**3GPP TSG-CT WG1 Meeting #133-eC1-216695**

**E-meeting, 11-19 November 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **24.301** | **CR** | **3627** | **rev** | **1** | **Current version:** | **17.4.1** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:*** | T3447 handling for MUSIM capable UE | | | | | | | | | |
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| ***Source to WG:*** | vivo, Samsung, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | MUSIM | | | | |  | ***Date:*** | | | 2021-10-29 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change 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](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) ... Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | 1.Subclause 5.5.3.1 in TS24.301 has specified that the MUSIM capable UE can initiate the TAU procedure when it needs to request an IMSI Offset value.  If the MUSIM capable UE detects POs collision when T3447 is running, the UE should be allowed to initiate the TAU procedure to obtain an IMSI Offset value. This will cause the paging failure. However the above case is not exempted from the SGC.  2.Similarly, the MUSIM capable UE in EMM-CONNECTED mode should be allowed to request for connection release when T3447 is running. This case should also be exempted from the SGC. | | | | | | | | |
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| ***Summary of change:*** | | 1.The MUSIM capable UE can initiate the TAU procedure to obtain an IMSI Offset value to resolve POs collision when T3447 is running.  2.The MUSIM capable UE can initiate the ESR procedure to request the network to release the NAS signalling connection when T3447 is running. | | | | | | | | |
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| ***Consequences if not approved:*** | | 1.The MUSIM capable UE can not obtain an IMSI Offset value upon detecting POs collision when T3447 is running, which would cause the paging failure.  2.The MUSIM capable UE in EMM-CONNECTED mode can not request to leave the current network to get the service from another network when T3447 is running. This would cause a negative impact on user experience. | | | | | | | | |
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| ***Clauses affected:*** | | 5.5.3.2.6, 5.6.1.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

5.5.3.2.6 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Access barred because of access class barring, EAB, ACDC or NAS signalling connection establishment rejected by the network without "Extended wait time" received from lower layers

In WB-S1 mode, if the tracking area updating procedure is started in response to a paging request from the network, access class barring, EAB or ACDC is not applicable.

In NB-S1 mode, if the tracking area updating procedure is started in response to a paging request from the network, access barring is not applicable.

In WB-S1 mode, if access is barred for "originating signalling" (see 3GPP TS 36.331 [22]), the tracking area updating procedure shall not be started. The UE stays in the current serving cell and applies the normal cell reselection process. The tracking area updating procedure is started as soon as possible and if still necessary, e.g. when access for "originating signalling" is granted on the current cell or when the UE moves to a cell where access for "originating signalling" is granted.

In NB-S1 mode, if access is barred for "originating signalling" (see 3GPP TS 36.331 [22]), the tracking area updating procedure shall not be started. The UE stays in the current serving cell and applies the normal cell reselection process. Further UE behaviour is implementation specific, e.g. the tracking area updating procedure is started again after an implementation dependent time.

In NB-S1 mode, if access is barred for "originating signalling" (see 3GPP TS 36.331 [22]), a request for an exceptional event is received from the upper layers, then the tracking area updating procedure shall be started.

NOTE 1: In NB-S1 mode, the EMM layer cannot receive the access barring alleviation indication from the lower layers (see 3GPP TS 36.331 [22]).

If access is barred because of access class barring for "originating signalling" (see 3GPP TS 36.331 [22]) and if:

- one of the MO MMTEL voice call is started, MO MMTEL video call is started or MO SMSoIP is started conditions is satisfied;

- the upper layers request to send a mobile originated SMS over NAS or SMS over S102; or

- the upper layers request user plane radio resources, ACDC is applicable to the request and the UE supports ACDC.

then the tracking area updating procedure shall be started according to clause 5.5.3.2.2. The call type used shall be per annex D of this document.

NOTE 2: If more than one of MO MMTEL voice call is started, MO MMTEL video call is started or MO SMSoIP is started conditions are satisfied, it is left to UE implementation to determine the call type based on Annex D of this document.

If access is barred for a certain ACDC category (see 3GPP TS 36.331 [22]), and if the upper layers request user plane radio resources for a higher ACDC category and the UE supports ACDC, then the tracking area updating procedure shall be started according to clause 5.5.3.2.2.

If an access request for an uncategorized application is barred due to ACDC (see 3GPP TS 36.331 [22]), and if the upper layers request user plane radio resources for a certain ACDC category and the UE supports ACDC, then the tracking area updating procedure shall be started according to clause 5.5.3.2.2.

If the trigger for the tracking area updating procedure is the response to a paging request from the network and the NAS signalling connection establishment is rejected by the network, the tracking area updating procedure shall not be started. The UE stays in the current serving cell and applies normal cell reselection process. The tracking area updating procedure may be started if it is still necessary when access for "terminating calls" is granted or because of a cell change.

b) Lower layer failure or release of the NAS signalling connection without "Extended wait time" and without "Extended wait time CP data" received from lower layers before the TRACKING AREA UPDATE ACCEPT or TRACKING AREA UPDATE REJECT message is received

The tracking area updating procedure shall be aborted, and the UE shall proceed as described below.

c) T3430 timeout

The UE shall abort the procedure. The NAS signalling connection, if any, shall be released locally.

NOTE 3: The NAS signalling connection can also be released if the UE deems that the network has failed the authentication check as specified in clause 5.4.2.7.

The UE shall proceed as described below.

d) TRACKING AREA UPDATE REJECT, other causes than those treated in clause 5.5.3.2.5, and cases of EMM cause values #22, #25 and #31, if considered as abnormal cases according to clause 5.5.3.2.5

If the tracking area updating request is not for initiating a PDN connection for emergency bearer services, upon reception of the EMM causes #95, #96, #97, #99 and #111 the UE should set the tracking area updating attempt counter to 5.

The UE shall proceed as described below.

e) Change of cell into a new tracking area

If a cell change into a new tracking area occurs before the tracking area updating procedure is completed, the tracking area updating procedure shall be aborted and re-initiated immediately. The UE shall set the EPS update status to EU2 NOT UPDATED.

The UE shall proceed as described below.

f) Tracking area updating and detach procedure collision

EPS detach containing detach type "re-attach required" or "re-attach not required":

If the UE receives a DETACH REQUEST message before the tracking area updating procedure has been completed, the tracking area updating procedure shall be aborted and the detach procedure shall be progressed. If the DETACH REQUEST message contains detach type "re-attach not required" and EMM cause #2 "IMSI unknown in HSS", the UE will follow the procedure as described below for the detach type "IMSI detach".

EPS detach containing detach type "IMSI detach":

If the UE receives a DETACH REQUEST message before the tracking area updating procedure has been completed, the DETACH REQUEST message shall be ignored and tracking area updating procedure shall be progressed.

The UE shall proceed as described below.

g) Tracking area updating and GUTI reallocation procedure collision

If the UE receives a GUTI REALLOCATION COMMAND message before the tracking area updating procedure has been completed, this message shall be ignored and the tracking area updating procedure shall be progressed.

h) Transmission failure of TRACKING AREA UPDATE REQUEST message indication from lower layers

The tracking area updating procedure shall be aborted and re-initiated immediately. The UE shall set the EPS update status to EU2 NOT UPDATED.

i) Transmission failure of TRACKING AREA UPDATE COMPLETE message indication with TAI change from lower layers

If the current TAI is not in the TAI list, the tracking area updating procedure shall be aborted and re-initiated immediately. The UE shall set the EPS update status to EU2 NOT UPDATED.

If the current TAI is still part of the TAI list, it is up to the UE implementation how to re-run the ongoing procedure.

j) Transmission failure of TRACKING AREA UPDATE COMPLETE message indication without TAI change from lower layers

It is up to the UE implementation how to re-run the ongoing procedure.

k) "Extended wait time" from the lower layers

If the TRACKING AREA UPDATE REQUEST message contained the low priority indicator set to "MS is configured for NAS signalling low priority", the UE shall start timer T3346 with the "Extended wait time" value and reset the tracking area updating attempt counter.

If the TRACKING AREA UPDATE REQUEST message did not contain the low priority indicator set to "MS is configured for NAS signalling low priority", the UE is operating in NB-S1 mode and the UE is not a UE configured to use AC11 – 15 in selected PLMN, then the UE shall start timer T3346 with the "Extended wait time" value and reset the tracking area updating attempt counter.

In other cases the UE shall ignore the "Extended wait time".

The UE shall abort the tracking area updating procedure, stay in the current serving cell, set the EPS update status to EU2 NOT UPDATED, change the state to EMM-REGISTERED.ATTEMPTING-TO-UPDATE and apply the normal cell reselection process.

If the UE had used eDRX before initiating tracking area updating procedure, then the UE shall continue to use the eDRX with the extended DRX parameters IE received during the last attach or tracking area updating procedure.

The UE shall proceed as described below.

ka) "Extended wait time CP data" from the lower layers

If the UE is operating in NB-S1 mode and supports the timer T3448, the UE shall start the timer T3448 with the "Extended wait time CP data" value. If the UE is operating in NB-S1 mode and does not support the timer T3448, the UE shall start the timer T3346 with the "Extended wait time CP data" value and reset the tracking area updating attempt counter.

In other cases the UE shall ignore the "Extended wait time CP data".

The UE shall abort the tracking area updating procedure, stay in the current serving cell, set the EPS update status to EU2 NOT UPDATED, change the state to EMM-REGISTERED.ATTEMPTING-TO-UPDATE and apply the normal cell reselection process.

If the UE had used eDRX before initiating tracking area updating procedure, then the UE shall continue to use the eDRX with the extended DRX parameters IE received during the last attach or tracking area updating procedure.

The UE shall proceed as described below.

l) Timer T3346 is running

The UE shall not start the tracking area updating procedure unless:

- the UE is in EMM-CONNECTED mode;

- the UE received a paging;

- the UE is a UE configured to use AC11 – 15 in selected PLMN;

- the UE has a PDN connection for emergency bearer services established or is establishing a PDN connection for emergency bearer services;

- the UE is requested by the upper layer for a CS fallback for emergency call or a 1xCS fallback for emergency call;

- the UE in NB-S1 mode is requested by the upper layer to transmit user data related to an exceptional event and

i) the UE is allowed to use exception data reporting (see the ExceptionDataReportingAllowed leaf of the NAS configuration MO in 3GPP TS 24.368 [15A] or the USIM file EFNASCONFIG in 3GPP TS 31.102 [17]); and

ii) timer T3346 was not started when NAS signalling connection was established with RRC establishment cause set to "MO exception data"; or

- the UE has a PDN connection established without the NAS signalling low priority indication or is establishing a PDN connection without the NAS signalling low priority indication, the timer T3402 and the timer T3411 are not running and the timer T3346 was started due to rejection of a NAS request message (e.g. ATTACH REQUEST, TRACKING AREA UPDATE REQUEST or EXTENDED SERVICE REQUEST) which contained the low priority indicator set to "MS is configured for NAS signalling low priority".

The UE stays in the current serving cell and applies the normal cell reselection process.

NOTE 4: It is considered an abnormal case if the UE needs to initiate a tracking area updating procedure while timer T3346 is running independent on whether timer T3346 was started due to an abnormal case or a non successful case.

If the TAI of the current serving cell is not included in the TAI list or the TIN indicates "P-TMSI", the UE shall set the EPS update status to EU2 NOT UPDATED and change to state EMM-REGISTERED.ATTEMPTING-TO-UPDATE.

If the tracking area updating procedure needs to be initiated for an MO MMTEL voice call or an MO MMTEL video call is started, then a notification that the procedure was not initiated due to network congestion shall be provided to upper layers.

NOTE 5: This can result in the upper layers requesting establishment of the originating voice call on an alternative manner e.g. requesting establishment of a CS voice call (see 3GPP TS 24.173 [13E]).

The UE shall proceed as described below.

la) Timer T3448 is running

The UE shall not start the tracking area updating procedure with the "signalling active" flag set, unless:

- the UE is a UE configured to use AC11 – 15 in selected PLMN;

- the UE which is only using EPS services with control plane CIoT EPS optimization received a paging; or

- the UE in NB-S1 mode is requested by the upper layer to transmit user data related to an exceptional event and the UE is allowed to use exception data reporting (see the ExceptionDataReportingAllowed leaf of the NAS configuration MO in 3GPP TS 24.368 [15A] or the USIM file EFNASCONFIG in 3GPP TS 31.102 [17]).

The UE stays in the current serving cell and applies the normal cell reselection process.

The UE shall proceed as described below.

m) Mobile originated detach required

Detach due to removal of USIM or due to switch off:

The tracking area updating procedure shall be aborted, and the UE initiated detach procedure shall be performed.

Detach not due to removal of USIM and not due to switch off:

The UE initiated detach procedure shall be initiated after successful completion of the tracking area updating procedure.

o) Timer T3447 is running

The UE shall not start the trcking area updating procedure with the "signalling active" flag set or the "active" flag set, unless:

- the UE received a paging;

- the UE is a UE configured to use AC11 – 15 in selected PLMN;

- the UE has a PDN connection for emergency bearer services established or is establishing a PDN connection for emergency bearer services; or

- the MUSIM capable UE needs to request an IMSI offset value as specified in subclause 5.5.3.2.2.

The UE stays in the current serving cell and applies the normal cell reselection process. The tracking area update request procedure is started, if still necessary, when timer T3447 expires.

p) Tracking area updating and paging procedure collision

If the UE receives a CS SERVICE NOTIFICATION message before the tracking area updating procedure has been completed, the UE shall progress the tracking area updating procedure and respond to the CS SERVICE NOTIFICATION upon successful completion of the tracking area updating procedure.

For the cases b, c, d, e, f with detach type "re-attach required" or "re-attach not required" with EMM cause other than #2 "IMSI unknown in HSS", k and ka, the UE shall stop any ongoing transmission of user data.

For the cases b, c, d, k, ka, l and la, the UE shall proceed as follows:

Timer T3430 shall be stopped if still running.

For the cases b, c, d, la k when the "Extended wait time" is ignored, and ka when the "Extended wait time CP data" is ignored, if the tracking area updating request is not for initiating a PDN connection for emergency bearer services, the tracking area updating attempt counter shall be incremented, unless it was already set to 5.

If the tracking area updating attempt counter is less than 5, the TAI of the current serving cell is included in the TAI list, the EPS update status is equal to EU1 UPDATED, the TIN does not indicate "P-TMSI" and the tracking area updating procedure is performed not due to an inter-system change from N1 mode to S1 mode and the tracking area updating procedure is not performed due to cases g, m, n, za, zc in clause 5.5.3.2.2:

the UE shall keep the EPS update status to EU1 UPDATED and enter state EMM-REGISTERED.NORMAL-SERVICE. The UE shall start timer T3411.

If in addition the TRACKING AREA UPDATE REQUEST indicated "periodic updating" or if tracking area updating procedure was initiated to recover NAS signalling connection due to "RRC Connection failure" from the lower layers, none of the other reasons for initiating the tracking area updating procedure listed in clause 5.5.3.2.2 was applicable, and the TRACKING AREA UPDATE REQUEST message did not include T3324 value IE, T3412 extended value IE or Extended DRX parameters IE, the timer T3411 may be stopped when the UE enters EMM-CONNECTED mode.

If timer T3411 expires the tracking area updating procedure is triggered again.

If the tracking area updating attempt counter is less than 5, and the TAI of the current serving cell is not included in the TAI list or the EPS update status is different to EU1 UPDATED or the TIN indicates "P-TMSI" or the tracking area updating procedure is performed due to an inter-system change from N1 mode to S1 mode or if the tracking area updating procedure is performed due to cases g, m, n, za, zc in clause 5.5.3.2.2:

- for the cases k and l, the tracking area updating procedure is started, if still necessary, when timer T3346 expires or is stopped.

- for the case ka, if timer T3346 is started, the tracking area updating procedure is started, if still necessary, when timer T3346 expires or is stopped.

- for the case ka, if timer T3448 is started and the "signalling active" flag is set in the TRACKING AREA UPDATE REQUEST message, the tracking area updating procedure is started, if still necessary, when timer T3448 expires or is stopped.

- for the case la, if the "signalling active" flag is set in the TRACKING AREA UPDATE REQUEST message, the tracking area updating procedure is started, if still necessary, when timer T3448 expires or is stopped.

- for the cases b, c, d, k when the "Extended wait time" is ignored, and ka when the "Extended wait time CP data" is ignored, if the tracking area updating request is not for initiating a PDN connection for emergency bearer services, the UE shall start timer T3411, shall set the EPS update status to EU2 NOT UPDATED and change to state EMM-REGISTERED.ATTEMPTING-TO-UPDATE. When timer T3411 expires the tracking area updating procedure is triggered again.

If A/Gb mode or Iu mode is supported by the UE, the UE shall in addition handle the GPRS update status as specified in 3GPP TS 24.008 [13] for the abnormal case when a normal or periodic routing area updating procedure fails and the routing area updating attempt counter is less than 5 and the GPRS update status is different from GU1 UPDATED.

If the UE is operating in single-registration mode, the UE shall in addition handle the 5GS update status as specified in 3GPP TS 24.501 [54] for the abnormal cases when a registration procedure for mobility and periodic registration fails and the registration attempt counter is less than 5 and the 5GS update status is different from 5U1 UPDATED.

If the tracking area updating attempt counter is equal to 5:

- the UE shall start timer T3402, shall set the EPS update status to EU2 NOT UPDATED;

- the UE shall delete the list of equivalent PLMNs and shall change to state EMM-REGISTERED.ATTEMPTING-TO-UPDATE or optionally to EMM-REGISTERED.PLMN-SEARCH in order to perform a PLMN selection according to 3GPP TS 23.122 [6]; and

- if A/Gb mode, Iu mode or N1 mode is supported by the UE:

- if A/Gb mode or Iu mode is supported by the UE, the UE shall in addition handle the GPRS update status as specified in 3GPP TS 24.008 [13] for the abnormal case when a normal or periodic routing area updating procedure fails and the routing area updating attempt counter is equal to 5;

- if the UE is operating in single-registration mode, the UE shall in addition handle the 5GS update status as specified in 3GPP TS 24.501 [54] for the abnormal case when a registration procedure for mobility or periodic registration update performed over 3GPP access fails and the registration attempt counter is equal to 5; and

- if the UE does not change to state EMM-REGISTERED.PLMN-SEARCH, the UE shall

- attempt to select GERAN, UTRAN or NG-RAN radio access technology. Additionally, if the UE selects GERAN or UTRAN radio access technology, the UE may disable the E-UTRA capability as specified in clause 4.5. If No E-UTRA Disabling In 5GS is enabled at the UE (see 3GPP TS 24.368 [50]) and the UE selects NG-RAN radio access technology, it shall not disable the E-UTRA capability; otherwise, the UE may disable the E-UTRA capability as specified in clause 4.5.

NOTE 6: Whether the UE requests RRC to treat the active E-UTRA cell as barred (see 3GPP TS 36.304 [21]) is left to the UE implementation.

Editor's note: It is FFS whether a USIM file for the No E-UTRA Disabling In 5GS configuration is needed.

attempt to select GERAN. UTRAN or NG-RAN radio access technology.

If a GERAN or UTRAN cell is selected:

- a UE in PS mode 1 or PS mode 2 of operation shall proceed with appropriate GMM specific procedures;

- a UE in CS/PS mode 1 or CS/PS mode 2 of operation shall proceed with appropriate MM or GMM specific procedures.

If an NG-RAN cell is selected, the UE shall proceed with appropriate 5GMM specific procedures.

\* \* \* Next Change \* \* \* \*

5.6.1.6 Abnormal cases in the UE

The following abnormal cases can be identified:

a) Access barred because of access class barring, EAB, ACDC or NAS signalling connection establishment rejected by the network without "Extended wait time" received from lower layers

In WB-S1 mode, if the service request procedure is started in response to a paging request from the network, access class barring, EAB or ACDC is not applicable.

In NB-S1 mode, if the service request procedure is started in response to a paging request from the network, access barring is not applicable.

If the trigger for the service request procedure is the response to a paging request from the network and the NAS signalling connection establishment is rejected by the network, the service request procedure shall not be started. The UE stays in the current serving cell and applies normal cell reselection process. During an implementation dependent time period, the service request procedure may be started when access for "terminating calls" is granted or upon a cell change.

If the service request was initiated for CS fallback and the access is barred for "mobile originating CS fallback" (see 3GPP TS 36.331 [22]) and the lower layer indicates "the barring is due to CSFB specific access barring information", the service request procedure shall not be started. The UE stays in the current serving cell and applies normal cell reselection process. The service request procedure may be started if it is still necessary, i.e. when access for "mobile originating CS fallback" is granted or because of a cell change.

If the service request was initiated for CS fallback and a CS fallback cancellation request was not received and the access is barred for "mobile originating CS fallback" (see 3GPP TS 36.331 [22]) and the lower layer does not indicate "the barring is due to CSFB specific access barring information", the UE shall attempt to select GERAN or UTRAN radio access technology. If the UE finds a suitable GERAN or UTRAN cell, it then proceeds with the appropriate MM and CC specific procedures and the EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer. Otherwise the EMM sublayer shall indicate the abort of the service request procedure to the MM sublayer.

If the service request was initiated for 1xCS fallback and the access is barred for "originating calls" (see 3GPP TS 36.331 [22]), the UE shall select cdma2000® 1x radio access technology. The UE then proceeds with appropriate cdma2000® 1x CS procedures.

If the lower layer indicated the access was barred because of access class barring for "originating calls" (see 3GPP TS 36.331 [22]) and if:

- the service request is initiated due to a request from upper layers for user plane radio resources, and the MO MMTEL voice call is started, the MO MMTEL video call is started or the MO SMSoIP is started;

- the service request is initiated due to a mobile originated SMS over NAS or SMS over S102; or

- the service request is initiated due to a request from upper layers for user plane radio resources, ACDC is applicable to the request and the UE supports ACDC.

then the service request procedure shall be started. The call type used shall be per annex D of this document.

NOTE 1: If more than one of MO MMTEL voice call is started, MO MMTEL video call is started or MO SMSoIP is started conditions are satisfied, it is left to UE implementation to determine the call type based on annex D of this document.

If access is barred for a certain ACDC category (see 3GPP TS 36.331 [22]), and if the upper layers request user plane radio resources for a higher ACDC category and the UE supports ACDC, then the service request procedure shall be started.

If an access request for an uncategorized application is barred due to ACDC (see 3GPP TS 36.331 [22]), and if the upper layers request user plane radio resources for a certain ACDC category and the UE supports ACDC, then the service request procedure shall be started.

Otherwise:

- In WB-S1 mode, if access is barred for "originating calls" (see 3GPP TS 36.331 [22]), the service request procedure shall not be started. The UE stays in the current serving cell and applies normal cell reselection process. The service request procedure may be started if it is still necessary when access for "originating calls" is granted or because of a cell change.

- In NB-S1 mode, if access is barred for "originating calls" (see 3GPP TS 36.331 [22]), the service request procedure shall not be started. The UE stays in the current serving cell and applies normal cell reselection process. Further UE behaviour is implementation specific, e.g. the service request procedure is started again after an implementation dependent time; or

In NB-S1 mode, if access is barred for "originating calls" (see 3GPP TS 36.331 [22]), and a request for an exceptional event is received from the upper layers, then the service request procedure shall be started.

NOTE 2: In NB-S1 mode, the EMM layer cannot receive the access barring alleviation indication from the lower layers (see 3GPP TS 36.331 [22]).

b) Lower layer failure or release of the NAS signalling connection without "Extended wait time", without "Extended wait time CP data", and without redirection indication received from lower layers before the service request procedure is completed (see clause 5.6.1.4) or before SERVICE REJECT message is received

If the service request was initiated for CS fallback and a CS fallback cancellation request was not received, the UE shall attempt to select GERAN or UTRAN radio access technology. If the UE finds a suitable GERAN or UTRAN cell, it then proceeds with the appropriate MM and CC specific procedures and the EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer. Otherwise the EMM sublayer shall indicate the abort of the service request procedure to the MM sublayer, and the UE shall also set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE.

If the service request was initiated for CS fallback and a CS fallback cancellation request was received, the UE shall set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE.

If the service request was initiated for 1xCS fallback, the UE shall either:

- attempt to select cdma2000® 1x radio access technology and proceed with appropriate cdma2000® 1x CS procedures. If the UE fails to select cdma2000® 1x radio access technology, the UE shall set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE; or

- set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE, and perform cell selection according to 3GPP TS 36.304 [21].

If the service request was not initiated for CS fallback or 1xCS fallback, the UE shall enter state EMM-REGISTERED.

The UE shall abort the service request procedure, stop timer T3417, T3417ext or T3417ext-mt and locally release any resources allocated for the service request procedure.

c) T3417 expired

The UE shall enter the state EMM-REGISTERED.

If the UE triggered the service request procedure in EMM-IDLE mode in order to obtain packet services, then the EMM sublayer shall increment the service request attempt counter, abort the procedure and release locally any resources allocated for the service request procedure. The service request counter shall not be incremented, if:

- the service request procedure is initiated to establish a PDN connection for emergency bearer services;

- the UE has a PDN connection for emergency bearer services established;

- the UE is a UE configured to use AC11 – 15 in selected PLMN;

- the service request is initiated in response to paging from the network; or

- the UE in NB-S1 mode is requested by the upper layer to transmit user data related to an exceptional event and the UE is allowed to use exception data reporting (see the ExceptionDataReportingAllowed leaf of the NAS configuration MO in 3GPP TS 24.368 [15A] or the USIM file EFNASCONFIG in 3GPP TS 31.102 [17]).

If the service request attempt counter is greater than or equal to 5, the UE shall start timer T3325 (see 3GPP TS 24.008 [13]). Additionally if the service request was initiated for an "originating MMTEL voice" call type or an "originating MMTEL video" call type, a notification that the service request was not accepted and that timer T3325 is running shall be provided to the upper layers.

NOTE 3: This can result in the upper layers requesting establishment of a CS voice call (if not already attempted in the CS domain), or other implementation specific mechanisms (see 3GPP TS 24.173 [13E]).

The UE shall not attempt service request until expiry of timer T3325 unless:

- the service request is initiated in response to paging from the network;

- the UE is a UE configured to use AC11 – 15 in selected PLMN;

- the service request is initiated to establish a PDN connection for emergency bearer services;

- the UE has a PDN connection for emergency bearer services established;

- the UE is registered in a new PLMN; or

- the UE in NB-S1 mode is requested by the upper layer to transmit user data related to an exceptional event and the UE is allowed to use exception data reporting (see the ExceptionDataReportingAllowed leaf of the NAS configuration MO in 3GPP TS 24.368 [15A] or the USIM file EFNASCONFIG in 3GPP TS 31.102 [17]).

If the service request for "originating MMTEL voice" call type was triggered while T3325 is running, a notification that the service request was not accepted and that timer T3325 is running shall be provided to the upper layers.

NOTE 4: This can result in the upper layers requesting establishment of a CS voice call (if not already attempted in the CS domain), or other implementation specific mechanisms (see 3GPP TS 24.173 [13E]).

NOTE 5: The NAS signalling connection can also be released if the UE deems that the network has failed the authentication check as specified in clause 5.4.2.7.

If the UE triggered the service request procedure in order to obtain services other than packet services from EMM-IDLE mode, then the EMM sublayer shall abort the procedure and release locally any resources allocated for the service request procedure.

If the UE triggered the service request procedure in EMM-CONNECTED mode, the EMM sublayer shall abort the procedure and consider the service request procedure with "active" flag set or the 1xCS fallback procedure as failed. The UE shall stay in EMM-CONNECTED mode.

d) T3417ext or T3417ext-mt expired

If a CS fallback cancellation request was not received, the UE shall attempt to select GERAN or UTRAN radio access technology. If the UE finds a suitable GERAN or UTRAN cell, it then proceeds with the appropriate MM and CC specific procedures and the EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer. Otherwise the EMM sublayer shall indicate the abort of the service request procedure to the MM sublayer, and the UE shall also set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE.

If a CS fallback cancellation request was received the UE shall set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE.

e) SERVICE REJECT received, other EMM cause values than those treated in clause 5.6.1.5, and cases of EMM cause values #22, #25 and #31 if considered as abnormal cases according to clause 5.6.1.5.

If the service request was initiated for CS fallback and a CS fallback cancellation request was not received, the UE shall attempt to select GERAN or UTRAN radio access technology. If the UE finds a suitable GERAN or UTRAN cell, it then proceeds with the appropriate MM and CC specific procedures and the EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer. Otherwise the EMM sublayer shall indicate the abort of the service request procedure to the MM sublayer, and the UE shall also set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE.

If the service request was initiated for CS fallback and a CS fallback cancellation request was received, the UE shall set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE.

If the service request was initiated for 1xCS fallback, the UE shall select cdma2000® 1x radio access technology. The UE then proceeds with appropriate cdma2000® 1x CS procedures.

If the service request was initiated for 1xCS fallback and the UE has dual Rx/Tx configuration and supports enhanced 1xCS fallback, then upon entering EMM-IDLE mode the UE shall perform tracking area updating procedure.

If the service request was not initiated for CS fallback or 1xCS fallback, the UE shall enter state EMM-REGISTERED.

The UE shall abort the service request procedure, stop timer T3417, T3417ext or T3417ext-mt and locally release any resources allocated for the service request procedure.

f) Tracking area updating procedure is triggered

The UE shall abort the service request procedure, stop timer T3417, T3417ext or T3417ext-mt if running and perform the tracking area updating procedure. The "active" flag shall be set in the TRACKING AREA UPDATE REQUEST message. If the service request was initiated for CS fallback or 1xCS fallback, and the CS fallback cancellation request was not received, the UE shall send the EXTENDED SERVICE REQUEST message to the MME by using the existing NAS signalling connection after the completion of the tracking area updating procedure. If the TRACKING AREA UPDATE ACCEPT message includes a UE radio capability ID deletion indication IE set to "Network-assigned UE radio capability IDs deletion requested", the UE shall not initiate a new tracking area update procedure, but shall proceed with sending the EXTENDED SERVICE REQUEST message by using the existing NAS signalling connection after the completion of the tracking area updating procedure.

g) Switch off

If the UE is in state EMM-SERVICE-REQUEST-INITIATED at switch off, the detach procedure shall be performed.

h) Detach procedure collision

EPS detach containing detach type "re-attach required":

If the UE receives a DETACH REQUEST message from the network in state EMM-SERVICE-REQUEST-INITIATED, the UE shall take the following actions:

- If the service request was initiated for CS fallback, the UE shall attempt to select GERAN or UTRAN radio access technology. If the UE finds a suitable GERAN or UTRAN cell, it then proceeds with the appropriate MM, CC and GMM specific procedures and the EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer. Otherwise the EMM sublayer shall indicate the abort of the service request procedure to the MM sublayer;

- If the service request was initiated for 1xCS fallback, the UE shall attempt to select cdma2000® 1x radio access technology. The UE then proceeds with appropriate cdma2000® 1x CS procedures; or

- If the service request was not initiated for CS fallback or 1xCS fallback, the detach procedure shall be progressed and the service request procedure shall be aborted.

EPS detach containing detach type "re-attach not required":

If the UE receives a DETACH REQUEST message from the network in state EMM-SERVICE-REQUEST-INITIATED, the UE shall take the following actions:

- If the DETACH REQUEST message contains an EMM cause other than #2 "IMSI unknown in HSS" or no EMM cause IE, the detach procedure shall be progressed and the service request procedure shall be aborted. Additionally, if the service request was initiated for CS fallback or 1xCS fallback, but not for CS fallback for emergency call or 1xCS fallback for emergency call, the EMM sublayer shall indicate to the MM sublayer or the cdma2000® upper layers that the CS fallback or 1xCS fallback procedure has failed; or

If the DETACH REQUEST message contains EMM cause #2 "IMSI unknown in HSS", the UE will follow the procedure as described below for the detach type "IMSI detach".

EPS detach containing detach type "IMSI detach":

If the UE receives a DETACH REQUEST message from the network in state EMM-SERVICE-REQUEST-INITIATED, the UE shall take the following actions:

- if the service request was initiated for SMS over NAS or CS fallback, but not for CS fallback for emergency call, the UE shall abort the service request procedure and progress the detach procedure; or

- otherwise the UE shall progress both procedures.

i) Transmission failure of SERVICE REQUEST, CONTROL PLANE SERVICE REQUEST or EXTENDED SERVICE REQUEST message indication with TAI change from lower layers

If the current TAI is not in the TAI list, the service request procedure shall be aborted to perform the tracking area updating procedure. The "active" flag shall be set in the TRACKING AREA UPDATE REQUEST message. If the service request was initiated for CS fallback or 1xCS fallback, and the CS fallback cancellation request was not received, the UE shall send the EXTENDED SERVICE REQUEST message to the MME by using the existing NAS signalling connection after the completion of the tracking area updating procedure.

If the current TAI is still part of the TAI list, the UE shall restart the service request procedure.

j) Transmission failure of SERVICE REQUEST, CONTROL PLANE SERVICE REQUEST or EXTENDED SERVICE REQUEST message indication without TAI change from lower layers

The UE shall restart the service request procedure.

k) Default or dedicated bearer set up failure

If the lower layers indicate a failure to set up a radio bearer, the UE shall locally deactivate the EPS bearer as described in clause 6.4.4.6.

l) "Extended wait time" from the lower layers

The UE shall abort the service request procedure, enter state EMM-REGISTERED, and stop timer T3417, T3417ext or T3417ext-mt if still running.

If the EXTENDED SERVICE REQUEST or CONTROL PLANE SERVICE REQUEST message contained the low priority indicator set to "MS is configured for NAS signalling low priority", the UE shall start timer T3346 with the "Extended wait time" value.

If the SERVICE REQUEST message was sent by a UE configured for NAS signalling low priority, the UE shall start timer T3346 with the "Extended wait time" value.

If the EXTENDED SERVICE REQUEST or CONTROL PLANE SERVICE REQUEST message did not contain the low priority indicator set to "MS is configured for NAS signalling low priority" or if the SERVICE REQUEST message was sent by a UE not configured for NAS signalling low priority, the UE is operating in NB-S1 mode and the UE is not a UE configured to use AC11 – 15 in selected PLMN, then the UE shall start timer T3346 with the "Extended wait time" value.

In other cases the UE shall ignore the "Extended wait time".

The UE stays in the current serving cell and applies normal cell reselection process. The service request procedure is started, if still necessary, when timer T3346 expires or is stopped.

If the service request was initiated for CS fallback and a CS fallback cancellation request was not received, the UE in CS/PS mode 1 of operation shall attempt to select GERAN or UTRAN radio access technology. If the UE finds a suitable GERAN or UTRAN cell, it then proceeds with the appropriate MM and CC specific procedures and the EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer. Otherwise the EMM sublayer shall indicate the abort of the service request procedure to the MM sublayer.

NOTE 5: If the UE disables the E-UTRA capability, then subsequent mobile terminating calls could fail.

If the service request was initiated for CS fallback for emergency call and a CS fallback cancellation request was not received, the UE may attempt to select GERAN or UTRAN radio access technology. It then proceeds with appropriate MM and CC specific procedures. The EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer.

If the service request was initiated for 1xCS fallback, the UE shall select cdma2000® 1x radio access technology. The UE then proceeds with appropriate cdma2000® 1x CS procedures.

If the service request was initiated for 1xCS fallback for emergency call, the UE may select cdma2000® 1x radio access technology. The UE then proceeds with appropriate cdma2000® 1x CS procedures.

If the service request was initiated due to a request from the SMS entity to send an SMS and timer T3246 is not running, the UE, if operating in CS/PS mode 1 of operation, may select GERAN or UTRAN radio access technology. It then proceeds with the appropriate MM procedure.

NOTE 6: If the UE disables the E-UTRA capability, then subsequent mobile terminating calls could fail.

la) "Extended wait time CP data" from the lower layers

The UE shall abort the service request procedure for transfer of user data via the control plane, enter state EMM-REGISTERED, and stop timer T3417 if still running.

If the UE is operating in NB-S1 mode and supports the timer T3448, the UE shall start the timer T3448 with the "Extended wait time CP data" value. If the UE is operating in NB-S1 mode and does not support the timer T3448, the UE shall start the timer T3346 with the "Extended wait time CP data" value.

In other cases the UE shall ignore the "Extended wait time CP data".

The UE stays in the current serving cell and applies normal cell reselection process. The service request procedure for transfer of user data via the control plane is started, if still necessary, when the timer T3448 expires or is stopped.

m) Timer T3346 is running

The UE shall not start the service request procedure unless:

- the UE receives a paging;

- the UE is a UE configured to use AC11 – 15 in selected PLMN;

- the UE has a PDN connection for emergency bearer services established or is establishing a PDN connection for emergency bearer services;

- the UE is requested by the upper layer for a CS fallback for emergency call or a 1xCS fallback for emergency call;

- the UE has a PDN connection established without the NAS signalling low priority indication or is establishing a PDN connection without the NAS signalling low priority indication and if the timer T3346 was started due to rejection of a NAS request message (e.g. ATTACH REQUEST, TRACKING AREA UPDATE REQUEST, EXTENDED SERVICE REQUEST or CONTROL PLANE SERVICE REQUEST) which contained the low priority indicator set to "MS is configured for NAS signalling low priority"; or

- the UE in NB-S1 mode is requested by the upper layer to transmit user data related to an exceptional event and:

- the UE is allowed to use exception data reporting (see the ExceptionDataReportingAllowed leaf of the NAS configuration MO in 3GPP TS 24.368 [15A] or the USIM file EFNASCONFIG in 3GPP TS 31.102 [17]); and

- timer T3346 was not started when NAS signalling connection was established with RRC establishment cause set to "MO exception data".

If the UE is in EMM-IDLE mode, the UE stays in the current serving cell and applies normal cell reselection process. The service request procedure is started, if still necessary, when timer T3346 expires or is stopped.

Upon upper layer's request for a mobile originated CS fallback which is not for emergency call, the UE in CS/PS mode 1 of operation shall attempt to select GERAN or UTRAN radio access technology. If the UE finds a suitable GERAN or UTRAN cell, it then proceeds with the appropriate MM and CC specific procedures and the EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer. Otherwise the EMM sublayer shall indicate the abort of the service request procedure to the MM sublayer.

NOTE 7: If the UE disables the E-UTRA capability, then subsequent mobile terminating calls could fail.

Upon upper layer's request for a CS fallback for emergency call, the UE may select GERAN or UTRAN radio access technology. It then proceeds with appropriate MM and CC specific procedures. The EMM sublayer shall not indicate the abort of the service request procedure to the MM sublayer.

Upon a request from the SMS entity to send an SMS and timer T3246 is not running, the UE, if operating in CS/PS mode 1 of operation, may select GERAN or UTRAN radio access technology. It then proceeds with the appropriate MM procedure.

NOTE 8: If the UE disables the E-UTRA capability, then subsequent mobile terminating calls could fail.

Upon upper layer's request for a mobile originated 1x CS fallback which is not for emergency call, the UE shall select cdma2000® 1x radio access technology. The UE then proceeds with appropriate cdma2000® 1x CS call procedures.

Upon upper layer's request for a 1xCS fallback for emergency call, the UE may select cdma2000® 1x radio access technology. The UE then proceeds with appropriate cdma2000® 1x CS call procedures.

If the service request procedure was triggered for an MO MMTEL voice call is started, a notification that the service request procedure was not initiated due to congestion shall be provided to the upper layers.

NOTE 9: This can result in the upper layers requesting establishment of the originating voice call on an alternative manner e.g. requesting establishment of a CS voice call (see 3GPP TS 24.173 [13E]).

n) Failure to find a suitable GERAN or UTRAN cell, after release of the NAS signalling connection without "Extended wait time" and with redirection indication received from lower layers when the service request was initiated for CS fallback

The EMM sublayer shall indicate the abort of the service request procedure to the MM sublayer, and the UE shall also set the EPS update status to EU2 NOT UPDATED and enter the state EMM-REGISTERED.ATTEMPTING-TO-UPDATE.

The UE shall abort the service request procedure, stop timer T3417ext or T3417ext-mt and locally release any resources allocated for the service request procedure.

o) Timer T3448 is running

The UE in EMM-IDLE mode shall not initiate the service request procedure for transport of user data via the control plane unless:

- the UE is a UE configured to use AC11 – 15 in selected PLMN;

- the UE which is only using EPS services with control plane CIoT EPS optimization received a paging; or

- the UE in NB-S1 mode is requested by the upper layer to transmit user data related to an exceptional event and the UE is allowed to use exception data reporting (see the ExceptionDataReportingAllowed leaf of the NAS configuration MO in 3GPP TS 24.368 [15A] or the USIM file EFNASCONFIG in 3GPP TS 31.102 [17]).

The UE stays in the current serving cell and applies the normal cell reselection process.

p) Timer T3447 is running

The UE shall not start any service request procedure unless:

- the UE receives a paging;

- the UE is a UE configured to use AC11 – 15 in selected PLMN;

- the UE has a PDN connection for emergency bearer services established or is establishing a PDN connection for emergency bearer services; or

- the MUSIM capable UE is in EMM-CONNECTED mode and requests the network to release the NAS signalling connection (see case p in subclause 5.6.1.1).

The UE stays in the current serving cell and applies the normal cell reselection process. The service request procedure is started, if still necessary, when timer T3447 expires.

\* \* \* End of Change \* \* \* \*