied.

If the maximum number of preamble ramping cycles M_{max} is exceeded, failure of RACH transmission shall be reported to higher layer.

Both, transmission failure and successful completion of the MAC transmission control procedure, shall be indicated individually for each logical channel of which data was included in the transport block set of that access attempt. When transparent mode RLC is employed (i.e. for CCCH), transmission status is reported to RRC with CMAC-STATUS-Ind

primitive. For logical channels employing acknowledged or unacknowledged mode RLC, transmission status is reported to RLC with MAC-STATUS-Ind primitive.

11.3 Control of CPCH transmissions for FDD

The MAC layer controls the timing of CPCH transmissions on transmission time interval level (i.e. on 10, 20, 40 or 80 ms level); the timing on access slot level is controlled by L1. MAC controls the timing of each initial preamble ramping cycle as well as successive preamble ramping cycles. Note that retransmissions in case of erroneously received CPCH message part are under control of higher layers. The CPCH transmissions are performed by the UE as illustrated in figures 11.3.1 and 11.3.2. Figure 11.3.1 procedure is used for access to CPCH channel. Figure 11.3.2 procedure is used for CPCH Message transmission on the CPCH channel obtained using the access procedure.

NOTE: In Cell-FACH state, the UE should coordinate the UL transmission schedule with the measurement schedule in FACH measurement occasions so as to minimize any delays associated with inter-frequency measurements.

MAC receives the following CPCH transmission control parameters from RRC with the CMAC-Config-REQ primitive:

- persistence values, P (transmission probability for each Transport Format (TF));
- N_access_fails, maximum number of preamble ramping cycles;
- NF_max, maximum number of frames for CPCH transmission for each TF;
- N_EOT (Number of EOT for release of CPCH transmission);
- Backoff control timer parameters;
- Transport Format Set;
- Initial Priority Delays;
- Channel Assignment Active indication.

The MAC procedure for CPCH access shall be invoked when the UE has data to transmit. The steps for this procedure are listed here:

1. the UE shall get all UL transmit parameters (CPCH Set Info, P values, Initial Priority Delays, N_access_fails, NF_max, N_EOT etc) from RRC;
2. the UE shall reset counter M, EOT counter and Frame Count Transmitted (FCT) upon entry to the initial access procedure;
3. if counter M is equal to N_access_fails, the UE shall indicate an access failure error to higher layer and the CPCH access procedure ends. Access failure is reported to RLC with MAC-STATUS-Ind primitive individually for each logical channel of which data was included in the transport block set that could not be transmitted. If counter M is less than N_access_fails, the UE shall send a PHY-CPCH_Status-REQ to Layer 1 to obtain CPCH TF subset status. If Layer 1 returns an error message, the UE shall increment counter M and the procedure shall continue from step 3. If Layer 1 returns a PHY-CPCH_Status-CNF message, which includes a TF subset indicating the currently available TFs of the requested TF subset, the procedure shall continue from step 4;
4. the UE shall initialise the Busy Table with the CPCH TF subset status from Layer 1. Those TFs in the TF subset of the Layer 1 PHY-CPCH_Status-CNF response will be marked available. All other TFs will be marked busy;
5. if all TFs are not marked busy, the procedure shall proceed from step 6. If all TFs are marked busy, the UE shall reset and start timer Tboc1, wait until timer expiry, and increment counter M. The procedure shall continue from step 3;
6. the UE shall update all UL transmit parameters from RRC;
7. UE shall select a TF from the set of available TFs listed in the Busy Table. UE shall use the CPCH channel capacity (transport block set size, NF_max, and TTI interval), and Busy Table information to select one CPCH TF for L1 to access. The UE may select a TF, which uses a lower data rate and a lower UL Tx power than the maximum UL Tx power allowed. UE shall implement a test based on the Persistence value (P) to determine

whether to attempt access to the selected CPCH TF. If access is allowed, the procedure shall continue from step 9. If the P test does not allow access, the procedure shall continue from step 8;

8. the selected CPCH TF shall be marked busy in the Busy Table. If all TFs are marked busy, the UE shall reset and start timer Tboc1, wait until timer expiry, increment counter M, and continue from step 3. If all TFs are not marked busy, the UE shall resume the procedure from step 6;

9. the UE may implement an initial delay based on ASC of the data to be transmitted, then shall send a PHY-Access-REQ with the selected TF to L1 for CPCH access. After the UE has sent the access request to L1 , L1 shall return a PHY-Access-CNF including one of five access indications to MAC as shown in figure 11.3.1. If the L1 access indication is that access is granted, then UE shall continue from step 14. For the cases of the other Layer 1 responses, the procedure shall continue from step 10, 11, or 12 respectively.

10. if L1 access indication is no AP-AICH received or no CD-AICH received, the UE shall reset and start timer Tboc3, wait until timer expiry, and increment counter M. The UE shall proceed from step 3;

11. if L1 access indication is AP-AICH_nak received, the UE shall reset and start timer Tboc2, wait until timer expiry. If Channel Assignment (CA) is active, the UE shall proceed from step 13. If Channel Assignment (CA) is not active, the procedure shall continue from step 8;

12. if L1 access indication is CD-AICH signature mismatch, the UE shall reset and start timer Tboc4, wait until timer expiry, and increment counter M. The procedure shall continue from step 3;

13. the UE shall increment counter M. The procedure shall continue from step 3.

14. the UE shall build a transport block set for the next TTI;

15. if the sum of the Frame Count Transmitted counter plus N_TTI (the number of frames in the next TTI) is greater than NF_max, the UE shall exit this procedure and start the MAC procedure for CPCH transmission of the first TTI. This shall release the CPCH channel in use and the UE will contend again for a new CPCH channel to continue transmission. If the sum of the Frame Count Transmitted counter plus N_TTI is less than or equal to NF_max, the UE shall send a PHY-Data-REQ with the transport block set to L1 to continue transmission on the CPCH channel which has previously been accessed;

16. if the L1 returns PHY-Status-IND indicating normal transmission, the procedure shall continue from step 17. If L1 returns PHY-Status-IND indicating abnormal situation the UE shall execute an abnormal situation handling procedure and the CPCH message transmission procedure ends. Reasons for abnormal situation may include the following:

    - emergency stop was received;
    - start of Message Indicator was not received;
    - L1 hardware failure has occurred;
    - out of synch has occurred;

17. the UE shall increment the Frame Count Transmitted (FCT) counter by N_TTI just transmitted and indicate TX Status "transmission successful" to RLC individually for each logical channel of which data was included in the transport block set. If the UE has more data to transmit, the procedure shall continue from step 14;

18. the UE shall build the next TTI with zero sized transport block set. If the sum of the Frame Count Transmitted counter plus N_TTI is less than or equal to NF_max and if the sum of the EOT counter plus N_TTI is less than or equal to N_EOT, the procedure shall continue from step 19. Otherwise, the procedure ends;

19. UE shall send a PHY-Data-REQ with zero sized transport block set to L1 to stop transmission on the CPCH channel which has previously been accessed, both the EOT and the FCT counters shall be incremented by N_TTI and the procedure shall continue from step 18.

Table 11.3: CPCH Backoff Delay Timer Values

Timer	Based on parameter	Fixed/random
T_{BOC1} (all Busy)	NF_bo_all_busy	Random
T_{BOC2} (channel Busy)	NS_bo_busy	Fixed
T_{BOC3} (no AICH)	NF_bo_no_aich	Fixed
T_{BOC4} (mismatch)	NF_bo_mismatch	Random

For $T_{BOC4,}$ UE shall randomly select a timer value at each execution of the timer. A uniform random draw shall be made to select an integer number of frames within the range [0, NF_bo_mismatch]. For $T_{BOC1,}$ UE would randomly select a timer value at each execution of the timer. A uniform random draw shall be made to select an integer number of frames within the range [0, NF_bo_all busy].

NOTE: Backoff parameter range and units are specified in [7], RRC Protocol Specification.

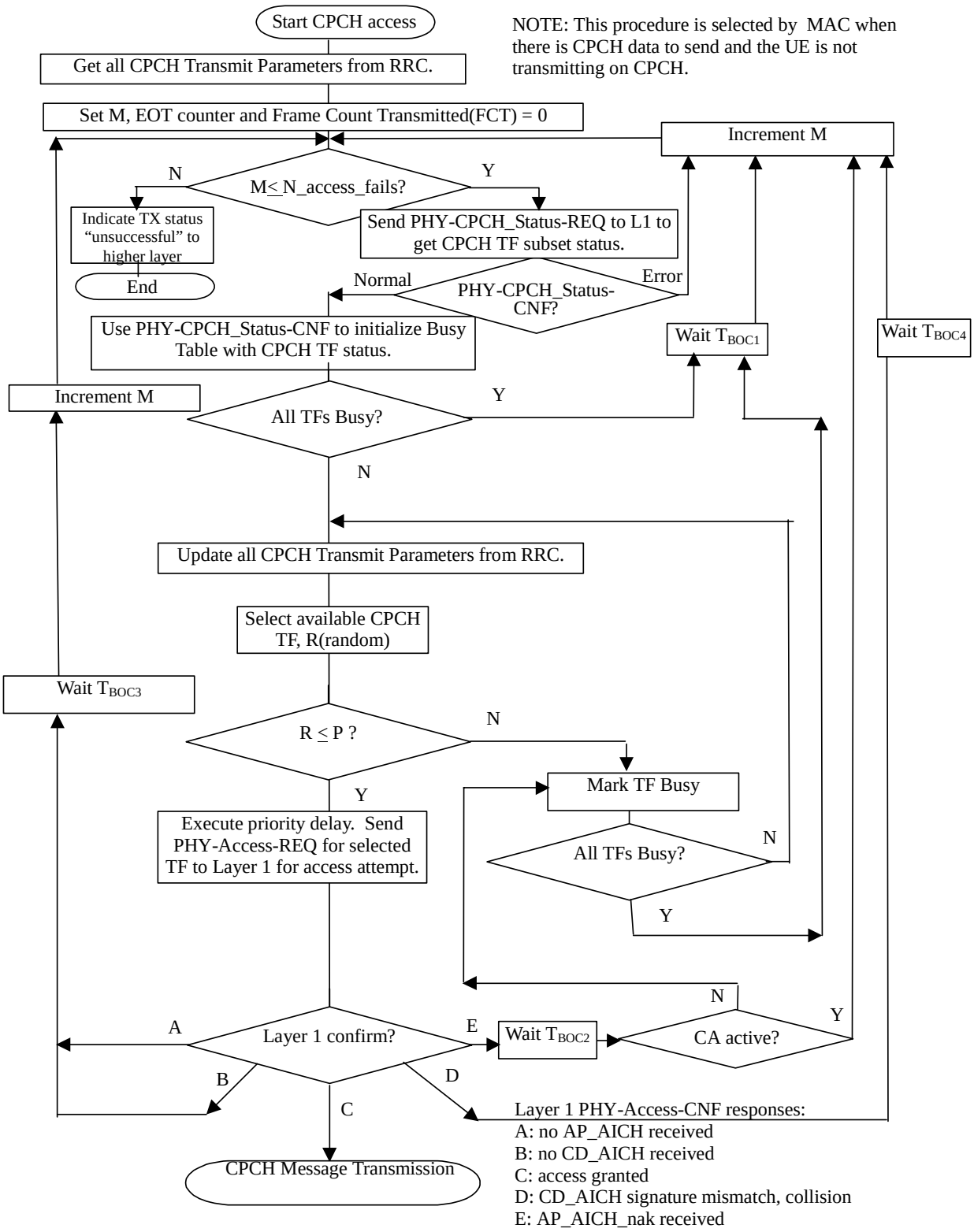

Figure 11.3.1: CPCH transmission control procedure for access (informative)

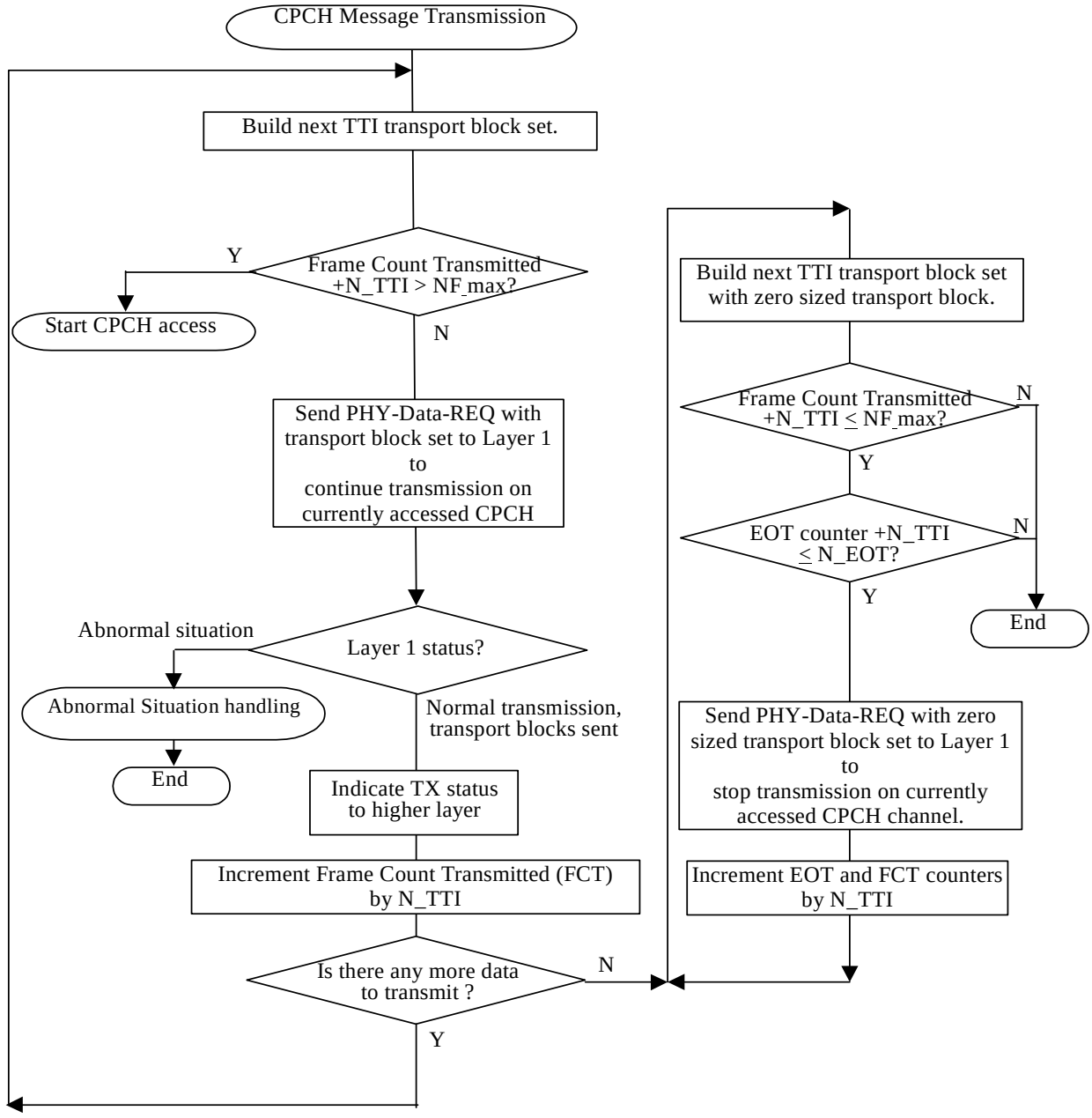

Figure 11.3.2: CPCH transmission control procedure for CPCH Message Transmission (informative)

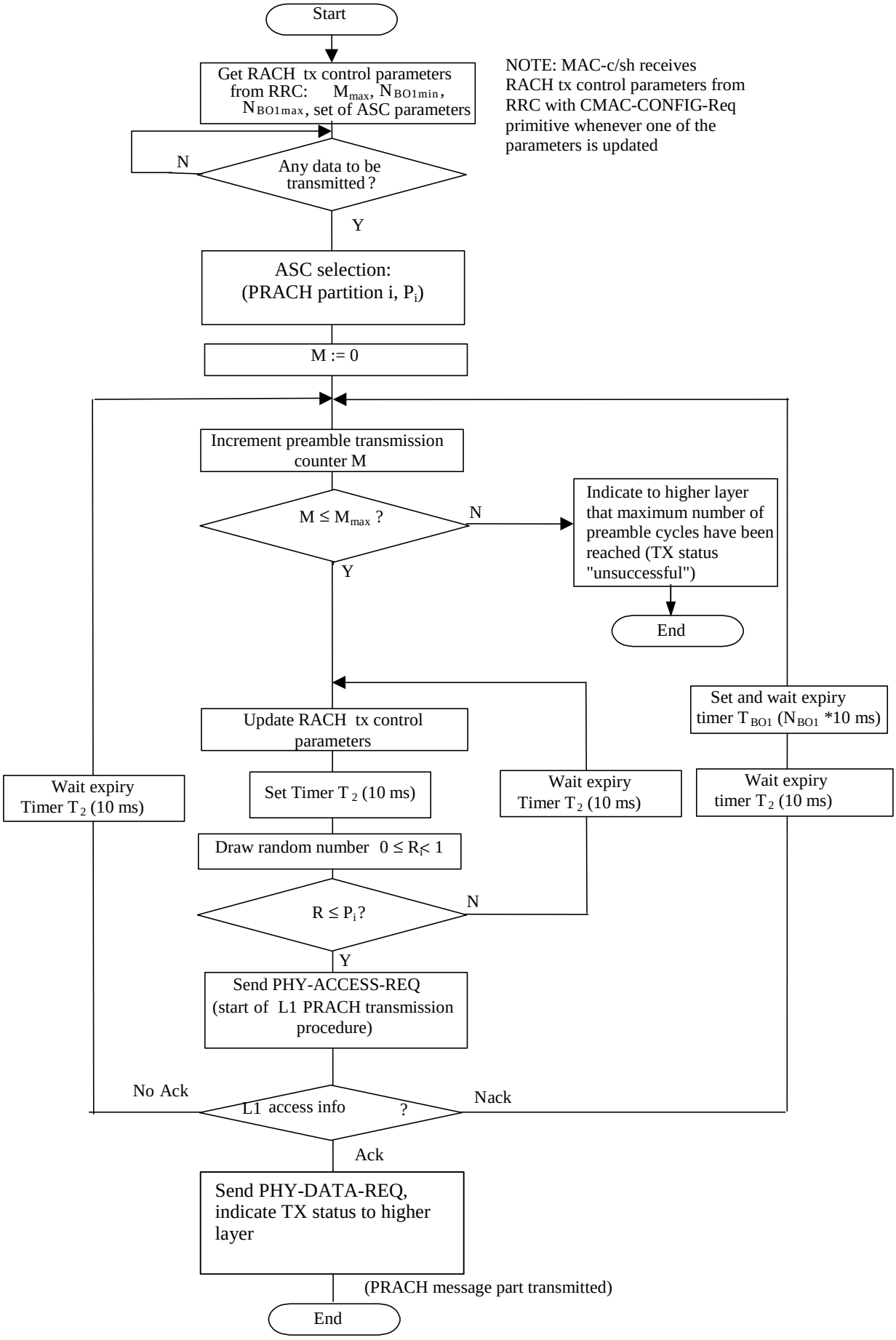

Figure 11.2.2.1: RACH transmission control procedure (UE side, informative)

TSG-RAN Working Group 2 #23
Helsinky, Finland, 26 - 31 August 2001

Tdoc R2-012155

CR-Form-v3

CHANGE REQUEST

⌘ **25.321** **CR** **092** ⌘ rev **r2** ⌘ Current version: **3.7.0** ⌘

*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 ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarification on TFC selection
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-08-31
Category:	⌘	**F**
Release:	⌘	R99

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: ⌘ The text is not aligned with 25.133. In 25.133 there is a difference between "blocked" and "unsupported" TFC. Further, the informative note in section 11.4 is considered to be mandatory in 25.133

In the most extreme case it is currently allowed that all TFCs could be blocked due to transmit power restrictions. One potential problem occurs at the edge of WCDMA coverage when it is not possible to support any TFC, a measurement report that would trigger inter-system handover could be blocked from transmission. At the same time UTRAN would be unable to know if all UL transmissions were blocked or the UE had nothing to send.

Summary of change: ⌘ 1. A set of states and the corresponding state diagram are introduced to align 25.321 with the text introduced in 25.133.

2. It is clarified that a blocked TFC shall not be used whereas an unsupported TFC may be eliminated from the TFC selection (optionally).

3. The following note was included in WG2 #20

NOTE: Based on the selected TFC, MAC should indicate the available bitrate for each logical channel to upper layers in order to facilitate adaptation of codec data rate when codecs supporting variable-rate operation is used. The details of the interaction with the application layer are not further specified.

The note is made mandatory in order to align with the recent CRs to 25.133 in RAN4 (R4-010931 and R4-010847).

Sentence added to state that TFCs defined in 25.331 are not to be blocked

		Impact Analysis: This is an isolated impact correction to uplink TFC selection.
Consequences if not approved:	⌘	Unclear specification. Misalignment between WG2 and WG4 specs. Informative functionality in WG2 is mandatory in WG4.

Clauses affected:	⌘	11.4			
Other specs affected:	⌘	X	Other core specifications	⌘	25.133 25.321 v4.1.0, CR 093r1
			Test specifications		
			O&M Specifications		
Other comments:	⌘				

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2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ 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.

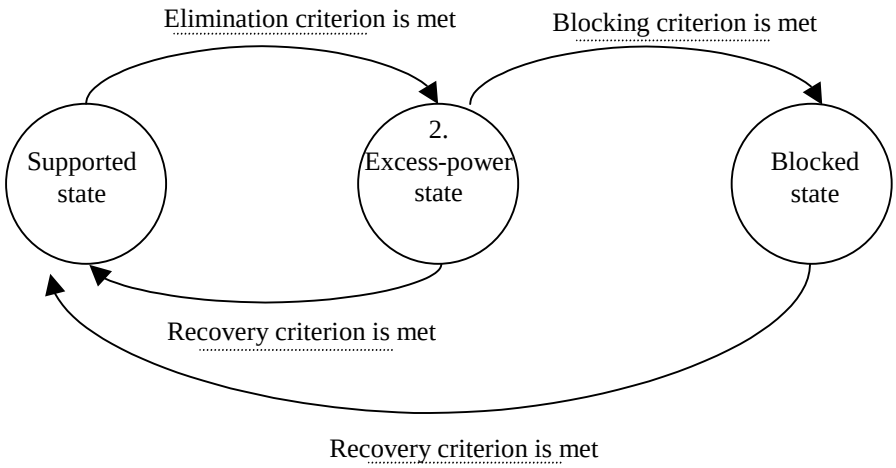
11.4 Transport format combination selection in UE

RRC can control the scheduling of uplink data by giving each logical channel a priority ~~value~~ between 1 and 8~~, for each logical channel~~ where 1 is the highest priority and 8 the lowest. ~~The~~ TFC selection ~~of TFC~~ in the UE shall be done in accordance~~ing to~~with the priorities ~~between logical channels~~ indicated by RRC. Logical channels have absolute priority, i.e. the UE shall maximize the transmission of higher priority data.

The UE shall continuously monitor the state for each TFC ~~regarding~~ based on its required transmit power versus the maximum UE transmit power. A given TFC can be in any of the following states:

- Supported state
- Excess-power state
- Blocked state

The following diagram illustrates the state transitions for the state of a given TFC:



The state transition criteria and the associated requirements are described in [12]. The UE shall consider that the Blocking criterion in never met for TFCs included in the minimum set of TFCs (see [7]).

~~The scheme is performed each time a TFC selection is performed, i.e., each time the shortest configured TTI begins.~~

~~Each time the~~ a ~~TFC selection is performed, the UE shall estimate~~ determine ~~which TFCs that cannot be supported and which TFCs are blocked. If the estimated power needed for a TFC is greater than the maximum UE transmitter power [7], the TFC shall not be used in the TFC selection algorithm below. The method and requirements for determining the estimation whenever a given TFC cannot be supported or is blocked of supported TFCs are described in [12].~~

~~If~~ Every time the set of supported TFCs ~~is~~changes, ~~different from the one obtained the previous time the TFC selection was performed,~~ the available bitrate shall be indicated to upper layers for each logical channel in order to facilitate the adaptation of codec data rate~~s~~ when codecs supporting variable-rate operation ~~is~~are used. The details of the computation of the available bitrate and the interaction with the application layer are not further specified.~~.~~

Before selecting a TFC, i.e at every boundary of the shortest TTI, the set of valid TFCs ~~will~~ shall be established. All TFCs in the set of valid TFCs shall:

1. belong to the TFCS.
2. not be in the B~~b~~locked state ~~i.e. be in Supported or Excess-power state (see additional point below)(as descrtibed in [12])be supported by the maximum UE transmitter power as defined above~~.
3. be compatible with the RLC configuration.
4. not require RLC to produce padding PDUs (see [6] for definition).
5. not carry more bits than can be transmitted in a TTI (e.g. when the number of bits that can be transmitted in a TTI is reduced due to compressed frames when compressed mode by higher layer scheduling is used).

Additionnally, ~~A TFC may be eliminated from~~the UE may remove from the set of valid TFCs, ~~if it cannot be supported (see [12]).a~~ TFCs in Excess-power state in order to maintain the quality of service for sensitive applications (e.g. speech) ~~applications.~~

If the TFCS selected by UTRAN does not follow the guidelines specified in [7] the UE may ignore constraint number 4 mentioned above in determining the set of valid TFCs.

The chosen TFC shall be selected from within the set of valid TFCs and shall satisfy the following criteria in the order in which they are listed below:

1. No other TFC shall allow the transmission of more highest priority data than the chosen TFC.
2. No other TFC shall allow the transmission of more data from the next lower priority logical channels. Apply this criterion recursively for the remaining priority levels.
3. No other TFC shall have a lower bit rate than the chosen TFC.

The above rules for TFC selection in the UE shall apply to DCH, and the same rules shall apply for TF selection on RACH and CPCH.

~~NOTE: Based on the selected TFC, MAC should indicate the available bitrate for each logical channel to upper layers in order to facilitate adaptation of codec data rate when codecs supporting variable-rate operation is used. The details of the interaction with the application layer are not further specified.~~

~~The maximum UE power is defined in [7].~~

TSG-RAN Working Group 2 #23
Helsinky, Finland, 26 - 31 August 2001

Tdoc R2-012191

CR-Form-v3

CHANGE REQUEST

⌘ **25.321** **CR** **093** ⌘ rev **r1** ⌘ 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 ☒ Radio Access Network ☐ Core Network ☐

Title:	⌘	Clarification on TFC selection
Source:	⌘	TSG-RAN WG2
Work item code:	⌘	TEI
Date:	⌘	2001-08-31
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: ⌘ The text is not aligned with 25.133. In 25.133 there is a difference between "blocked" and "unsupported" TFC. Further, the informative note in section 11.4 is considered to be mandatory in 25.133

In the most extreme case it is currently allowed that all TFCs could be blocked due to transmit power restrictions. One potential problem occurs at the edge of WCDMA coverage when it is not possible to support any TFC, a measurement report that would trigger inter-system handover could be blocked from transmission. At the same time UTRAN would be unable to know if all UL transmissions were blocked or the UE had nothing to send.

Summary of change: ⌘ 1. A set of states and the corresponding state diagram are introduced to align 25.321 with the text introduced in 25.133.

2. It is clarified that a blocked TFC shall not be used whereas an unsupported TFC may be eliminated from the TFC selection (optionally).

3. The following note was included in WG2 #20

NOTE: Based on the selected TFC, MAC should indicate the available bitrate for each logical channel to upper layers in order to facilitate adaptation of codec data rate when codecs supporting variable-rate operation is used. The details of the interaction with the application layer are not further specified.

The note is made mandatory in order to align with the recent CRs to 25.133 in RAN4 (R4-010931 and R4-010847).

		Sentence added to state that TFCs defined in 25.331 are not to be blocked Impact Analysis: This is an isolated impact correction to uplink TFC selection.
Consequences if not approved:	⌘	Unclear specification. Misalignment between WG2 and WG4 specs. Informative functionality in WG2 is mandatory in WG4.

Clauses affected:	⌘	11.4			
Other specs affected:	⌘	X	Other core specifications	⌘	25.133 25.321 v3.8.0, CR 092r2
			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: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ 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.

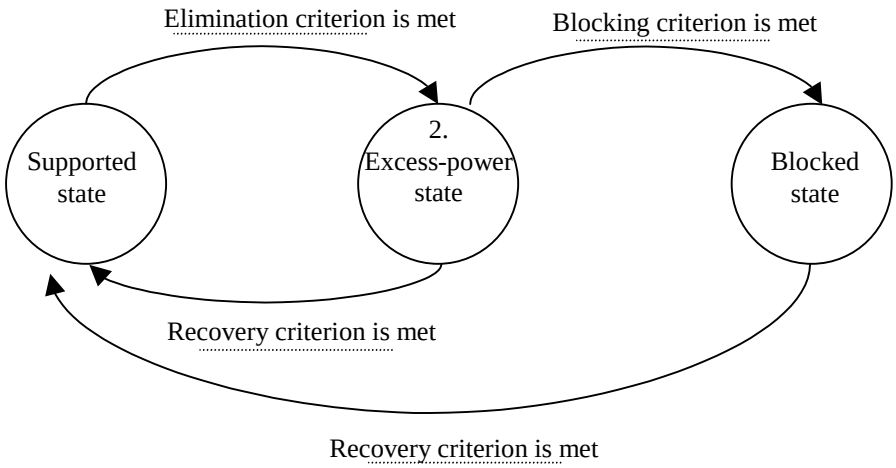
11.4 Transport format combination selection in UE

RRC can control the scheduling of uplink data by giving each logical channel a priority ~~value~~ between 1 and 8, ~~for each logical channel~~ where 1 is the highest priority and 8 the lowest. ~~The~~ TFC selection ~~of TFC~~ in the UE shall be done in accordance~~ing~~ ~~to~~with the priorities ~~between logical channels~~ indicated by RRC. Logical channels have absolute priority, i.e. the UE shall maximize the transmission of higher priority data.

The UE shall continuously monitor the state for each TFC ~~regarding~~ based on its required transmit power versus the maximum UE transmit power. A given TFC can be in any of the following states:

- Supported state
- Excess-power state
- Blocked state

The following diagram illustrates the state transitions for the state of a given TFC:



The state transition criteria and the associated requirements are described in [12]. The UE shall consider that the Blocking criterion in never met for TFCs included in the minimum set of TFCs (see [7]).

~~The scheme is performed each time a TFC selection is performed, i.e., each time the shortest configured TTI begins.~~

~~Each time the a TFC selection is performed, the UE shall estimate determine which TFCs that cannot be supported and which TFCs are blocked. If the estimated power needed for a TFC is greater than the maximum UE transmitter power [7], the TFC shall not be used in the TFC selection algorithm below. The method and requirements for determining the estimation whenever a given TFC cannot be supported or is blocked of supported TFCs are described in [12].~~

~~If~~ Every time the set of supported TFCs ~~is~~changes, ~~different from the one obtained the previous time the TFC selection was performed,~~ the available bitrate shall be indicated to upper layers for each logical channel in order to facilitate the adaptation of codec data rates when codecs supporting variable-rate operation ~~is~~are used. The details of the computation of the available bitrate and the interaction with the application layer are not further specified.~~.~~

Before selecting a TFC, i.e at every boundary of the shortest TTI, the set of valid TFCs ~~will~~ shall be established. All TFCs in the set of valid TFCs shall:

1. belong to the TFCS.
2. not be in the B~~b~~locked state ~~i.e. be in Supported or Excess-power state (see additional point below)(as descrtibed in [12])be supported by the maximum UE transmitter power as defined above~~.
3. be compatible with the RLC configuration.
4. not require RLC to produce padding PDUs (see [6] for definition).
5. not carry more bits than can be transmitted in a TTI (e.g. when the number of bits that can be transmitted in a TTI is reduced due to compressed frames when compressed mode by higher layer scheduling is used).

Additionnally, ~~A TFC may be eliminated from~~the UE may remove from the set of valid TFCs, ~~if it cannot be supported (see [12]).a~~ TFCs in Excess-power state in order to maintain the quality of service for sensitive applications (e.g. speech) ~~applications.~~

If the TFCS selected by UTRAN does not follow the guidelines specified in [7] the UE may ignore constraint number 4 mentioned above in determining the set of valid TFCs.

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~~NOTE: Based on the selected TFC, MAC should indicate the available bitrate for each logical channel to upper layers in order to facilitate adaptation of codec data rate when codecs supporting variable-rate operation is used. The details of the interaction with the application layer are not further specified.~~

~~The maximum UE power is defined in [7].~~