# 5 Subscription related tests

## 5.1 IMSI / TMSI handling

### 5.1.1 UE identification by short IMSI

#### 5.1.1.1 Definition and applicability

The IMSI is used for unique identification of the UE by UTRAN/ a GERAN. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

#### 5.1.1.2 Conformance requirement

After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE/ ATTACH REQUEST containing the IMSI of the USIM, which is less than the maximum length.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- TS 24.008 [16], clause 10.5.1.4 and 4.7.9.1.2;

- ETSI TS 102 221 [5], clause 14.1.1.

#### 5.1.1.3 Test purpose

1) To verify that the Terminal uses the IMSI of the USIM.

2) To verify that the Terminal can handle an IMSI of less than the maximum length.

3) To verify that the READ EFIMSI command is performed correctly by the terminal

#### 5.1.1.4 Method of test

##### 5.1.1.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.

- LAI (MCC/MNC/LAC): 246/081/0001.

- RAI (MCC/MNC/LAC/RAC): 246/081/0001/05. (only for UTRAN cell)

- Access control: unrestricted.

The default UICC is installed into the Terminal and the UE is powered on. In case PS is supported and active the ME performs a GPRS attach procedure, this will be accepted by the USS.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

##### 5.1.1.4.2 Procedure

Expected Sequence A:

a) The USS sends PAGING TYPE 1 in the CS domain if supported by the ME or where CS is not supported by the ME, in PS domain to the UE using the IMSI stored in the USIM.

b) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.

c) After receipt of a PAGING RESPONSE in case paging in CS domain or an ATTACH REQUEST in case of PS domain from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

Expected Sequence B:

a) The SS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.

b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a PAGING RESPONSE from the UE, the SS sends CHANNEL RELEASE to the UE.

#### 5.1.1.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE or ATTACH REQUEST to the USS/SS containing the IMSI stored in the USIM.

### 5.1.2 UE identification by short IMSI using a 2 digit MNC

#### 5.1.2.1 Definition and applicability

In some networks the IMSI identifying the UTRAN/ GERAN can be consistence of a 2 digit MNC. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

#### 5.1.2.2 Conformance requirement

After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE/ ATTACH REQUEST containing the IMSI of the USIM.

Reference:

- TS 31.102 [4], clause 4.2.18;

- TS 24.008 [16], clause 10.5.1.4 and 4.7.9.1.2.

#### 5.1.2.3 Test purpose

1) To verify that the Terminal can handle an IMSI consistence of a 2 digit MNC.

#### 5.1.2.4 Method of test

##### 5.1.2.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.

- LAI (MCC/MNC/LAC): 246/81/0001.

- RAI (MCC/MNC/LAC/RAC): 246/81/0001/05. (only for UTRAN cell)

- Access control: unrestricted.

The default UICC is used with the following exception:

**EFLOCI (Location Information)**

Logically: LAI-MCC: 246

LAI-MNC: 81

LAI-LAC: 0001

TMSI: "FF .. FF"

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 |
| Hex | FF | FF | FF | FF | 42 | F6 | 18 | 00 | 01 | FF | 00 |

**EFIMSI (IMSI)**

Logically: 246813579

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 05 | 29 | 64 | 18 | 53 | 97 | FF | FF | FF |

Logically:

Mode of operation: normal operation

Additional information: ciphering indicator feature disabled

Length of MNC in the IMSI: 2 digit

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 |
| Hex | 00 | 00 | 00 | 02 |

The UICC is installed into the Terminal and the UE is powered on. In case PS is supported and active the ME performs a GPRS attach procedure, this will be accepted by the USS.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

##### 5.1.2.4.2 Procedure

Expected Sequence A:

a) The USS sends PAGING TYPE 1 in the CS domain if supported by the ME or where CS is not supported by the ME, in PS domain to the UE using the IMSI stored in the USIM.

b) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.

c) After receipt of a PAGING RESPONSE in the case of paging in CS domain or an ATTACH REQUEST in the case of PS domain from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

Expected Sequence B:

a) The SS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.

b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a PAGING RESPONSE from the UE, the SS sends CHANNEL RELEASE to the UE.

#### 5.1.2.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE or ATTACH REQUEST to the USS/SS containing the IMSI stored in the USIM.

### 5.1.3 UE identification by "short" TMSI

#### 5.1.3.1 Definition and applicability

The TMSI is temporarily used for identification of the UE by UTRAN/ a GERAN. It will have been previously assigned by the network. The TMSI is stored in the USIM by the Terminal and read during the USIM-Terminal initialisation procedure.

NOTE: According to TS 23.003 [14], clause 2.4, a TMSI always consists of 8 digits (4 bytes). With this tests the handling of a TMSI with leading zeros will be tested. The term "short" TMSI is used in order to distinguish between the tests as defined in clauses 5.1.3 and 5.1.4.

#### 5.1.3.2 Conformance requirement

After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE containing the TMSI of the USIM. According to clause 10.3.1.17 in TS 25.331 [20] the TMSI has a fixed length of 32 bit (8 digits) when used inside the PAGING TYPE 1/ PAGING REQUEST message.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- TS 24.008 [16], clause 10.5.1.4.

- TS 25.331 [20], clause 10.3.1.17

#### 5.1.3.3 Test purpose

1) To verify that the Terminal uses the TMSI stored in the USIM.

2) To verify that the Terminal can handle a TMSI of less than maximum length.

#### 5.1.3.4 Method of test

##### 5.1.3.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.

- LAI (MCC/MNC/LAC): 246/081/0001.

- Access control: unrestricted.

The default UICC is used with the following exception:

**EFLOCI (Location Information)**

Logically: LAI-MCC: 246

LAI-MNC: 081

LAI-LAC: 0001

TMSI: "00002143"

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 |
| Hex | 00 | 00 | 21 | 43 | 42 | 16 | 80 | 00 | 01 | FF | 00 |

The UICC is installed into the Terminal and the UE is powered on.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

##### 5.1.3.4.2 Procedure

Expected Sequence A:

a) The USS sends PAGING TYPE 1 to the UE using the TMSI stored in the USIM matching the required length of 8 digits.

b) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.

c) After receipt of a PAGING RESPONSE from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

Expected Sequence B:

a) The SS sends PAGING REQUEST to the UE using the TMSI stored in the USIM matching the required length of 8 digits.

b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.

c) After receipt of a PAGING RESPONSE from the UE, the SS sends CHANNEL RELEASE to the UE.

#### 5.1.3.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE to the USS/SS containing the TMSI stored in the USIM.

### 5.1.4 UE identification by "long" TMSI

#### 5.1.4.1 Definition and applicability

The TMSI is temporarily used for identification of the UE by UTRAN/ a GERAN. It will have been previously assigned by the network. The TMSI is stored in the USIM by the Terminal and read during the USIM-Terminal initialisation procedure.

NOTE: According to TS 23.003 [14], clause 2.4, a TMSI always consists of 8 digits (4 bytes). With this tests the handling of a new assigned TMSI will be tested. The term "long" TMSI is used in order to distinguish between the tests as defined in clauses 5.1.3 and 5.1.4.

#### 5.1.4.2 Conformance requirement

After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE containing the correct TMSI stored in the USIM.

According to clause 10.3.1.17 in TS 25.331 [20] the TMSI has a fixed length of 32 bit (8 digits) when used inside the PAGING TYPE 1/PAGING REQUEST message.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- TS 24.008 [16], clause 10.5.1.4.

- TS 25.331 [20], clause 10.3.1.17

#### 5.1.4.3 Test purpose

1) To verify that the Terminal uses the TMSI stored in the USIM.

2) To verify that the Terminal can handle a TMSI of maximum length.

3) To verify that the Terminal does not respond to page requests containing a previous TMSI.

#### 5.1.4.4 Method of test

##### 5.1.4.4.1 Initial conditions

Prior to this test, the Terminal shall have been operated with a USIM containing TMSI "2143". This may be achieved by executing the previous test (5.1.3) prior to this test. Only under this condition will test purpose 3) be verified.

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.

- LAI (MCC/MNC/LAC): 246/081/0001.

- Access control: unrestricted.

The default UICC is used with the following exception:

**EFLOCI (Location Information)**

Logically: LAI-MCC: 246

LAI-MNC: 081

LAI-LAC: 0001

TMSI: "21430000"

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 |
| Hex | 21 | 43 | 00 | 00 | 42 | 16 | 80 | 00 | 01 | FF | 00 |

The UICC is installed into the Terminal and the UE is powered on.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

##### 5.1.4.4.2 Procedure

Expected Sequence A:

a) The USS sends PAGING TYPE 1 to the UE using the TMSI "00002143".

b) The USS sends PAGING TYPE 1 to the UE using the TMSI stored in the USIM.

c) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.

d) After receipt of a PAGING RESPONSE from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

Expected Sequence B:

a) The SS sends PAGING REQUEST to the UE using the TMSI "00002143".

b) The SS sends PAGING REQUEST to the UE using the TMSI stored in the USIM.

c) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.

d) After receipt of a PAGING RESPONSE from the UE, the SS sends CHANNEL RELEASE to the UE.

#### 5.1.4.5 Acceptance criteria

1) After step a) the UE shall not respond to the PAGING TYPE 1 respectively to the PAGING REQUEST.

2) After step c) the UE shall send PAGING RESPONSE to the USS/ SS containing the TMSI stored in the USIM.

### 5.1.5 UE identification by long IMSI, TMSI updating and key set identifier assignment

#### 5.1.5.1 Definition and applicability

The IMSI and TMSI are used for identification of the UE by UTRAN/ a GERAN. They are read from the USIM during the USIM-Terminal initialisation procedure. Within the authentication procedure the UTRAN sends a key set identifier respectively a GERAN sends a ciphering key sequence number to the UE. In addition the network may allocate a new TMSI to the UE. Key set identifier and TMSI are stored in the USIM after UTRAN call termination and/or at a 3G session termination. Ciphering key sequence number and TMSI are stored in the USIM after GERAN call termination and/or at a 3G session termination.

NOTE: According to TS 24.008 [16] the term KSI may be used instead of the term ciphering key sequence number which is used inside the MM message AUTHENTICATION REQUEST.

#### 5.1.5.2 Conformance requirement

1) After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE containing the correct IMSI stored in the USIM.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- TS 24.008 [16], clause 10.5.1.4.

2) After call termination the USIM shall contain the key set identifier (ciphering key sequence number) and TMSI received by the UE during the authentication and TMSI reallocation procedures.

Reference:

- TS 31.102 [4], clauses 5.1.2, 5.2.5 and 5.2.6;

- TS 21.111 [19], clause 10.1.

- TS 24.008 [16], clause 4.3.2.4.

3) After call termination the Terminal shall have updated EFLOCI.

Reference:

- ETSI TS 102 221 [5], clause 14.1.2.

#### 5.1.5.3 Test purpose

1) To verify that the Terminal uses the IMSI stored in the USIM.

2) To verify that the Terminal does not respond to page requests containing a previous IMSI.

3) To verify that the Terminal can handle an IMSI of maximum length.

4) To verify that the Terminal correctly updates the key set identifier respectively the ciphering key sequence number at call termination.

5) To verify that the Terminal correctly updates the TMSI at call termination.

6) To verify that the UPDATE EFLOCI command is performed correctly by the terminal

#### 5.1.5.4 Method of test

##### 5.1.5.4.1 Initial conditions

Prior to this test, the Terminal shall have been operated with a USIM containing IMSI "2460813579". This may be achieved by executing the previous test (5.1.4) prior to this test. Only under this condition will test purpose 2) be verified.

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.

- LAI (MCC/MNC/LAC): 246/081/0001.

- Access control: unrestricted.

The default UICC is used with the following exception:

**EFIMSI (IMSI)**

Logically: 246081111111111

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 08 | 29 | 64 | 80 | 11 | 11 | 11 | 11 | 11 |

**EFKc (GSM Ciphering Key Kc)**

Logically: Ciphering key Kc: xx

Ciphering key sequence number n: 01

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | xx | xx | xx | xx | xx | xx | xx | xx | 01 |

The UICC is installed into the Terminal and the UE is powered on.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

##### 5.1.5.4.2 Procedure

Expected Sequence A:

a) The USS sends PAGING TYPE 1 to the UE using the IMSI "2460813579".

b) The USS sends PAGING TYPE 1 to the UE using the IMSI stored in the USIM.

c) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.

d) After receipt of a PAGING RESPONSE from the UE, the USS sends AUTHENTICATION REQUEST to the UE containing Key Set Identifier KSI (ciphering key sequence number) set to binary 010.

e) After receipt of AUTHENTICATION RESPONSE from the UE and subsequent completion of the security procedure on RRC, the USS sends TMSI REALLOCATION COMMAND to the UE containing TMSI "32547698".

f) Within 5 s after receipt of TMSI REALLOCATION COMPLETE from the UE, the USS sends RRC CONNECTION RELEASE to the UE.

g) To allow examination of the values in the USIM after connection termination the UE shall not be soft powered down. If the test is performed with a USIM simulator, the simulation is stopped. If the test is performed with a USIM, the UICC is removed without soft powering down the UE. If this is not possible, the power supply of the Terminal is removed and then the UICC removed.

Expected sequence B:

a) The SS sends PAGING REQUEST to the UE using the IMSI "2460813579".

b) The SS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.

c) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.

d) After receipt of a PAGING RESPONSE from the UE, the SS sends AUTHENTICATION REQUEST to the UE containing ciphering key sequence number set to binary 010.

e) After receipt of AUTHENTICATION RESPONSE from the UE, the SS sends TMSI REALLOCATION COMMAND to the UE containing TMSI "32547698".

f) Within 5 s after receipt of TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.

g) To allow examination of the values in the USIM after connection termination the UE shall not be soft powered down. If the test is performed with a USIM simulator, the simulation is stopped. If the test is performed with a USIM, the UICC is removed without soft powering down the UE. If this is not possible, the power supply of the Terminal is removed and then the UICC removed.

#### 5.1.5.5 Acceptance criteria

1) After step a) the UE shall not respond to the PAGING TYPE 1/ PAGING REQUEST.

2) After step c) the UE shall send PAGING RESPONSE to the USS/SS containing the IMSI stored in the USIM.

3) After step e) the UE shall send TMSI REALLOCATION COMPLETE to the USS/SS.

4) After step g) the USIM shall contain the following values:

**EFLOCI (Location Information)**

Logically: LAI-MCC: 246

LAI-MNC: 081

TMSI: "32547698"

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 |
| Hex | 32 | 54 | 76 | 98 | 42 | 16 | 80 | xx | xx | xx | 00 |

In case of a Terminal accessing UTRAN:

**EFKeys (Ciphering and Integrity Keys)**

Logically: Key Set Identifier KSI: 02

Ciphering Keys CK: xx (result of the authentication algorithm)

Integrity Keys IK: xx (result of the authentication algorithm)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | … | B16 | B17 | B18 | … | B31 | B32 | B33 |
| Hex | 02 | xx | xx | … | xx | xx | xx | … | xx | xx | xx |

In case of a Terminal accessing a GERAN:

**EFKc (GSM Ciphering Key Kc)**

Logically: Ciphering key Kc: xx (result of the authentication algorithm)

Ciphering key sequence number n: 02

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | xx | xx | xx | xx | Xx | xx | xx | xx | 02 |

### 5.1.6 UE identification by short IMSI when accessing E-UTRAN/EPC

#### 5.1.6.1 Definition and applicability

Paging for EPS services using IMSI is an abnormal procedure used for error recovery in the network. The IMSI is used for unique identification of the UE by an E-UTRAN/EPC if there is no GUTI available. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

#### 5.1.6.2 Conformance requirement

Only after reception of a Paging message containing the IMSI stored in the USIM the UE shall send the *RRCConnectionRequest* message.

For NB-IoT, the paging message shall include a CN domain indicator set to "PS". If the paging message includes a UE Paging Identity set to the UE's IMSI, the paging procedure is performed according to clause 5.6.2.2.2 [26].

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- ETSI TS 102 221 [5], clause 14.1.1;

- TS 24.301 [26], clause 5.6.2.2.2, 5.6.2.4.

#### 5.1.6.3 Test purpose

1) To verify that the Terminal uses the IMSI of the USIM.

2) To verify that the Terminal can handle an IMSI of less than the maximum length.

3) To verify that the READ EFIMSI command is performed correctly by the terminal.

4) To verify that the terminal does not respond to a Paging message containing an IMSI not stored in the USIM.

#### 5.1.6.4 Method of test

##### 5.1.6.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.

- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.

- Access control: unrestricted.

The default E-UTRAN UICC is installed into the Terminal and the UE is powered on.

##### 5.1.6.4.2 Procedure

a) The UE performs Attach procedure to E-USS/NB-SS.

b) The E-USS/NB-SS sends *Paging/Paging-NB* to the UE using the IMSI 24608122222.

c) The E-USS/NB-SS sends *Paging/Paging-NB* to the UE using the IMSI stored in the USIM.

d) After receipt of a *RRCConnectionRequest/RRCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCConnectionSetup/RRCConnectionSetup-NB* message to the UE, followed by *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.

e) After the EPS attach procedure the E-USS/NB-SS sends *RRCConnectionRelease/RRCConnectionRelease-NB* to the UE.

#### 5.1.6.5 Acceptance criteria

1) After step b) the UE shall not send *RRCConnectionRequest/RRCConnectionRequest-NB* to the E-USS/NB-SS.

2) After step c) the UE shall send *RRCConnectionRequest/RRCConnectionRequest-NB* to the E-USS/NB-SS.

3) After step d) the UE performs the EPS attach procedure.

### 5.1.7 UE identification by short IMSI using a 2 digit MNC when accessing E-UTRAN/EPC

#### 5.1.7.1 Definition and applicability

In some networks the IMSI identifying the E-UTRAN/EPC can be consistence of a 2 digit MNC. Paging for EPS services using IMSI is an abnormal procedure used for error recovery in the network. The IMSI is used for unique identification of the UE by an E-UTRAN/EPC if there is no GUTI available. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

#### 5.1.7.2 Conformance requirement

Only after reception of a Paging message containing the IMSI stored in the USIM the UE shall send the *RRCConnectionRequest* message.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- ETSI TS 102 221 [5], clause 14.1.1;

- TS 24.301 [26], clause 5.6.2.2.2, 5.6.2.4.

#### 5.1.7.3 Test purpose

1) To verify that the Terminal uses the IMSI of the USIM.

2) To verify that the Terminal can handle an IMSI consistence of a 2 digit MNC.

3) To verify that the READ EFIMSI command is performed correctly by the terminal.

4) To verify that the terminal does not respond to a Paging message containing an IMSI not stored in the USIM.

#### 5.1.7.4 Method of test

##### 5.1.7.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/81/0001.

- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/81/0001.

- Access control: unrestricted.

The default UICC is used with the following exception:

**EFIMSI (IMSI)**

Logically: 246813579

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 05 | 29 | 64 | 18 | 53 | 97 | FF | FF | FF |

**EFAD (Administrative Data)**

Logically:

Mode of operation: normal operation

Additional information: ciphering indicator feature disabled

Length of MNC in the IMSI: 2 digit

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 |
| Hex | 00 | 00 | 00 | 02 |

The UICC is installed into the Terminal and the UE is powered on.

##### 5.1.7.4.2 Procedure

a) The UE performs Attach procedure to E-USS/NB-SS.

b) The E-USS/NB-SS sends *Paging*/*Paging-NB* to the UE using the IMSI 24608122222.

c) The E-USS/NB-SS sends *Paging*/*Paging-NB* to the UE using the IMSI stored in the USIM.

d) After receipt of a *RRCConnectionRequest/RRCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCConnectionSetup/RRCConnectionSetup-NB* message to the UE, followed by *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.

e) After the EPS attach procedure the E-USS/NB-SS sends *RRCConnectionRelease/RRCConnectionRelease-NB* to the UE.

#### 5.1.7.5 Acceptance criteria

1) After step b) the UE shall not send *RRCConnectionRequest/RRCConnectionRequest-NB* to the E-USS/NB-SS.

2) After step c) the UE shall send *RRCConnectionRequest/RRCConnectionRequest-NB* to the E-USS/NB-SS.

3) After step d) the UE performs the EPS attach procedure.

### 5.1.8 UE identification after changed IMSI with service "EMM Information" not available

#### 5.1.8.1 Definition and applicability

The attach procedure is used to attach for packet services in EPS. With a successful attach procedure, a context is established for the UE in the MME, and a default bearer is established between the UE and the PDN GW, thus enabling always-on IP connectivity to the UE. The network may also initiate the activation of dedicated bearers as part of the attach procedure. For NB-IoT terminals the establishment of the PDN connection is optional.

#### 5.1.8.2 Conformance requirement

The following EMM parameters shall be stored on the USIM if the corresponding file is present:

- GUTI;

- last visited registered TAI;

- EPS update status.

If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM. These EMM parameters can only be used if the IMSI from the USIM matches the IMSI stored in the non-volatile memory; else the UE shall delete the EMM parameters.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- TS 24.301 [26], clause 5.5.1.2.1, 5.5.1.2.2, 5.5.1.2.4 and Annex C.

#### 5.1.8.3 Test purpose

1) To verify that UE deletes existing EMM parameters from the UE's non-volatile memory in case a different IMSI is activated.

2) To verify that UE includes the IMSI stored in the USIM during the attach procedure.

#### 5.1.8.4 Method of test

##### 5.1.8.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.

- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.

- Access control: unrestricted.

The default UICC (without the service "EMM Information") is installed into the Terminal and the UE is powered on.

##### 5.1.8.4.2 Procedure

a) The UE is switched on.

b) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS. The E-USS/NB-SS sends *AttachAccept* with the following values:

GUTI: "24608100010266345678"

TAI (MCC/MNC/TAC): 246/081/0001

c) The UE send *AttachComplete.*

d) The E-USS/NB-SS requests the release of the RRC Connection.

e) The UE is switched off.

f) A new UICC with the following configuration is activated:

The default UICC with the following exception: The IMSI is set to "246081222233333".

g) The Terminal is switched on.

h) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS.

#### 5.1.8.5 Acceptance criteria

1) After step a) the UE shall read EFUST.

2) During step h) the UE shall include the IMSI "246081222233333", but no GUTI nor TAI in the AttachRequest message.

### 5.1.9 UE identification by GUTI when using USIM with service "EMM Information" not available

The attach procedure is used to attach for packet services in EPS. With a successful attach procedure, a context is established for the UE in the MME, and a default bearer is established between the UE and the PDN GW, thus enabling always-on IP connectivity to the UE. The network may also initiate the activation of dedicated bearers as part of the attach procedure. For NB-IoT terminals the establishment of the PDN connection is optional.

#### 5.1.9.2 Conformance requirement

The following EMM parameters shall be stored on the USIM if the corresponding file is present:

- GUTI;

- last visited registered TAI;

- EPS update status.

If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM. These EMM parameters can only be used if the IMSI from the USIM matches the IMSI stored in the non-volatile memory; else the UE shall delete the EMM parameters.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- TS 24.301 [26], clause 5.5.1.2.1, 5.5.1.2.2, 5.5.1.2.4 and Annex C.

#### 5.1.9.3 Test purpose

1) To verify that UE stores the GUTI and the TAI in the UE's non-volatile memory.

2) To verify that the UE uses the GUTI and the TAI from the UE's non-volatile memory during the attach procedure if the IMSI stored in the USIM has not changed.

#### 5.1.9.4 Method of test

##### 5.1.9.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.

- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.

- Access control: unrestricted.

The default UICC (without the service "EMM Information") is installed into the Terminal and the UE is powered on.

##### 5.1.9.4.2 Procedure

a) The UE is switched on.

b) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS. The E-USS/NB-SS sends *AttachAccept* with the following values:

GUTI: "24608100010266345699"

TAI (MCC/MNC/TAC): 246/081/0001

c) The UE send *AttachComplete.*

d) The E-USS/NB-SS requests the release of the RRC Connection.

e) The UE is switched off.

f) The default UICC remains in use.

g) The Terminal is switched on.

h) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS.

#### 5.1.9.5 Acceptance criteria

1) After step a) the UE shall read EFUST.

2) During step h) the UE shall include the GUTI "24608100010266345699" and the TAI 246/081/0001 in the *AttachRequest* message.

### 5.1.10 UE identification by GUTI when using USIM with service "EMM Information" available

#### 5.1.10.1 Definition and applicability

The attach procedure is used to attach for packet services in EPS. With a successful attach procedure, a context is established for the UE in the MME, and a default bearer is established between the UE and the PDN GW, thus enabling always-on IP connectivity to the UE. The network may also initiate the activation of dedicated bearers as part of the attach procedure. For NB-IoT terminals the establishment of the PDN connection is optional.

#### 5.1.10.2 Conformance requirement

The following EMM parameters shall be stored on the USIM if the corresponding file is present:

- GUTI;

- last visited registered TAI;

- EPS update status.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;

- TS 24.301 [26], clause 5.5.1.2.1, 5.5.1.2.2, 5.5.1.2.4 and Annex C.

#### 5.1.10.3 Test purpose

1) To verify that UE includes the GUTI and TAI stored in EFEPSLOCI in the *AttachRequest* message.

2) To verify that the EMM parameters GUTI, Last Registered TAI sent in the *AttachAccept* message and the related EPS Update Status are correctly stored on the USIM if the corresponding file is present.

#### 5.1.10.4 Method of test

##### 5.1.10.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0002.

- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0002.

- Access control: unrestricted.

The default E-UTRAN UICC is is used with the following exceptions:

**EFEPSNSC (EPS NAS Security Context)**

Logically: Key Set Identifier KSIASME: '01'

ASME Key (KSIASME): 32 byte key, any value

Uplink NAS count: '00'

Downlink NAS count: '01'

Identifiers of selected NAS  
integrity and encryption algorithm: '01'

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **…** | **B39** |
| Hex | A0 | 34 | 80 | 01 | 01 | 81 | 20 | xx | **…** | xx |
|  | **B40** | **B41** | **B42** | **B43** | **B44** | **B45** | **B46** | **B47** | **B48** | **B49** |
| 82 | 04 | 00 | 00 | 00 | 00 | 83 | 04 | 00 | 00 |
| **B50** | **B51** | **B52** | **B53** | **B54** |
| 00 | 01 | 84 | 01 | 01 |

##### 5.1.10.4.2 Procedure

a) The UE is switched on.

b) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS. The E-USS/NB-SS sends *AttachAccept* with the following values:

GUTI: "24608100010266436587"

TAI (MCC/MNC/TAC): 246/081/0002

c) The UE send *AttachComplete.*

d) The E-USS/NB-SS requests the release of the RRC Connection.

#### 5.1.10.5 Acceptance criteria

1) After step a) the UE shall read EFUST and EFEPSLOCI.

2) During step b) the UE shall include the GUTI and the Last visited registered TAI contained in EFEPSLOCI when sending the *AttachRequest* message.

3) After step b) EFEPSLOCI shall contain:

Logically: GUTI: 24608100010266436587

Last visited registered TAI: 246/081/0002

EPS update status: updated

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 |
| Hex: | 0B | F6 | 42 | 16 | 80 | 00 | 01 | 02 | 66 | 43 | 65 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | B12 | B13 | B14 | B15 | B16 | B17 | B18 |  |  |  |  |
|  | 87 | 42 | 16 | 80 | 00 | 02 | 00 |  |  |  |  |

## 5.2 Access Control handling

### 5.2.1 Access Control information handling

#### 5.2.1.1 Definition and applicability

Access Control allows restriction of call access attempts. All User Equipment are assigned to one out of ten randomly allocated classes, and optionally (for priority uses) also to one or more special categories.

An Access Class of the special Categories is only valid in the HPLMN or HPLMN country. Otherwise, the randomly allocated class is used.

The classes are programmed on the USIM. The network controls which classes at any time may be barred.

In addition, there is a separate mechanism for control of network access for emergency call attempts.

#### 5.2.1.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopt this value.

Reference:

- TS 31.102 [4], clause 5.1.1.

2. If the UE is a member of at least one access class which corresponds to the permitted classes as signalled over the air interface, and the access class is applicable in the serving network, access attempts are allowed . Otherwise access attempts are not allowed.

3. If access class 10 is barred, then the UE of classes 0 – 9 and the Terminals without UICCs shall not make emergency call attempts.

4. UE of classes 11 – 15 are not allowed to make emergency call attempts if access class 10 and the relevant access class(es) between 11 and 15 are barred. Otherwise, emergency call attempts are allowed irrespective of the conditions of access class 10.

All options are shown in figure 5-1 and are referenced to the tests.

Reference:

- TS 22.011 [6], clauses 4.3 and 4.4.

#### 5.2.1.3 Test purpose

1) To verify that the Terminal reads the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify that the UE controls its network access in accordance with its access control class and the conditions imposed by the serving network.

The tests verify Terminal performance for the following:

Tests (a) and (b) No UICC in Terminal.

Tests (c) to (e) UE with access class 0 to 9.

Test (f) UE with access class 11 and 15 not in HPLMN, and

UE with access class 12,13 and 14 not in HPLMN country.

Test (g) and (h) UE with access class 11 and 15 in HPLMN, and

UE with access class 12,13 and 14 in HPLMN country.

Each of the above are tested against all relevant combinations of access control and emergency call bits signalled by the network, as shown in table 5-1.

#### 5.2.1.4 Method of test

##### 5.2.1.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a GERAN Terminal) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.

- LAI (MCC/MNC/LAC): MCC, MNC: see table 5-1, LAC="0001".

- Access control: see table 5-1.

- RACH: see table 5-1.

The default UICC is installed in the Terminal containing IMSI and access control values as given in table 5-1 and the UE is powered on.

NOTE: Depending on the initial value of the EFLOCI, the UE may perform a location update. This shall be accepted by the USS/SS.

##### 5.2.1.4.2 Coding details

USIM IMSI EFIMSI: Data Field "6F 07"

Logically: IMSI: "2460813579"

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 06 | 21 | 64 | 80 | 31 | 75 | F9 | FF | FF |

Logically: IMSI: "24608135x9"

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 06 | 21 | 64 | 80 | 31 | x5 | F9 | FF | FF |

Access Control class EFACC: Data field "6F 78"

Reference:

See TS 31.102 [4].

NETWORK (USS in case of a Terminal accessing UTRAN)

Access Class Barred List in SIB 3 should be set as table 5.1a:

Reference:

TS 25.331 clause 10.3.2.1

NOTE: The first instance of the parameter corresponds to Access Class 0, the second to Access Class 1 and so on up to Access Class 15.

NETWORK (SS in case of a Terminal accessing GERAN)

RACH: As defined in TS 44.018 clause 10.5.2.29.

NOTE: TS 44.018 also apply for the Radio Resource management for UMTS (see TS 24.008, clause 10.5.2).

Octet 1 0111 1000

Octet 2 0000 1000

Octet 3 }

Octet 4 } as table 5-1b

##### 5.2.1.4.3 Procedure

a) Using the MMI or EMMI a normal call set-up is attempted.

b) Using the MMI or EMMI an emergency call set-up is attempted.

c) The test is repeated for each set of values in table 5-1.

#### 5.2.1.5 Acceptance criteria

After steps a) and b) the UE shall access the network, or shall make no access attempt, in accordance with table 5-1.

NOTE 1: For conformance testing, to limit testing, in tesI(c), (d) and (e) it is only necessary that one of the access classes is tested. This access class may be chosen randomly.

NOTE 2: In tables 5-1a and 5-1b the following notation is used to describe the Access Class Barred IE:

"0" = not barred, "1" =barred.

Table 5-1a

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | USIM |  |  | Network |  | Test Results | |
|  | IMSI |  | RACH  SIB3:  Access Class  Barred List | Informative: Cell Barred for: | BCCH/LAI | Normal Call | Emergency Call |
|  |  | Access | AC15-AC08 | Emergency Call | MCC |  |  |
|  |  | Class | AC07-AC00 | Normal Call | MNC |  |  |
| Test (a) | No UICC in | N/A | 0000 0100 | Yes | 234 | No | No |
|  | Terminal |  | 0000 0000 | No | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Test (b) | No UICC in | N/A | 0000 0000 | No | 234 | No | Yes |
|  | Terminal |  | 0000 0000 | No | 001 |  |  |
|  |  |  |  |  |  |  |  |
| Test (c) | "2460813579" | 0 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0000 0001 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 1 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0000 0010 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 2 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0000 0100 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 3 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0000 1000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 4 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0001 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 5 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0010 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 6 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0100 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 7 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 1000 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 8 | 0000 0101 | Yes | 246 | No | No |
|  |  |  | 0000 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 9 | 0000 0110 | Yes | 246 | No | No |
|  |  |  | 0000 0000 | No, except for ACC | 081 |  |  |
| Test (d) | "2460813579" | 0 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0000 0001 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 1 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0000 0010 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 2 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0000 0100 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 3 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0000 1000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 4 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0001 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 5 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0010 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 6 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0100 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 7 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 1000 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 8 | 0000 0001 | No | 246 | No | Yes |
|  |  |  | 0000 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 9 | 0000 0010 | No | 246 | No | Yes |
|  |  |  | 0000 0000 | None, except for ACC | 081 |  |  |
| Test (e) | "2460813579" | 0 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1110 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 1 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1101 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 2 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1011 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 3 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 0111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 4 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1110 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 5 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1101 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 6 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1011 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2406813579" | 7 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 0111 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 8 | 1111 1010 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 9 | 1111 1001 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except ACC on USIM | 081 |  |  |
| Test (f) | "24608135x9" | 11 & x | 0000 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 11 & x | 0000 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 11 & x | 0000 0000 | No | 246 | Yes | Yes |
|  |  |  | 0000 0000 | None | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "24608135x9" | 12 & x | 0000 0111 | Yes | 244 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 12 & x | 0000 0011 | No | 244 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 12 & x | 0000 0000 | No | 244 | Yes | Yes |
|  |  |  | 0000 0000 | None | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | "24608135x9" | 13 & x | 0000 0111 | Yes | 244 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 13 & x | 0000 0011 | No | 244 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 13 & x | 0000 0000 | No | 244 | Yes | Yes |
|  |  |  | 0000 0000 | None | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | "24608135x9" | 14 & x | 0000 0111 | Yes | 244 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 14 & x | 0000 0011 | No | 244 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 14 & x | 0000 0000 | No | 244 | Yes | Yes |
|  |  |  | 0000 0000 | None | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | "24608135x9" | 15 & x | 0000 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 15 & x | 0000 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 15 & x | 0000 0000 | No | 246 | Yes | Yes |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  | 0000 0000 | None | 082 |  |  |
| Test (g) | "2460813579" | 11 & x | 0000 1111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 11 & x | 0000 1011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 12 & x | 0001 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 12 & x | 0001 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 13 & x | 0010 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 13 & x | 0010 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 14 & x | 0100 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 14 & x | 0100 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 15 & x | 1000 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 15 & x | 1000 0011 | No | 246 | No | Yes |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  | 1111 1111 | All normal ACC and ACC on USIM | 081 |  |  |
| Test (h) | "2460813579" | 11 & x | 1111 0011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 11 & x | 1111 0111 | Yes | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 12 & x | 1110 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 12 & x | 1110 1111 | Yes | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 13 & x | 1101 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 13 & x | 1101 1111 | Yes | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 14 & x | 1011 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 14 & x | 1011 1111 | Yes | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 15 & x | 0111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 15 & x | 0111 1111 | Yes | 246 | Yes | Yes |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  | 1111 1111 | All, except "special" ACC on USIM | 081 |  |  |

Table 5-1b

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | USIM |  |  | Network |  | Test Results | |
|  | IMSI |  | RACH | Informative: Cell Barred for: | BCCH/LAI | Normal Call | Emergency Call |
|  |  | Access | Octet 3 | Emergency Call | MCC |  |  |
|  |  | Class | Octet 4 | Normal Call | MNC |  |  |
| Test (a) | No UICC in | N/A | 0000 0100 | Yes | 234 | No | No |
|  | Terminal |  | 0000 0000 | No | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Test (b) | No UICC in | N/A | 0000 0000 | No | 234 | No | Yes |
|  | Terminal |  | 0000 0000 | No | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Test (c) | "2460813579" | 0 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0000 0001 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 1 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0000 0010 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 2 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0000 0100 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 3 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0000 1000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 4 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0001 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 5 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0010 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 6 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 0100 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 7 | 0000 0100 | Yes | 246 | No | No |
|  |  |  | 1000 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 8 | 0000 0101 | Yes | 246 | No | No |
|  |  |  | 0000 0000 | No, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 9 | 0000 0110 | Yes | 246 | No | No |
|  |  |  | 0000 0000 | No, except for ACC | 081 |  |  |
| Test (d) | "2460813579" | 0 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0000 0001 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 1 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0000 0010 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 2 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0000 0100 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 3 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0000 1000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 4 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0001 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 5 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0010 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 6 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 0100 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 7 | 0000 0000 | No | 246 | No | Yes |
|  |  |  | 1000 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 8 | 0000 0001 | No | 246 | No | Yes |
|  |  |  | 0000 0000 | None, except for ACC | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 9 | 0000 0010 | No | 246 | No | Yes |
|  |  |  | 0000 0000 | None, except for ACC | 081 |  |  |
| Test (e) | "2460813579" | 0 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1110 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 1 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1101 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 2 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1011 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 3 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 0111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 4 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1110 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 5 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1101 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 6 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1011 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2406813579" | 7 | 1111 1011 | No | 246 | Yes | Yes |
|  |  |  | 0111 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 8 | 1111 1010 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 9 | 1111 1001 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except ACC on USIM | 081 |  |  |
| Test (f) | "24608135x9" | 11 & x | 0000 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 11 & x | 0000 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 11 & x | 0000 0000 | No | 246 | Yes | Yes |
|  |  |  | 0000 0000 | None | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "24608135x9" | 12 & x | 0000 0111 | Yes | 244 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 12 & x | 0000 0011 | No | 244 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 12 & x | 0000 0000 | No | 244 | Yes | Yes |
|  |  |  | 0000 0000 | None | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | "24608135x9" | 13 & x | 0000 0111 | Yes | 244 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 13 & x | 0000 0011 | No | 244 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 13 & x | 0000 0000 | No | 244 | Yes | Yes |
|  |  |  | 0000 0000 | None | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | "24608135x9" | 14 & x | 0000 0111 | Yes | 244 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 14 & x | 0000 0011 | No | 244 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 14 & x | 0000 0000 | No | 244 | Yes | Yes |
|  |  |  | 0000 0000 | None | 001 |  |  |
|  |  |  |  |  |  |  |  |
|  | "24608135x9" | 15 & x | 0000 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 15 & x | 0000 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All, except ACC greater than 11 | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 15 & x | 0000 0000 | No | 246 | Yes | Yes |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  | 0000 0000 | None | 082 |  |  |
| Test (g) | "2460813579" | 11 & x | 0000 1111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 11 & x | 0000 1011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 12 & x | 0001 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 12 & x | 0001 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 13 & x | 0010 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 13 & x | 0010 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 14 & x | 0100 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 14 & x | 0100 0011 | No | 246 | No | Yes |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 15 & x | 1000 0111 | Yes | 246 | No | No |
|  |  |  | 1111 1111 | All normal ACC and ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 15 & x | 1000 0011 | No | 246 | No | Yes |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  | 1111 1111 | All normal ACC and ACC on USIM | 081 |  |  |
| Test (h) | "2460813579" | 11 & x | 1111 0011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 11 & x | 1111 0111 | Yes | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 12 & x | 1110 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 12 & x | 1110 1111 | Yes | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 13 & x | 1101 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 13 & x | 1101 1111 | Yes | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 14 & x | 1011 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 14 & x | 1011 1111 | Yes | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 082 |  |  |
|  |  |  |  |  |  |  |  |
|  | "2460813579" | 15 & x | 0111 1011 | No | 246 | Yes | Yes |
|  |  |  | 1111 1111 | All, except "special" ACC on USIM | 081 |  |  |
|  |  |  |  |  |  |  |  |
|  | " | 15 & x | 0111 1111 | Yes | 246 | Yes | Yes |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  | 1111 1111 | All, except "special" ACC on USIM | 081 |  |  |



NOTE: UE adopts Access Class 0-9, based on IMSI, see TS 22.011 [6].

Access Class in USIM, See TS 31.102 [4], EF ACC, "6F 78".

ECs: Emergency Calls.

EC Bit: In case of GERAN:

Bit 3 of Octet 3 of RACH Control Parameters, See TS 44.018 Clause 10.5.2.29.

In case of UTRAN

Access Class 10 defined in TS 22.011 clause 4.4.

AC Bit: See Access Class Barred List defined in TS 25.331 clause 10.3.2.1.

HPLMN: Country means that the MCC of the VPLMN is the same as the MCC of the HPLMN.

Figure 5-1: Access control information

### 5.2.2 Access Control information handling for E-UTRAN/EPC

#### 5.2.2.1 Definition and applicability

Access Control allows restriction of EPS bearer context activation access attempts. All User Equipments are assigned to one out of ten randomly allocated classes, and optionally (for priority uses) also to one or more special categories.

An Access Class of the special categories is only valid in the HPLMN or HPLMN country. Otherwise, the randomly allocated class is used.

The classes are programmed on the USIM. The network controls which classes at any time may be barred.

Emergency call handling is FFS.

#### 5.2.2.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopt this value.

Reference:

- TS 31.102 [4], clause 5.1.1.

2. If the UE is a member of at least one access class which corresponds to the permitted classes as signalled over the air interface, and the access class is applicable in the serving network,access attempts are allowed . Otherwise access attempts are not allowed.

All options are shown in figure 5-2 and are referenced to the tests.

Reference:

- TS 22.011 [6], clauses 4.3 and 4.4,

- TS 24.301 [26], clause 5.5.1.2.6,

#### 5.2.2.3 Test purpose

1) To verify that the Terminal reads the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify that the UE controls its network access in accordance with its access control class and the conditions imposed by the serving network.

The tests verify Terminal performance for the following:

Tests (a) to (b) UE with access class 0 to 9.

Test (c) UE with access class 11 and 15 not in HPLMN, and

UE with access class 12,13 and 14 not in HPLMN country.

Test (d) and (e) UE with access class 11 and 15 in HPLMN, and

UE with access class 12,13 and 14 in HPLMN country.

Each of the above are tested against all relevant combinations of access control bits signalled by the network, as shown in table 5-2.

#### 5.2.2.4 Method of test

##### 5.2.2.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5-2, TAC="0001".

- Access control: see table 5-2.

The default UICC is installed in the Terminal containing IMSI and access control values as given in table 5-2 and the UE is powered on.

NOTE: Depending on the initial value of the EFEPSLOCI, the UE may perform a location update. This shall be accepted by the E-USS.

##### 5.2.2.4.2 Coding details

EFIMSI: Data Field "6F 07"

Logically: IMSI: "2460813579"

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 06 | 21 | 64 | 80 | 31 | 75 | F9 | FF | FF |

Logically: IMSI: "24608135x9"

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 06 | 21 | 64 | 80 | 31 | x5 | F9 | FF | FF |

Access Control class EFACC: Data field "6F 78"

Reference:

- See TS 31.102 [4].

NETWORK (E-USS)

ac-BarringInfo in SystemInformationBlockType2 should be set as in table 5-2:

Reference

- TS 36.331 clause 6.3.1

##### 5.2.2.4.3 Procedure

a) The terminal is switched on and performs registration if access is allowed for signalling according to table 5-2.

b) Using the MMI or EMMI a normal EPS bearer context setup is attempted if required by the test.

c) The test is repeated for each set of values in table 5-2.

#### 5.2.2.5 Acceptance criteria

After step a) the UE shall access the network, or shall make no access attempt, in accordance with table 5-2.

In case in tables 5-2 the cell is indicated as

barred = yes, in these sub-sequences, the UE shall not establish a connection

barred = no, the UE shall establish a connection.

NOTE 1: For conformance testing, to limit testing, in tests (a), (b) and (c) it is only necessary that one of the access classes is tested. This access class may be chosen randomly.

Table 5-2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | USIM |  |  | Network |  | |
|  | IMSI | Access class: | SIBType2:  ac-BarringInfo | Cell barred for ATTACH and Default EPS bearer context activation: | MCC MNC for BCCH/LAI | Cell barred for second (non-default) EPS bearer context setup: |
| Test (a) | "2460813579" | 0 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 1 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 2 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 3 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 4 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 5 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 6 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 7 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 8 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 9 | **SIBType2\_A01** |  | 246 | Yes |
|  |  |  |  | No | 081 |  |
| Test (b) | "2460813579" | 0 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 1 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 2 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 3 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 4 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 5 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 6 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 7 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 8 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 9 | **SIBType2\_B01** |  | 246 | No |
|  |  |  |  | No | 081 |  |
| Test (c) | "24608135x9" | 11 & x | **SIBType2\_A01** | No | 246 | Yes |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | " | 11 & x | **SIBType2\_C11\_01** | No | 246 | Yes |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | " | 11 & x | **SIBType2\_C11\_02** | Yes | 246 | N/A (no registration possible as initial condition) |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | "24608135x9" | 12 & x | **SIBType2\_A01** |  | 244 | Yes |
|  |  |  |  | No | 001 |  |
|  |  |  |  |  |  |  |
|  | " | 12 & x | **SIBType2\_C12\_01** | No | 244 | Yes |
|  |  |  |  |  | 001 |  |
|  |  |  |  |  |  |  |
|  | " | 12 & x | **SIBType2\_C12\_02** | Yes | 244 | N/A (no registration possible as initial condition) |
|  |  |  |  |  | 001 |  |
|  |  |  |  |  |  |  |
|  | "24608135x9" | 13 & x | **SIBType2\_A01** | No | 244 | Yes |
|  |  |  |  |  | 001 |  |
|  |  |  |  |  |  |  |
|  | " | 13 & x | **SIBType2\_C13\_01** | No | 244 | Yes |
|  |  |  |  |  | 001 |  |
|  |  |  |  |  |  |  |
|  | " | 13 & x | **SIBType2\_C13\_02** | Yes | 244 | N/A (no registration possible as initial condition) |
|  |  |  |  |  | 001 |  |
|  |  |  |  |  |  |  |
|  | "24608135x9" | 14 & x | **SIBType2\_A01** | No | 244 | Yes |
|  |  |  |  |  | 001 |  |
|  |  |  |  |  |  |  |
|  | " | 14 & x | **SIBType2\_C14\_01** | No | 244 | Yes |
|  |  |  |  |  | 001 |  |
|  |  |  |  |  |  |  |
|  | " | 14 & x | **SIBType2\_C14\_02** | Yes | 244 | N/A (no registration possible as initial condition) |
|  |  |  |  |  | 001 |  |
|  |  |  |  |  |  |  |
|  | "24608135x9" | 15 & x | **SIBType2\_A01** | No | 246 | Yes |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | " | 15 & x | **SIBType2\_C15\_01** | No | 246 | Yes |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | " | 15 & x | **SIBType2\_C15\_02** | Yes | 246 | N/A (no registration possible as initial condition) |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  |  |  | 082 |  |
| Test (d) | "2460813579" | 11 & x | **SIBType2\_C11\_01** | No | 246 | Yes |
|  |  |  |  |  | 081 |  |
|  |  |  |  |  |  |  |
|  | " | 11 & x | **SIBType2\_C11\_02** | Yes | 246 | N/A |
|  |  |  |  |  | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 12 & x | **SIBType2\_C12\_01** | No | 246 | Yes |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | " | 12 & x | **SIBType2\_C12\_02** | Yes | 246 | N/A |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 13 & x | **SIBType2\_C13\_01** | No | 246 | Yes |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | " | 13 & x | **SIBType2\_C13\_02** | Yes | 246 | N/A |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 14 & x | **SIBType2\_C14\_01** | No | 246 | Yes |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | " | 14 & x | **SIBType2\_C14\_02** | Yes | 246 | N/A |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 15 & x | **SIBType2\_C15\_01** | No | 246 | Yes |
|  |  |  |  |  | 081 |  |
|  |  |  |  |  |  |  |
|  | " | 15 & x | **SIBType2\_C15\_02** | Yes | 246 | N/A |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  |  |  | 081 |  |
| Test (e) | "2460813579" | 11 & x | **SIBType2\_C11\_03** | No | 246 | No |
|  |  |  |  |  | 081 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 12 & x | **SIBType2\_C12\_03** | No | 246 | No |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 13 & x | **SIBType2\_C13\_03** | No | 246 | No |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 14 & x | **SIBType2\_C14\_03** | No | 246 | No |
|  |  |  |  |  | 082 |  |
|  |  |  |  |  |  |  |
|  | "2460813579" | 15 & x | **SIBType2\_C15\_03** | No | 246 | No |
|  | Set "x" to an arbitrary value in the range 0 to 9 |  |  |  | 081 |  |

Specific message contents for Table 5-2

*SystemInformationBlockType2* configuration SIBType2\_A01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration **SIBType2\_B01**

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data | Not present |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C11\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '10000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C11\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '10000'B |  |  |
| } |  |  |  |
| ac-BarringForMO-Data | Not present |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C11\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '01111'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C12\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '01000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C12\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '01000'B |  |  |
| } |  |  |  |
| ac-BarringForMO-Data | Not present |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C12\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '10111'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C13\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '00100'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C13\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '00100'B |  |  |
| } |  |  |  |
| ac-BarringForMO-Data | Not present |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C13\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '11011'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C14\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '00010'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C14\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '00010'B |  |  |
| } |  |  |  |
| ac-BarringForMO-Data | Not present |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C14\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '11101'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C15\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '00001'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C15\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '00001'B |  |  |
| } |  |  |  |
| ac-BarringForMO-Data | Not present |  |  |
| } |  |  |  |
| } |  |  |  |

*SystemInformationBlockType2* configuration SIBType2\_C15\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508, Table 4.4.3.3-1 | | | |
| Information Element | Value/remark | Comment | Condition |
| SystemInformationBlockType2 ::= SEQUENCE { |  |  |  |
| ac-BarringInfo SEQUENCE { |  |  |  |
| ac-BarringForEmergency | FALSE |  |  |
| ac-BarringForMO-Signalling | Not present |  |  |
| ac-BarringForMO-Data SEQUENCE { |  |  |  |
| ac-BarringFactor | p00 |  |  |
| ac-BarringTime | s512 |  |  |
| ac-BarringForSpecialAC | '11110'B |  |  |
| } |  |  |  |
| } |  |  |  |
| } |  |  |  |



*Editor's note: the flow chart is currently for information only and has to be updated to be in line with 36.331, this is TBD.*

NOTE: UE adopts Access Class 0-9, based on IMSI, see TS 22.011 [6].

Access Class in USIM, See TS 31.102 [4], EF ACC, "6F 78".

ECs: Emergency Calls.

EC Bit: see description in 36.331, clause 6.3.1

Access Class 10 defined in TS 22.011 clause 4.4.

AC Bit: see description in 36.331, clause 6.3.1.

HPLMN: Country means that the MCC of the VPLMN is the same as the MCC of the HPLMN.

Figure 5-2: Access control information

### 5.2.3 Access Control information handling for NB-IoT

#### 5.2.3.1 Definition and applicability

Access Control allows restriction on RRC connection establishment attempts. All User Equipments are assigned to one out of ten randomly allocated classes, and optionally (for priority uses) also to one or more special categories.

An Access Class of the special categories is only valid in the HPLMN or HPLMN country. Otherwise, the randomly allocated class is used.

The classes are programmed on the USIM. The network controls which classes at any time may be barred.

#### 5.2.3.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopt this value.

Reference:

- TS 31.102 [4], clause 5.1.1.

2. If the UE is a member of at least one access class which corresponds to the permitted classes as signalled over the air interface, and the access class is applicable in the serving network,access attempts are allowed . Otherwise access attempts are not allowed.

Reference:

- TS 22.011 [6], clauses 4.3 and 4.4,

- TS 24.301 [26], clause 5.5.1.2.6,

#### 5.2.3.3 Test purpose

1) To verify that the Terminal reads the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify that the UE controls its network access in accordance with its access control class and the conditions imposed by the serving network.

The tests verify Terminal performance for the following:

Tests (a) to (b) UE with access class 0 to 9.

Test (c) UE with access class 11 and 15 not in HPLMN, and

UE with access class 12,13 and 14 not in HPLMN country.

Test (d) and (e) UE with access class 11 and 15 in HPLMN, and

UE with access class 12,13 and 14 in HPLMN country.

Each of the above are tested against all relevant combinations of access control bits signalled by the network, as shown in table 5-3.

#### 5.2.3.4 Method of test

##### 5.2.3.4.1 Initial conditions

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5-3, TAC="0001".

- Access control: see table 5-3.

The default UICC is installed in the Terminal containing IMSI and access control values as given in table 5-3 and the UE is powered on.

NOTE: Depending on the initial value of the EFEPSLOCI, the UE may perform a location update. This shall be accepted by the NB-SS.

##### 5.2.3.4.2 Coding details

EFIMSI: Data Field "6F 07"

Logically: IMSI: "2460813579"

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 06 | 21 | 64 | 80 | 31 | 75 | F9 | FF | FF |

Logically: IMSI: "24608135x9"

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 06 | 21 | 64 | 80 | 31 | x5 | F9 | FF | FF |

Access Control class EFACC: Data field "6F 78"

Reference:

See TS 31.102 [4].

NETWORK (NB-SS)

*ab-Enabled* included in *MasterInformationBlock-NB* is set to *TRUE* and in *SystemInformationBlockType14-NB* should be set as in table 5-3.

Reference:

TS 36.331 clause 6.7.3.1.

##### 5.2.3.4.3 Procedure

a) The terminal is switched on and performs registration if access is allowed for signalling according to table 5-3.

b) The test is repeated for each set of values in table 5-3.

#### 5.2.3.5 Acceptance criteria

After step a) the UE shall access the network, or shall make no access attempt, in accordance with table 5-3.

In case in tables 5-3 the cell is indicated as

barred = yes, in these sub-sequences, the UE shall not establish a connection

barred = no, the UE shall establish a connection.

NOTE 1: For conformance testing, to limit testing, in tests (a), (b) and (c) it is only necessary that one of the access classes is tested. This access class may be chosen randomly.

**Table 5-3**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **USIM** |  | **Network** | | |
|  | **IMSI** | **AC** | **SIBType14-NB:**  **ac-Param** | **Cell barred for RRC connection establishment / resume :** | **MCC MNC for BCCH/LAI** |
| Test (a) | "2460813579" | 0 | **SIBType14-NB\_A00** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 1 | **SIBType14-NB\_A01** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 2 | **SIBType14-NB\_A02** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 3 | **SIBType14-NB\_A03** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 4 | **SIBType14-NB\_A04** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 5 | **SIBType14-NB\_A05** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 6 | **SIBType14-NB\_A06** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 7 | **SIBType14-NB\_A07** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 8 | **SIBType14-NB\_A08** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 9 | **SIBType14-NB\_A09** | Yes | 246 081 |
|  |  |  |  |  |  |
| Test (b) | "2460813579" | 0 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 1 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 2 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 3 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 4 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 5 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 6 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 7 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 8 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 9 | **SIBType14-NB\_B01** | No | 246 081 |
|  |  |  |  |  |  |
| Test (c) | "24608135x9" | 11 & 2 | **SIBType14-NB\_C11\_01** | Yes | 246 082 |
|  |  |  |  |  |  |
|  | " | 11 & 2 | **SIBType14-NB\_C11\_02** | Yes | 246 082 |
|  |  |  |  |  |  |
|  | "24608135x9" | 12 & 5 | **SIBType14-NB\_C12\_01** | Yes | 244 001 |
|  |  |  |  |  |  |
|  | " | 12 & 5 | **SIBType14-NB\_C12\_02** | Yes | 244 001 |
|  |  |  |  |  |  |
|  | "24608135x9" | 13 & 4 | **SIBType14-NB\_C13\_01** | Yes | 244 001 |
|  |  |  |  |  |  |
|  | " | 13 & 4 | **SIBType14-NB\_C13\_02** | Yes | 244 001 |
|  |  |  |  |  |  |
|  | "24608135x9" | 14 & 9 | **SIBType14-NB\_C14\_01** | Yes | 244 001 |
|  |  |  |  |  |  |
|  | " | 14 & 9 | **SIBType14-NB\_C14\_02** | Yes | 244 001 |
|  |  |  |  |  |  |
|  | "24608135x9" | 15 & 0 | **SIBType14-NB\_C15\_01** | Yes | 246 082 |
|  | " | 15 & 0 | **SIBType14-NB\_C15\_02** | Yes | 246 082 |
|  |  |  |  |  |  |
| Test (d) | "2460813579" | 11 & 2 | **SIBType14-NB\_C11\_01** | Yes | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 12 & 5 | **SIBType14-NB\_C12\_01** | Yes | 246 082 |
|  |  |  |  |  |  |
|  | "2460813579" | 13 & 4 | **SIBType14-NB\_C13\_01** | Yes | 246 082 |
|  |  |  |  |  |  |
|  | "2460813579" | 14 & 9 | **SIBType14-NB\_C14\_01** | Yes | 246 082 |
|  |  |  |  |  |  |
|  | "2460813579" | 15 & 0 | **SIBType14-NB\_C15\_01** | Yes | 246 081 |
|  |  |  |  |  |  |
| Test (e) | "2460813579" | 11 & 2 | **SIBType14-NB\_C11\_03** | No | 246 081 |
|  |  |  |  |  |  |
|  | "2460813579" | 12 & 5 | **SIBType14-NB\_C12\_03** | No | 246 082 |
|  |  |  |  |  |  |
|  | "2460813579" | 13 & 4 | **SIBType14-NB\_C13\_03** | No | 246 082 |
|  |  |  |  |  |  |
|  | "2460813579" | 14 & 9 | **SIBType14-NB\_C14\_03** | No | 246 082 |
|  |  |  |  |  |  |
|  | "2460813579" | 15 & 0 | **SIBType14-NB\_C15\_03** | No | 246 081 |
|  |  |  |  |  |  |

**Specific message contents for Table 5-3**

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A00

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '1000000000'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0100000000'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0010000000'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0001000000'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A04

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000100000'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A05

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000010000'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A06

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000001000'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A07

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000000100'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A08

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000000010'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_A09

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000000001'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_B01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000000000'B |  |  |
| ab-BarringExceptionData-r13 | Not present |  |  |
| ab-BarringForSpecialAC-r13 | '00000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C11\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0010000000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '10000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C11\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | b |  |  |
| ab-BarringBitmap-r13 | '0010000000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '10000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C11\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0010000000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '01111'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C12\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000010000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '01000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C12\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | b |  |  |
| ab-BarringBitmap-r13 | '0000010000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '01000'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C12\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000010000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '10111'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C13\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000100000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '00100'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C13\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | b |  |  |
| ab-BarringBitmap-r13 | '0000100000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '00100'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C13\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000100000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '11011'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C14\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000000001'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '00010'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C14\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | b |  |  |
| ab-BarringBitmap-r13 | '0000000001'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '00010'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C14\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '0000000001'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '11101'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C15\_01

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '1000000000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '00001'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C15\_02

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | b |  |  |
| ab-BarringBitmap-r13 | '1000000000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '00001'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

*SystemInformationBlockType14-NB* configuration SIBType14-NB\_C15\_03

|  |  |  |  |
| --- | --- | --- | --- |
| Derivation Path: 36.508 Table 8.1.4.3.3-5 | | | |
| **Information Element** | **Value/remark** | **Comment** | **Condition** |
| SystemInformationBlockType14-NB-r13 ::= SEQUENCE { |  |  |  |
| ab-Param-r13 CHOICE { |  |  |  |
| ab-Common-r13 SEQUENCE { |  |  |  |
| ab-Category-r13 | a |  |  |
| ab-BarringBitmap-r13 | '1000000000'B |  |  |
| ab-BarringExceptionData-r13 | FALSE |  |  |
| ab-BarringForSpecialAC-r13 | '11110'B |  |  |
| } |  |  |  |
| } |  |  |  |
| lateNonCriticalExtension | Not present |  |  |
| } |  |  |  |

## 5.3 Handling subscription identifier privacy for 5G

### 5.3.1 SUCI calculation by ME using null scheme

#### 5.3.1.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers in the USIM that the operator allows. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in the order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

The ME shall calculate the SUCI using the null-scheme if the highest priority of the protection schemes listed in the USIM is the null-scheme.

#### 5.3.1.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure for EFSUCI\_Calc\_Info.

3) The ME shall calculate the SUCI using the null-scheme if highest priority of the protection schemes listed in the USIM is the null-scheme.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- TS 33.501 [41], clause Annex C;

- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.3.1.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFIMSI commands are performed correctly by the ME.

2) To verify that the ME performs the SUCI calculation procedure using null-scheme.

#### 5.3.1.4 Method of test

##### 5.3.1.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

**EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF)**

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – null-scheme

Key Index 1: 0

Protection Scheme Identifier 2 – ECIES scheme profile B

Key Index 2: 1

Protection Scheme Identifier 3 – ECIES scheme profile A

Key Index 3: 2

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 27

Home Network Public Key 1:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | A0 | 06 | 00 | 00 | 02 | 01 | 01 | 02 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| A1 | 6B | 80 | 01 | 1B | 81 | 41 | 04 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 72 | DA | 71 | 97 | 62 | 34 | CE | 83 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 3A | 69 | 07 | 42 | 58 | 67 | B8 | 2E |
| **B33** | **B34** | **B35** | **B36** | **B37** | **B38** | **B39** | **B40** |
| 07 | 4D | 44 | EF | 90 | 7D | FB | 4B |
| **B41** | **B42** | **B43** | **B44** | **B45** | **B46** | **B47** | **B48** |
| 3E | 21 | C1 | C2 | 25 | 6E | BC | D1 |
| **B49** | **B50** | **B51** | **B52** | **B53** | **B54** | **B55** | **B56** |
| 5A | 7D | ED | 52 | FC | BB | 09 | 7A |
| **B57** | **B58** | **B59** | **B60** | **B61** | **B62** | **B63** | **B64** |
| 4E | D2 | 50 | E0 | 36 | C7 | B9 | C8 |
| **B65** | **B66** | **B67** | **B68** | **B69** | **B70** | **B71** | **B72** |
| C7 | 00 | 4C | 4E | ED | C4 | F0 | 68 |
| **B73** | **B74** | **B75** | **B76** | **B77** | **B78** | **B79** | **B80** |
| CD | 7B | F8 | D3 | F9 | 00 | E3 | B4 |
| **B81** | **B82** | **B83** | **B84** | **B85** | **B86** | **B87** | **B88** |
| 80 | 01 | 1E | 81 | 20 | 5A | 8D | 38 |
| **B89** | **B90** | **B91** | **B92** | **B93** | **B94** | **B95** | **B96** |
| 86 | 48 | 20 | 19 | 7C | 33 | 94 | B9 |
| **B97** | **B98** | **B99** | **B100** | **B101** | **B102** | **B103** | **B104** |
| 26 | 13 | B2 | 0B | 91 | 63 | 3C | BD |
| **B105** | **B106** | **B107** | **B108** | **B109** | **B110** | **B111** | **B112** |
| 89 | 71 | 19 | 27 | 3B | F8 | E4 | A6 |
| **B113** | **B114** | **B115** | **B116** | **B117** |
| F4 | EE | C0 | A6 | 50 |

The UICC is installed into the ME.

##### 5.3.1.4.2 Procedure

a) The UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.3.1.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI, EFRouting\_Indicator and EFSUCI\_Calc\_Info.

2) In step b) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 357935793

### 5.3.2 SUCI calculation by ME using Profile B

#### 5.3.2.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

#### 5.3.2.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure with EFSUCI\_Calc\_Info.

3) The ME shall calculate the SUCI using the ECIES scheme profile B if highest priority of the protection schemes listed in the USIM is the ECIES scheme profile B.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- 3GPP TS 33.501 [41], clause Annex C;

- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.3.2.3 Test purpose

1) To verify that the READ EFRouting\_Indicator, EFSUCI\_Calc\_Info and EFIMSI commands are performed correctly by the terminal.

2) To verify that the ME performs the SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile B and the home network public key).

#### 5.3.2.4 Method of test

##### 5.3.2.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC is used and the UICC is installed into the ME.

The NG-SS shall be configured with Home Network Private Key as following:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | F1 | AB | 10 | 74 | 47 | 7E | BC | C7 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | F5 | 54 | EA | 1C | 5F | C3 | 68 | B1 |
|  | **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
|  | 61 | 67 | 30 | 15 | 5E | 00 | 41 | AC |
|  | **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
|  | 44 | 7D | 63 | 01 | 97 | 5F | EC | DA |

##### 5.3.2.4.2 Procedure

a) The UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of REGISTRATION ACCEPT message with a new 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.3.2.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI, EFRouting\_Indicator and EFSUCI\_Calc\_Info.

2) After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

### 5.3.3 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B

#### 5.3.3.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier.

#### 5.3.3.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the USIM if service n°124 is "available" in EFUST and service n°125 is "available" in EFUST.

2) The ME shall use the GET IDENTITY command in SUCI context to retrieve the SUCI calculated by the USIM.

3) This GET IDENTITY command shall be as per 7.5.2 in 3GPP TS 31.102 [4].

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 5.3.48 and 7.5;

- 3GPP TS 33.501 [41], clause Annex C;

- 3GPP TS 24.501 [42], clause 5.5.1.2.2, 5.5.1.2.4.

#### 5.3.3.3 Test purpose

1) To verify that the GET IDENTITY command is performed correctly by the ME.

2) To verify that the ME includes the SUCI received from the 5G-NR UICC within GET IDENTITY response in the 5GS mobile identity IE.

#### 5.3.3.4 Method of test

##### 5.3.3.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC is used and the UICC is installed into the ME.

The NG-SS shall be configured with Home Network Private Key for profile B:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | F1 | AB | 10 | 74 | 47 | 7E | BC | C7 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | F5 | 54 | EA | 1C | 5F | C3 | 68 | B1 |
|  | **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
|  | 61 | 67 | 30 | 15 | 5E | 00 | 41 | AC |
|  | **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
|  | 44 | 7D | 63 | 01 | 97 | 5F | EC | DA |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n° 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support available

SUCI calculation by USIM available

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | | B2 | | B3 | | | B4 | | B5 | | | B6 | | B7 | | B8 | | |
| Binary: | xxxx xx1x | | xxxx xxxx | | xxxx 1x00 | | | xxxx x1xx | | xxxx xx11 | | | xxxx xxxx | | xxxx xxxx | | xxxx xxxx | | |
|  |  |  | |  | |  |  | |  | |  |  | |  | |  | |  |
|  | B9 | | B10 | | B11 | | |  | | B16 | | |  | |  | |  | | |
|  | xxxx xxxx | | xxxx xxxx | | xx11 xxxx | | | ..... | | xxx1 111x | | |  | |  | |  | | |

5G-NR UICC is configured with:

Protection Scheme Identifier: ECIES scheme profile B

Key Index: 1

Home Network Public Key Identifier: 27

Home Network Public Key:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 04 | 72 | DA | 71 | 97 | 62 | 34 | CE |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 83 | 3A | 69 | 07 | 42 | 58 | 67 | B8 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 2E | 07 | 4D | 44 | EF | 90 | 7D | FB |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 4B | 3E | 21 | C1 | C2 | 25 | 6E | BC |
| **B33** | **B34** | **B35** | **B36** | **B37** | **B38** | **B39** | **B40** |
| D1 | 5A | 7D | ED | 52 | FC | BB | 09 |
| **B41** | **B42** | **B43** | **B44** | **B45** | **B46** | **B47** | **B48** |
| 7A | 4E | D2 | 50 | E0 | 36 | C7 | B9 |
| **B49** | **B50** | **B51** | **B52** | **B53** | **B54** | **B55** | **B56** |
| C8 | C7 | 00 | 4C | 4E | ED | C4 | F0 |
| **B57** | **B58** | **B59** | **B60** | **B61** | **B62** | **B63** | **B64** |
| 68 | CD | 7B | F8 | D3 | F9 | 00 | E3 |
| **B65** |
| B4 |

EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF): Not available to the ME

##### 5.3.3.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

#### 5.3.3.5 Acceptance criteria

1) After step a) the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC

2) After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

### 5.3.4 UE identification by SUCI in response to IDENTITY REQUEST message

#### 5.3.4.1 Definition and applicability

The identification procedure is specified to request a particular UE to provide specific identification parameters, e.g. the SUCI or the IMEI. The SUCI is a privacy preserving identifier containing the concealed SUPI and IMEI is a format of PEI.

The network initiates the identification procedure by sending an IDENTITY REQUEST message to the UE and starting timer T3570. The IDENTITY REQUEST message specifies the requested identification parameters in the Identity type information element and the UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM-CONNECTED mode.

#### 5.3.4.2 Conformance requirement

1) A UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM- CONNECTED mode.

2) Upon receipt of the IDENTITY REQUEST message, if the Identity type IE in the IDENTITY REQUEST message is set to "SUCI", the UE shall:

- if timer T3519 is not running, generate a fresh SUCI as specified in 3GPP TS 33.501 [41], send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and

- if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.

3) If the REGISTRATION ACCEPT message contained a 5G-GUTI, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the received 5G-GUTI, stop timer T3519 if running, and delete any stored SUCI.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- TS 33.501 [41], clauses 6.12.4 and Annex C;

- TS 24.501 [42], clauses 5.5.1.2.4,5.4.3 and 5.2.3.2.5.

#### 5.3.4.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFIMSI commands are performed correctly by the terminal.

2) To verify that the UE will perform SUCI calculation procedure correctly.

3) To verify that upon reception of the IDENTITY REQUEST message with Identity type IE set to "SUCI", the UE will:

- if timer T3519 is not running, generate a fresh SUCI, send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and

- if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI

4) To verify that upon reception of the REGISTRATION ACCEPT message containing a 5G-GUTI UE deletes the stored SUCI and stops timer T3519 if running.

#### 5.3.4.4 Method of test

##### 5.3.4.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A - TAI (MCC/MNC/TAC): 244/083/000001.

Access control: unrestricted.

Cell B - TAI (MCC/MNC/TAC): 244/084/000001.

Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

**EF**5GS3GPPLOCI **(5GS 3GPP location information)**

Logically:

5G-GUTI: 244083 00010266436587

TAI: 244 083 000001

5GS update status: 5U2 NOT UPDATED

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 |
| Hex | 00 | 0B | F2 | 42 | 34 | 80 | 00 | 01 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | 02 | 66 | 43 | 65 | 87 | 42 | 34 | 80 |
|  | **B17** | **B18** | **B19** | **B20** |
|  | 00 | 00 | 01 | 01 |

The UICC is installed into the terminal.

##### 5.3.4.4.2 Procedure

a) Bring up the Cell A and the UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

c) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI" and starts timer T3570.

d) The UE sends IDENTITY RESPONSE message with the fresh generated SUCI, starts timer T3519 and stores the value of the SUCI sent in the IDENTITY RESPONSE message.

e) NG-SS should ignore the IDENTITY RESPONSE sent by the UE and shall resend IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI" before the expiry of T3519.

f) The UE sends the IDENTITY RESPONSE message with the stored SUCI.

g) NG-SS accepts IDENTITY RESPONSE message and stops timer T3570 if running and upon reception of REGISTRATION ACCEPT message with a 5G-GUTI by UE, UE sends REGISTRATION COMPLETE message to the NG-SS, stops T3519, T3510 if running and deletes stored SUCI.

h) Bring down Cell A and bring up Cell B.

i) The UE sends REGISTRATION REQUEST to the Cell B NG-SS indicating the 5GS registration type IE as "mobility registration updating" or as "initial registration", and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

j) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI" and starts timer T3570.

k) The UE sends IDENTITY RESPONSE message with the fresh generated SUCI, starts timer T3519 and stores the value of the SUCI sent in the IDENTITY RESPONSE message.

l) NG-SS accepts IDENTITY RESPONSE message and stops timer T3570 if running and upon reception of REGISTRATION ACCEPT message with a 5G-GUTI by UE, UE sends REGISTRATION COMPLETE message to the NG-SS, stops T3519, T3510 if running and deletes stored SUCI.

#### 5.3.4.5 Acceptance criteria

a) In step d) the UE shall send IDENTITY RESPONSE with new generated SUCI.

b) In step f) the UE shall send IDENTITY RESPONSE with the same SUCI generated in step d).

c) In step k) the UE shall send IDENTITY RESPONSE with new generated SUCI.

### 5.3.5 UE identification by SUCI in response to IDENTITY REQUEST message with T3519 timer expiry

#### 5.3.5.1 Definition and applicability

The identification procedure is specified to request a particular UE to provide specific identification parameters, e.g. the SUCI or the IMEI. The SUCI is a privacy preserving identifier containing the concealed SUPI and IMEI is a format of PEI.

The network initiates the identification procedure by sending an IDENTITY REQUEST message to the UE and starting timer T3570. The IDENTITY REQUEST message specifies the requested identification parameters in the Identity type information element and the UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM-CONNECTED mode.

#### 5.3.5.2 Conformance requirement

1) A UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM- CONNECTED mode.

2) Upon receipt of the IDENTITY REQUEST message, if the Identity type IE in the IDENTITY REQUEST message is set to "SUCI", the UE shall:

- if timer T3519 is not running, generate a fresh SUCI as specified in 3GPP TS 33.501 [41], send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and

- if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.

3) If the REGISTRATION ACCEPT message contained a 5G-GUTI, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the received 5G-GUTI, stop timer T3519 if running, and delete any stored SUCI.

4) On expiry of T3519 (60s) timer UE shall delete stored SUCI (Table 10.2.1 in 3GPP TS 24.501 [42]).

5) During initial registration the UE handles the 5GS mobile identity IE in the following order as defined in TS 24.501 [42] clause 5.5.1.2.2:

b) a valid 5G-GUTI assigned by the same PLMN;

c) a valid 5G-GUTI assigned by an equivalent PLMN;

d) a valid 5G-GUTI assigned by any other PLMN;

e) a SUCI is available in the UE;

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- 3GPP TS 33.501 [41], clauses 6.12.2 and Annex C;

- 3GPP TS 24.501 [42], clauses 5.5.1.2.2, 5.5.1.2.4, 5.4.3 and 10.2.

#### 5.3.5.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFIMSI commands are performed correctly by the terminal.

2) To verify that the UE will perform SUCI calculation procedure correctly.

3) To verify that upon reception of the IDENTITY REQUEST message with Identity type IE set to "SUCI", the UE will:

- if timer T3519 is not running, generate a fresh SUCI, send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and

- if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.

4) To verify that upon expiry of T3519 UE deletes the stored SUCI.

5) To verify UE handles the 5GS mobile identity IE in the correct order during initial registration and use 5G-GUTI as identity when it has a valid 5G-GUTI and the SUCI both.

#### 5.3.5.4 Method of test

##### 5.3.5.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A -TAI (MCC/MNC/TAC): 244/083/000001.

- CellIdentity: "000000001"

Access control: unrestricted.

Cell B -TAI (MCC/MNC/TAC): 244/083/000001.

- CellIdentity: "000000002"

Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

**EF**5GS3GPPLOCI **(5GS 3GPP location information)**

Logically:

5G-GUTI: 244083 00010266436587

TAI: 244 083 000001

5GS update status: 5U2 NOT UPDATED

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 00 | 0B | F2 | 42 | 34 | 80 | 00 | 01 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | 02 | 66 | 43 | 65 | 87 | 42 | 34 | 80 |
|  | **B17** | **B18** | **B19** | **B20** |  |  |  |  |
|  | 00 | 00 | 01 | 01 |  |  |  |  |

The UICC is installed into the Terminal.

##### 5.3.5.4.2 Procedure

a) Bring up the Cell A and the UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

c) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI", then the UE sends IDENTITY RESPONSE message with the fresh generated SUCI, starts timer T3519 and stores the value of the SUCI sent in the IDENTITY RESPONSE message.

d) Bring down Cell A and bring up Cell B before the expiry of T3519 and the UE shall stop timer T3510.

e) While T3519 is still running, the UE sends *REGISTRATION REQUEST* to the Cell B NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

f) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI", then the UE sends IDENTITY RESPONSE message with the stored SUCI.

g) Bring down Cell B and bring up Cell A after 70 sec (that is, after T3519 expires) and the UE shall stop timer T3510.

h) The UE sends *REGISTRATION REQUEST* to the Cell A NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

i) NG-SS sends *IDENTITY REQUEST* message to the UE indicating Identity type information element is "SUCI", then the UE sends *IDENTITY RESPONSE* message with a freshly generated SUCI, start timer T3519 and store the value of the SUCI sent in the *IDENTITY RESPONSE* message.

j) NG-SS sends REGISTRATION ACCEPT message with a 5G-GUTI.

k) Upon reception of REGISTRATION ACCEPT message, the UE sends REGISTRATION COMPLETE message to the NG-SS, stops timers T3510 and T3519 if running and deletes any stored SUCI.

#### 5.3.5.5 Acceptance criteria

a) In step c) the UE shall send IDENTITY RESPONSE with new generated SUCI.

b) In step f) the UE shall send *IDENTITY RESPONSE* with the stored SUCI in step c).

c) In step i) the UE shall send *IDENTITY RESPONSE* with new generated SUCI.

### 5.3.6 UE identification by SUCI in response to IDENTITY REQUEST message and AUTHENTICATION REJECT

#### 5.3.6.1 Definition and applicability

The identification procedure is specified to request a particular UE to provide specific identification parameters, e.g. the SUCI or the IMEI. The SUCI is a privacy preserving identifier containing the concealed SUPI and IMEI is a format of PEI.

The network initiates the identification procedure by sending an IDENTITY REQUEST message to the UE and starting timer T3570. The IDENTITY REQUEST message specifies the requested identification parameters in the Identity type information element and the UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM-CONNECTED mode.

#### 5.3.6.2 Conformance requirement

1) A UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM- CONNECTED mode.

2) Upon receipt of the IDENTITY REQUEST message, if the Identity type IE in the IDENTITY REQUEST message is set to "SUCI", the UE shall:

- if timer T3519 is not running, generate a fresh SUCI as specified in 3GPP TS 33.501 [41], send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and

- if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.

3) If the REGISTRATION ACCEPT message contained a 5G-GUTI, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the received 5G-GUTI, stop timer T3519 if running, and delete any stored SUCI.

4) If the AUTHENTICATION REJECT message is received by the UE, the UE shall abort any 5GMM signalling procedure, stop any of the timers T3510, T3516, T3517, T3519 or T3521 (if they were running), delete stored SUCI and enter state 5GMM-DEREGISTERED.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- TS 33.501 [41], clauses 6.12.2 and Annex C;

- TS 24.501 [42], clauses 5.5.1.2.2, 5.5.1.2.4, 5.4.3, 5.4.1.3.5 and 5.4.1.2.2.11.

#### 5.3.6.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFIMSI commands are performed correctly by the terminal.

2) To verify that the UE will perform SUCI calculation procedure correctly.

3) To verify that upon reception of the IDENTITY REQUEST message with Identity type IE set to "SUCI", the UE will:

- if timer T3519 is not running, generate a fresh SUCI as specified in 3GPP TS 33.501 [41], send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and

- if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.

4) To verify that upon receiving AUTHENTICATION REJECT UE deletes the stored SUCI.

#### 5.3.6.4 Method of test

##### 5.3.6.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A -TAI (MCC/MNC/TAC): 244/083/000001.

Access control: unrestricted.

Cell B -TAI (MCC/MNC/TAC): 244/084/000001.

Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

**EF**5GS3GPPLOCI **(5GS 3GPP location information)**

Logically:

5G-GUTI: 244083 00010266436587

TAI: 244 083 000001

5GS update status: 5U2 NOT UPDATED

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 00 | 0B | F2 | 42 | 34 | 80 | 00 | 01 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | 02 | 66 | 43 | 65 | 87 | 42 | 34 | 80 |
|  | **B17** | **B18** | **B19** | **B20** |  |  |  |  |
|  | 00 | 00 | 01 | 01 |  |  |  |  |

The UICC is installed into the Terminal.

##### 5.3.6.4.2 Procedure

a) Bring up the Cell A and the UE is switched on.

b) The UE sends REGISTRATION REQUEST to the Cell A, indicates the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

c) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI, then the UE sends IDENTITY RESPONSE message with the fresh generated SUCI and start T3519 timer.

d) NG-SS sends AUTHENTICATION REQUEST to the UE.

e) Upon receiving AUTHENTICATION RESPONSE from UE, NG-SS sends AUTHENTICATION REJECT.

f) UE stops T3510 and T3519 timers and deletes the stored SUCI.

g) Bring down Cell A and bring up Cell B, switch off and then switch on UE.

h) The UE sends REGISTRATION REQUEST to the Cell B, indicates the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI", with fresh SUCI then the UE starts timers T3519, T3510.

i) NG-SS sends REGISTRATION ACCEPT message with a 5G-GUTI.

j) Upon reception of REGISTRATION ACCEPT message, the UE sends REGISTRATION COMPLETE message to the NG-SS, stops timers T3510 and T3519 if running and deletes any stored SUCI.

#### 5.3.6.5 Acceptance criteria

a) In step c) the UE shall send IDENTITY RESPONSE with new generated SUCI

b) In step h) the UE shall send REGISTRATION REQUEST with a fresh generated SUCI.

### 5.3.7 SUCI calculation by the ME using null scheme – missing parameters for subscription identifier privacy support by the USIM

#### 5.3.7.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

The ME shall calculate the SUCI using the null-scheme if one or more parameters (i.e. Home Network Public Key, Protection Scheme Identifier) required for the calculation of the SUCI are not provisioned in the USIM.

#### 5.3.7.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) As part of the SUCI calculation performed by the ME, the ME shall perform reading procedure onEFSUCI\_Calc\_Info and EFRouting\_Indicator.

3) The ME shall calculate the SUCI using the null-scheme if no Protection Scheme Identifier is provisioned in the USIM or if there is no Home Network Public Key configured in the USIM for the highest priority protection scheme configured in the USIM that the ME supports.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- 3GPP TS 33.501 [41], clause Annex C;

- 3GPP TS 24.501 [42], clause 5.5.1.2.2.

#### 5.3.7.3 Test purpose

1) To verify that the READ EFUST, EFIMSI, EFSUCI\_Calc\_Info and EFRouting\_Indicator commands are performed correctly by the ME.

2) To verify that the ME performs SUCI calculation procedure using null-scheme.

#### 5.3.7.4 Method of test

##### 5.3.7.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC is used with the following exceptions:

The USIM does not have the Home Network Public Key configured for the highest priority protection scheme configured in the USIM that the ME supports.

**EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF)**

Logically:

null

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** |
| Hex | A0 | 02 | 01 | 01 | A1 | 00 |

The UICC is installed into the ME.

##### 5.3.7.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

#### 5.3.7.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI,EFUST, EFSUCI\_Calc\_Info and EFRouting\_Indicator

2) After step b) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 357935793

### 5.3.8 UE identification by 5G-GUTI – Last Registered TAI stored on USIM

#### 5.3.8.1 Definition and applicability

A globally unique temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages.

#### 5.3.8.2 Conformance requirement

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

a) 5G-GUTI;

b) last visited registered TAI; and

c) 5GS update status.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

Reference:

- TS 31.102 [4], clause 4.4.11.2;

- TS 24.501 [42], clauses 5.3.3, 5.5.1.2 and Annex C.

#### 5.3.8.3 Test purpose

1) To verify that the READ EFIMSI and EF5GS3GPPLOCI commands are performed correctly by the ME.

2) To verify that the ME uses 5G-GUTI in the Registration Request.

#### 5.3.8.4 Method of test

5.3.8.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000002.

- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

**EF5GS3GPPLOCI (5GS 3GPP location information)**

Logically:

5G-GUTI: 24408300010266436587

TAI: 244083000001

5GS update status: 5U2 NOT UPDATED

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 00 | 0B | F2 | 42 | 34 | 80 | 00 | 01 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 02 | 66 | 43 | 65 | 87 | 42 | 34 | 80 |
| **B17** | **B18** | **B19** | **B20** |
| 00 | 00 | 01 | 01 |

The UICC is installed into the Terminal.

##### 5.3.8.4.2 Procedure

a) Bring up the NG-SS and the UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "initial registration". and 5GS mobile identity information element type "5G-GUTI.

c) Upon reception of REGISTRATION ACCEPT message with the new 5G-GUTI (244083 00010266555555) and the 5GS TAI list with TAI (244 083 000002) UE sends REGISTRATION COMPLETE message to the NG-SS and stops timer T3510 if running.

d) Power reset the UE. Valid NAS security context gets updated in the USIM

e) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

f) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.3.8.5 Acceptance criteria

1) After steps a) and e) the ME shall readEFIMSI and EF5GS3GPPLOCI.

2) In step e) the UE shall use new 5G-GUTI and Last visited TAI in the REGISTRATION REQUEST:

5G-GUTI: 24408300010266555555

TAI (MCC/MNC/TAC): 244/083/000002

### 5.3.9 UE identification by 5G-GUTI – Last Registered TAI stored by ME

#### 5.3.9.1 Definition and applicability

A globally unique temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages.

5.3.9.2 Conformance requirement

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

a) 5G-GUTI;

b) last visited registered TAI; and

c) 5GS update status.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

Reference:

- TS 24.501 [42], clauses 5.3.3, 5.5.1.2, 5.2.3.2.5 and Annex C.

#### 5.3.9.3 Test purpose

1) To verify that the READ EFIMSI command is performed correctly by the ME.

2) To verify that the ME uses 5G-GUTI in the Registration Request.

3) To verify that the ME stores the new 5G-GUTI in its non-volatile memory if the corresponding file is not present in the USIM.

#### 5.3.9.4 Method of test

##### 5.3.9.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A -TAI (MCC/MNC/TAC): 244/083/000001.

Access control: unrestricted.

Cell B -TAI (MCC/MNC/TAC): 244/084/000001.

Access control: unrestricted.

The default E-UTRAN UICC is used and installed into the Terminal.

##### 5.3.9.4.2 Procedure

a) Bring up the Cell A and the UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "initial registration".

c) The NG-SS sends a REGISTRATION ACCEPT message with the following parameters:

5G-GUTI: 244083 00010266436587

TAI: 244 083 000001

d) The UE sends REGISTRATION COMPLETE message to the NG-SS.

e) The UE is switched off.

f) The UE is switched on.

g) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

h) The NG-SS sends REGISTRATION ACCEPT message with the following parameters:

5G-GUTI: 244 083 00010266434444

TAI: 244 083 000001

i) The UE sends REGISTRATION COMPLETE message to the NG-SS and stops timer T3510.

j) Turn cell A off, then turn cell B on.

k) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "mobility registration updating" or as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

#### 5.3.9.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI.

2) In step g) the UE shall use in the REGISTRATION REQUEST the following parameters:

5G-GUTI: 244083 00010266436587

Last visited registered TAI: 244 083 000001

3) In step k) the UE shall use in the REGISTRATION REQUEST with the following parameters:

5G-GUTI: 244 083 00010266434444

Last visited registered TAI: 244 083 000001

### 5.3.10 UE identification after SUPI is changed

#### 5.3.10.1 Definition and applicability

A globally unique temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages.

#### 5.3.10.2 Conformance requirement

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

a) 5G-GUTI;

b) last visited registered TAI;

c) 5GS update status; and

d) 5G NAS security context parameters from a full native 5G NAS security context.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

Reference:

- TS 24.501 [42], clauses 5.3.3, 5.5.1.2 and Annex C.

#### 5.3.10.3 Test purpose

1) To verify that the READ EFIMSI command is performed correctly by the ME.

2) To verify that the ME deletes the 5GMM parameters from non-volatile memory in case SUPI is changed.

#### 5.3.10.4 Method of test

##### 5.3.10.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default E-UTRAN UICC is used and installed into the Terminal.

##### 5.3.10.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicates the 5GS registration type IE as "initial registration".

c) The NG-SS sends a *REGISTRATION ACCEPT* message with the following parameters:

5G-GUTI: 24408300010266436587

TAI: 244 083 000001

d) The UE sends a *REGISTRATION COMPLETE* message to the NG-SS.

e) The UE is switched off, change the UICC configuration by setting the IMSI to (24681685533963)

f) The UE is switched on.

g) The UE sends REGISTRATION REQUEST to the NG-SS.

#### 5.3.10.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI

2) In step g) the UE shall not use the 5G-GUTI or the Last visited registered TAI parameters in the REGISTRATION REQUEST message, instead it shall use SUCI as 5GS mobile identity IE.

### 5.3.11 SUCI calculation by ME using Profile A

#### 5.3.11.1 Definition and applicability

If the operator's decision is that the ME shall calculate the SUCI, the Home Network Operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

#### 5.3.11.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST.

2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure with EFSUCI\_Calc\_Info.

3) The ME shall calculate the SUCI using the ECIES scheme profile A if highest priority of the protection schemes listed in the USIM is the ECIES scheme profile A

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- 3GPP TS 33.501 [41], clause Annex C;

- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.3.11.3 Test purpose

1) To verify that the READ EFRouting\_Indicator, EFSUCI\_Calc\_Info and EFIMSI commands are performed correctly by the ME.

2) To verify that the terminal performs SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile A and the Home Network Public Key).

#### 5.3.11.4 Method of test

##### 5.3.11.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The 5G-NR UICC is configured with the following parameters in the order of priority and installed into the ME.

EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – ECIES scheme profile A

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile B

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 30

Home Network Public Key 1:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Home Network Public Key 2 Identifier: 27

Home Network Public Key 2:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

The NG-SS shall be configured with Home Network Private Key as following (for Profile A):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | C5 | 3C | 22 | 20 | 8B | 61 | 86 | 0B |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 06 | C6 | 2E | 54 | 06 | A7 | B3 | 30 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| C2 | B5 | 77 | AA | 55 | 58 | 98 | 15 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 10 | D1 | 28 | 24 | 7D | 38 | BD | 1D |

##### 5.3.11.4.2 Procedure

a) The UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.3.11.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI, EFUST, EFRouting\_Indicator and EFSUCI\_Calc\_Info.

2) After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

### 5.3.12 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile A

#### 5.3.12.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier.

#### 5.3.12.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the USIM if service n°124 is "available" in EFUST and service n°125 is "available" in EFUST.

2) The ME shall use the GET IDENTITY command in SUCI context to retrieve the SUCI calculated by the USIM.

3) This GET IDENTITY command shall be as per 7.5.2 in TS 31.102

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 5.3.48 and 7.5;

- TS 33.501 [41], clause Annex C;

- TS 24.501 [42], clause 5.5.1.2.2.

#### 5.3.12.3 Test purpose

1) To verify that the GET IDENTITY command is performed correctly by the terminal.

2) To verify that the terminal includes the SUCI received from the 5G-NR UICC within GET IDENTITY response in the 5GS mobile identity IE.

#### 5.3.12.4 Method of test

##### 5.3.12.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC is used and the UICC is installed into the Terminal.

The NG-SS shall be configured with Home Network Private Key for profile A:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | C5 | 3C | 22 | 20 | 8B | 61 | 86 | 0B |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 06 | C6 | 2E | 54 | 06 | A7 | B3 | 30 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| C2 | B5 | 77 | AA | 55 | 58 | 98 | 15 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 10 | D1 | 28 | 24 | 7D | 38 | BD | 1D |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n° 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support available

SUCI calculation by USIM available

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | | B2 | | B3 | | | B4 | | B5 | | | B6 | | B7 | | B8 | | |
| Binary: | xxxx xx1x | | xxxx xxxx | | xxxx 1x00 | | | xxxx x1xx | | xxxx xx11 | | | xxxx xxxx | | xxxx xxxx | | xxxx xxxx | | |
|  |  |  | |  | |  |  | |  | |  |  | |  | |  | |  |
|  | B9 | | B10 | | B11 | | |  | | B16 | | |  | |  | |  | | |
|  | xxxx xxxx | | xxxx xxxx | | xx11 xxxx | | | ..... | | xxx1 111x | | |  | |  | |  | | |

5G-NR UICC is configured with:

Protection Scheme Identifier: ECIES scheme profile A

Key Index: 1

Home Network Public Key Identifier: 30

Home Network Public Key:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 5A | 8D | 38 | 86 | 48 | 20 | 19 | 7C |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 33 | 94 | B9 | 26 | 13 | B2 | 0B | 91 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 63 | 3C | BD | 89 | 71 | 19 | 27 | 3B |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| F8 | E4 | A6 | F4 | EE | C0 | A6 | 50 |

EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF): Not available to the ME

##### 5.3.12.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

#### 5.3.12.5 Acceptance criteria

1) After step a) the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC

2) After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

### 5.3.13 SUCI calculation by ME using null scheme– no Protection Scheme Identifier provisioned in the USIM

#### 5.3.13.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, and the home network operator has not provisioned any Protection Scheme Identifier definition in the list of Protection Scheme Identifiers in the USIM, the ME shall calculate the SUCI using the null-scheme.

#### 5.3.13.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure on EFSUCI\_Calc\_Info and EFRouting\_Indicator.

3) The ME shall calculate the SUCI using the null-scheme if no Protection Scheme Identifier is provisioned in the USIM.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- TS 33.501 [41], clause 6.12.2, Annex C;

- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.3.13.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFIMSI commands are performed correctly by the ME.

2) To verify that the ME performs the SUCI calculation procedure using null-scheme.

#### 5.3.13.4 Method of test

##### 5.3.13.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

**EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF)**

Logically:

null

|  |  |  |
| --- | --- | --- |
| **Coding:** | **B1** | **B2** |
| Hex | A0 | 00 |

The UICC is installed into the Terminal.

##### 5.3.13.4.2 Procedure

a) The UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.3.13.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI, EFRouting\_Indicator and EFSUCI\_Calc\_Info

2) After step b) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 357935793

### 5.3.14 SUCI calculation by ME using null scheme – no Home Network Public Key for supported protection scheme provisioned in the USIM

#### 5.3.14.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, and the home network operator has not provisioned the Home Network Public Key for the protection scheme configured in the USIM that the ME supports, the ME shall calculate the SUCI using the null-scheme.

#### 5.3.14.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure on EFSUCI\_Calc\_Info and EFRouting\_Indicator.

3) The ME shall calculate the SUCI using the null-scheme if no Home Network Public Key configured in the USIM for the protection scheme configured in the USIM that the ME supports.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- TS 33.501 [41], clause 6.12.2, Annex C;

- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.3.14.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFIMSI commands are performed correctly by the ME.

2) To verify that the ME performs the SUCI calculation procedure using null-scheme.

#### 5.3.14.4 Method of test

##### 5.3.14.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

**EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF)**

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – ECIES scheme profile B

Key Index 1: 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** |
| Hex | A0 | 02 | 02 | 00 |

The UICC is installed into the Terminal.

##### 5.3.14.4.2 Procedure

a) The UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.3.14.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI, EFRouting\_Indicator and EFSUCI\_Calc\_Info

2) After step b) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 357935793

### 5.3.15 SUCI calculation by ME using null scheme with the E-UTRAN/EPC UICC

#### 5.3.15.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision the Protection Scheme and public key in the USIM that the operator allows. But if the SUCI calculation indication is not present, the calculation is in the ME. If the Home Network Public Key or the priority list are not provisioned in the USIM, the ME shall calculate the SUCI using the null-scheme. The Routing Indicator shall be stored in the USIM. If the Routing Indicator is not present in the USIM, the ME shall set it to a default value 0.

#### 5.3.15.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if the SUCI calculation indication is not present in the USIM.

2) The ME shall calculate the SUCI using the null-scheme if E-UTRAN/EPC UICC is installed into the ME.

Reference:

- TS 31.102 [4], clause Annex E;

- TS 33.501 [41], clause 5.2.5, 6.12.2, Annex C;

- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4, 9.11.3.4.

#### 5.3.15.3 Test purpose

1) To verify that the ME performs the SUCI calculation procedure using null-scheme.

#### 5.3.15.4 Method of test

##### 5.3.15.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default E-UTRAN/EPC is used with the following exception:

EFIMSI (IMSI)

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Coding: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

The UICC is installed into the Terminal.

##### 5.3.15.4.2 Procedure

a) Bring up Cell A and the UE is switched on.

b) The UE sends REGISTRATION REQUEST to NG-SS, Further NG-SS responds with REGISTRATION REJECT (cause: Roaming not allowed in this tracking area), and the UE is switched off.

c) The UE is switched on.

d) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

e) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.3.15.5 Acceptance criteria

1) After step c) the ME shall readEFIMSI.

2) At step d) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 0

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 357935793

### 5.3.16 SUCI calculation by ME using the lower priority protection scheme when the higher priority protection scheme is not supported by the ME

#### 5.3.16.1 Definition and applicability

If the operator's decision is that the ME shall calculate the SUCI, the Home Network Operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM. If the higher priority protection scheme is not supported by the ME, the ME should use the lower priority protection scheme to calculate the SUCI.

#### 5.3.16.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST.

2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure with EFSUCI\_Calc\_Info.

3) The ME shall select the protection scheme from its supported schemes that has the highest priority in the list are obtained from the USIM. If the higher priority protection scheme is not supported by the ME, the ME should use the lower priority protection scheme to calculate the SUCI.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- 3GPP TS 33.501 [41], clause 6.12.2, Annex C;

- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.3.16.3 Test purpose

1) To verify that the READ EFRouting\_Indicator, EFSUCI\_Calc\_Info and EFIMSI commands are performed correctly by the ME.

2) To verify that if the higher priority protection scheme is not supported by the ME, the ME should use the lower priority protection scheme to calculate the SUCI.

#### 5.3.16.4 Method of test

##### 5.3.16.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The 5G-NR UICC is configured with the following parameters in the order of priority and installed into the ME.

**EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF)**

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – any value of the reserved range (i.e 0x3 - 0xB) that is not standardized

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile A

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 16

Home Network Public Key 1: 2E 85 DA EC 6A C9 B5 2B 5D 2D 58 02 33 29 57 75 49 44 5A 39 3D 2A 68 E6 12 14 27 34 95 AD BE 65

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2: 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | A0 | 06 | Note1 | 01 | 01 | 02 | 00 | 00 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | A1 | 4A | 80 | 01 | 10 | 81 | 20 | 2E |
|  | **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
|  | 85 | DA | EC | 6A | C9 | B5 | 2B | 5D |
|  | **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
|  | 2D | 58 | 02 | 33 | 29 | 57 | 75 | 49 |
|  | **B33** | **B34** | **B35** | **B36** | **B37** | **B38** | **B39** | **B40** |
|  | 44 | 5A | 39 | 3D | 2A | 68 | E6 | 12 |
|  | **B41** | **B42** | **B43** | **B44** | **B45** | **B46** | **B47** | **B48** |
|  | 14 | 27 | 34 | 95 | AD | BE | 65 | 80 |
|  | **B49** | **B50** | **B51** | **B52** | **B53** | **B54** | **B55** | **B56** |
|  | 01 | 1E | 81 | 20 | 5A | 8D | 38 | 86 |
|  | **B57** | **B58** | **B59** | **B60** | **B61** | **B62** | **B63** | **B64** |
|  | 48 | 20 | 19 | 7C | 33 | 94 | B9 | 26 |
|  | **B65** | **B66** | **B67** | **B68** | **B69** | **B70** | **B71** | **B72** |
|  | 13 | B2 | 0B | 91 | 63 | 3C | BD | 89 |
|  | **B73** | **B74** | **B75** | **B76** | **B77** | **B78** | **B79** | **B80** |
|  | 71 | 19 | 27 | 3B | F8 | E4 | A6 | F4 |
|  | **B81** | **B82** | **B83** | **B84** |  |  |  |  |
|  | EE | C0 | A6 | 50 |  |  |  |  |

NOTE1: Any value of the reserved range (i.e 0x3 - 0xB) that is not standardized (e.g. 0xB).

The NG-SS shall be configured with Home Network Private Key as following (for Profile A):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | C5 | 3C | 22 | 20 | 8B | 61 | 86 | 0B |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 06 | C6 | 2E | 54 | 06 | A7 | B3 | 30 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| C2 | B5 | 77 | AA | 55 | 58 | 98 | 15 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 10 | D1 | 28 | 24 | 7D | 38 | BD | 1D |

##### 5.3.16.4.2 Procedure

a) The UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.3.16.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI, EFUST, EFRouting\_Indicator and EFSUCI\_Calc\_Info.

2) After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

### 5.3.17 SUCI calculation by ME using Profile B with compressed Home Network Public Key

#### 5.3.17.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

According to RFC 5480 [46] the ECC public key used with Profile B might have been calculated in compressed format.

#### 5.3.17.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure with EFSUCI\_Calc\_Info.

3) The ME shall calculate the SUCI using the highest priority supported protection scheme and the home network public key stored on the USIM

4) The ME shall be capable to calculate the SUCI using Profile B with the ECC public key provided in compressed format.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;

- 3GPP TS 33.501 [41], clause Annex C;

- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4;

- RFC 5480 [46], clause 2.2.

#### 5.3.17.3 Test purpose

1) To verify that the READ EFRouting\_Indicator, EFSUCI\_Calc\_Info and EFIMSI commands are performed correctly by the ME.

2) To verify that the ME performs the SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile B and the home network public key).

#### 5.3.17.4 Method of test

##### 5.3.17.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

**EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF)**

Logically:

Protection Scheme Identifier List data object:

Protection Scheme Identifier 1 – ECIES scheme profile B

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile A

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object:

Home Network Public Key 1 Identifier: 27

Home Network Public Key 1 (see Note 1):

- 02 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | A0 | 06 | 02 | 01 | 01 | 02 | 00 | 00 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| A1 | 4B | 80 | 01 | 1B | 81 | 21 | 02 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 72 | DA | 71 | 97 | 62 | 34 | CE | 83 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 3A | 69 | 07 | 42 | 58 | 67 | B8 | 2E |
| **B33** | **B34** | **B35** | **B36** | **B37** | **B38** | **B39** | **B40** |
| 07 | 4D | 44 | EF | 90 | 7D | FB | 4B |
| **B41** | **B42** | **B43** | **B44** | **B45** | **B46** | **B47** | **B48** |
| 3E | 21 | C1 | C2 | 25 | 6E | BC | D1 |
| **B49** | **B50** | **B51** | **B52** | **B53** | **B54** | **B55** | **B56** |
| 80 | 01 | 1E | 81 | 20 | 5A | 8D | 38 |
| **B57** | **B58** | **B59** | **B60** | **B61** | **B62** | **B63** | **B64** |
| 86 | 48 | 20 | 19 | 7C | 33 | 94 | B9 |
| **B65** | **B66** | **B67** | **B68** | **B69** | **B70** | **B71** | **B72** |
| 26 | 13 | B2 | 0B | 91 | 63 | 3C | BD |
| **B73** | **B74** | **B75** | **B76** | **B77** | **B78** | **B79** | **B80** |
| 89 | 71 | 19 | 27 | 3B | F8 | E4 | A6 |
| **B81** | **B82** | **B83** | **B84** | **B85** |
| F4 | EE | C0 | A6 | 50 |

NOTE 1: EFSUCI\_Calc\_Info contains the compressed form of the ECC public key for Profile B.

The UICC is installed into the ME.

The NG-SS shall be configured with Home Network Private Key as following:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | F1 | AB | 10 | 74 | 47 | 7E | BC | C7 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| F5 | 54 | EA | 1C | 5F | C3 | 68 | B1 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 61 | 67 | 30 | 15 | 5E | 00 | 41 | AC |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 44 | 7D | 63 | 01 | 97 | 5F | EC | DA |

##### 5.3.17.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of *REGISTRATION ACCEPT* message with a new 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

#### 5.3.17.5 Acceptance criteria

1) After step a) the ME shall readEFIMSI, EFRouting\_Indicator and EFSUCI\_Calc\_Info.

2) After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

## 5.4 Unified Access Control information handling for 5G-NR

### 5.4.1 Unified Access Control – Access identity 0, no access identities indicated by USIM

#### 5.4.1.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

If no Access Identities are configured in EFUAC\_AIC and in EFACC, Access Identity 0 is applicable. The UE shall read EFUAC\_AIC and EFACC as part of USIM Initialization procedure.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.1.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.

3. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

#### 5.4.1.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

#### 5.4.1.4 Method of test

##### 5.4.1.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

No Access Identities configured in EFUAC\_AIC and no Access Classes configured in EFACC as also shown in table 5.4.1-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.1-1, TAC="000001".

- CellIdentity: "000000001"

If present in the REGISTRATION ACCEPT, the 5GS network feature support IE indicates Access identity 1 as not valid and Access identity 2 as not valid.

For Table 5.4.1-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.1.4.2 Procedure

Steps for the Table 5.4.1-1

a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.

b) Using the MMI or EMMI a MO Data call is attempted if required by the test.

c) The test is repeated for each set of values in the table.

##### 5.4.1.4.3 Acceptance criteria

For the Table 5.4.1-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.1-1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | **SIB1** | | **REGISTRATION ACCEPT (5GS network feature support IE)** | | **Result** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **Registration successful?** | **MO Data call successful?** |
| 1.1 | 7 | 0x00 00 00 00 | 00000 | Not Present | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.2 | 3 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_Common(3,0x0000000'B) | 246 / 081 | 0 | 0 | No | NA |
| 1.3 | 3 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN(3,0x0000000'B) | 246 / 081 | 0 | 0 | No | NA |
| 1.4 | 3 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN(3,0x1000000'B) | 246 / 081 | 0 | 0 | No | NA |
| 1.5 | 7 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_Common(7,0x0000000'B) | 246 / 081 | 0 | 0 | Yes | No |
| 1.6 | 7 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN(7,0x0000000'B) | 246 / 081 | 0 | 0 | Yes | No |
| 1.7 | 3 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_Common2 (  7,0x1000000'B, 3,0x0000000'B) | 244 / 081 | 0 | 0 | No | NA |

### 5.4.1A Unified Access Control – Access identity 0, no access identities indicated by USIM, Access Category 8

#### 5.4.1A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

If no Access Identities are configured in EFUAC\_AIC and in EFACC, Access Identity 0 is applicable. The UE shall read EFUAC\_AIC and EFACC as part of USIM Initialization procedure.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC\_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update, RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

#### 5.4.1A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.

3. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

4. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP 38.331 [44], clauses 5.3.13.2.

#### 5.4.1A.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

#### 5.4.1A.4 Method of test

##### 5.4.1A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

No Access Identities configured in EFUAC\_AIC and no Access Classes configured in EFACC as also shown in table 5.4.1A‑1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see tables 5.4.1A-1, TAC="000001".

- CellIdentity: "000000001"

If present in the REGISTRATION ACCEPT, the 5GS network feature support IE indicates Access identity 1 as not valid and Access identity 2 as not valid.

For Table 5.4.1A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.1A-1, TAC="000001".

- CellIdentity: "000000002"

If present in the REGISTRATION ACCEPT, the 5GS network feature support IE indicates Access identity 1 as not valid and Access identity 2 as not valid.

For Table 5.4.1A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.1.4.2 Procedure

Steps for the Table 5.4.1A-1

a) NG-SS activates Cell A and terminal is switched on and performs successful Registration.

b) Using the MMI or EMMI set up a successful MO Data call.

c) NG-SS sends *RRCRelease* with *suspendConfig* in *criticalExtensions* (with the choice *rrcRelease*).

- *ran-NotificationAreaInfo in suspendConfig contains the cellList with cellIdentity of Cell A*

cellList {

plmn-Identity {mcc, mnc}, -- see table 5.4.1A-1 for mcc/mnc

ran-AreaCells 000000001’B

}

d) Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

e) UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.

f) The test is repeated for each set of values in the table.

##### 5.4.1A.4.3 Acceptance criteria

For the Table 5.4.1A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.1A-1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | **SIB1** | | **REGISTRATION ACCEPT (5GS network feature support IE)** | | **Result** |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1,**  **b8-b4)** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **RRCResumeRequest with resumeCause set to**  **rna-Update successful?** |
| 2.1 | 8 | 0x00 00 00 00 | 00000 | Not Present | 246 / 081 | 0 | 0 | Yes |
| 2.2 | 8 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 8,0x0000000'B) | 246 / 081 | 0 | 0 | No |
| 2.3 | 8 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN( 8,0x0000000'B) | 246 / 081 | 0 | 0 | No |
| 2.4 | 8 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_Common2(  7,0x1000000'B, 8,0x0000000'B) | 244 / 081 | 0 | 0 | No |

### 5.4.2 Unified Access Control – Access Identity 1 – MPS indicated by USIM

#### 5.4.2.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EFUAC\_AIC in the USIM contains the configuration information pertaining to access identity 1 allocated for high priority services MPS.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.2.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Access Identity 1 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.2.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

#### 5.4.2.4 Method of test

##### 5.4.2.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identity 1 (and in some test cases additional Access Identities) in EFUAC\_AIC is configured and no Access Classes are configured in EFACC as given in tables 5.4.2-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.2-1, TAC="000001".

- CellIdentity : "000000001"

For Table 5.4.2-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.2.4.2 Procedure

Steps for the Table 5.4.2-1

a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.

b) Using the MMI or EMMI a MO Data call is attempted if required by the test.

c) The test is repeated for each set of values in the table.

##### 5.4.2.4.3 Acceptance criteria

For the Table 5.4.2-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

**Table 5.4.2-1**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | **SIB1** | | **REGISTRATION ACCEPT (5GS network feature support IE)** | | **Result** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **Registration successful?** | **MO Data call successful?** |
| 1.1 | 7 | 0x01 00 00 00 | 00000 | Not Present | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.2 | 3 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x1000000'B) | 246 / 081 | 0 | 0 | No | NA |
| 1.3 | 3 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN( 3,0x1000000'B) | 246 / 081 | 0 | 0 | No | NA |
| 1.4 | 3 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x1000000'B) | 246 / 082 | 0 | 0 | No | NA |
| 1.5 | 3 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x0100000'B) | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.6 | 3 | 0x03 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x0100000'B) | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.7 | 7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.8 | 3 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 244 / 081 | 0 | 0 | No | NA |
| 1.9 | 7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x1000000'B) | 246 / 081 | 0 | 0 | Yes | No |
| 1.10 | 7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN( 7,0x1000000'B) | 246 / 081 | 0 | 0 | Yes | No |
| 1.11 | 7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x1000000'B) | 246 / 082 | 0 | 0 | Yes | No |
| 1.12 | 7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | 0 | 0 | Yes | No |
| 1.13 | 7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x01000000'B) | 244 / 081 | 1 | 0 | Yes | Yes |
| 1.14 | 7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x01000000'B) | 244 / 081 | 1 | 0 | Yes | Yes |
| 1.15 | 7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common2( 3,0x0100000'B, 7,0x1000000'B ) | 246 / 081 | 0 | 0 | Yes | No |
| 1.16 | 3 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common2( 7,0x1000000'B, 3,0x0000000'B ) | 244 / 081 | 0 | 0 | No | NA |

### 5.4.2A Unified Access Control – Access Identity 1 – MPS indicated by USIM, Access Category 8

#### 5.4.2A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EFUAC\_AIC in the USIM contains the configuration information pertaining to access identity 1 allocated for high priority services MPS.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC\_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

#### 5.4.2A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Access Identity 1 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.13.2

#### 5.4.2A.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

4) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

#### 5.4.2A.4 Method of test

##### 5.4.2A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identitity 1 (and in some test cases additional Access Identities) in EFUAC\_AIC is configured and no Access Classes are configured in EFACC as given in table 5.4.2A-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.2A-1, TAC="000001".

- CellIdentity : "000000001"

For Table 5.4.2A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.2A-1, TAC="000001".

- CellIdentity: "000000002"

For Table 5.4.2A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.2A.4.2 Procedure

Steps for the Table 5.4.2A-1

a) NG-SS activates Cell A and terminal is switched on and performs successful Registration.

b) Using the MMI or EMMI set up a successful MO Data call.

c) NG-SS sends RRCRelease with suspendConfig in criticalExtensions (with the choice rrcRelease).

*- ran-NotificationAreaInfo in suspendConfig contains the cellList with cellIdentity of Cell A*

cellList {

plmn-Identity {mcc, mnc}, -- see table 5.4.2A-1 for mcc/mnc

ran-AreaCells 000000001’B

}

d) Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

e) UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.

f) The test is repeated for each set of values in the table.

##### 5.4.2A.4.3 Acceptance criteria

For the Table 5.4.2A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

**Table 5.4.2A-1**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | **SIB1** | | **REGISTRATION ACCEPT (5GS network feature support IE)** | | **Result** |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1,**  **b8-b4)** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **RRCResumeRequest with resumeCause set to rna-Update successful?** |
| 2.1 | 8 | 0x01 00 00 00 | 00000 | Not Present | 246 / 081 | 0 | 0 | Yes |
| 2.2 | 8 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 8,0x1000000'B) | 246 / 081 | 0 | 0 | No |
| 2.3 | 8 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN( 8,0x0000000'B) | 246 / 081 | 0 | 0 | Yes |
| 2.4 | 8 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 8,0x1000000'B) | 244 / 081 | 1 | 0 | No |
| 2.5 | 8 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common2( 7,0x1000000'B, 8,0x0000000'B) | 244 / 081 | 0 | 0 | No |
| 2.6 | 8 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 8,0x0000000'B) | 246 / 081 | 0 | 0 | Yes |
| 2.7 | 8 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN( 8,0x1000000'B) | 246 / 081 | 0 | 0 | No |

### 5.4.3 Unified Access Control – Access Identity 1 – no MPS indication by USIM and SUPI not changed

#### 5.4.3.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

The UE shall not consider access identity 1 to be valid when the UE is not in the country of its HPLMN prior to receiving the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 1 valid in RPLMN or equivalent PLMN".

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.3.2 Conformance requirement

1. The USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

2. The UE shall not consider access identity 1 to be valid when the UE is not in the country of its HPLMN prior to receiving the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 1 valid in RPLMN or equivalent PLMN".

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

3. The MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MPS indicator.

Reference:

- 3GPP TS 24.501 [42], Annex C.

4. Access Identity 1 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

5. Upon receiving a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 valid", the UE shall act as a UE with access identity 1 configured for MPS in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid" or until the UE selects a non-equivalent PLMN. Access identity 1 is only applicable while the UE is in N1 mode.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.3.4

6. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac‑BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac‑BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.3.3 Test purpose

1) To verify if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 1 and the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is received, UE considers access identity as 1 for access barring.

2) To verify the MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and the MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME,

3) To verify that the UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

4) To verify that the UE determines whether or not a particular access attempt is allowed based on uac‑BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5) To verify that a UE operated with a USIM where the file EFUAC\_AIC does not indicate access identity 1, after a change of the REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid", or when the UE has selected a non-equivalent PLMN, the UE is acting as if it is configured for access identity 0.

#### 5.4.3.4 Method of test

##### 5.4.3.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

No Access Identity is configured in EFUAC\_AIC  and no Access Classes are configured in EFACC as given in table 5.4.3-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | B9 | B10 | B11 |  | B16 |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/000001.

- CellIdentity: "000000001"

For Table 5.4.3-1:

After turning on the cell for the 2nd time, uac‑BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

Cell B:

Transmits on the BCCH, with the following network parameters:

TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.3-1, TAC: "000002".

CellIdentity: "000000002"

For Table 5.4.3-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.3.4.2 Procedure

Steps for the Table 5.4.3-1

a) The NG-SS activates Cell A without uac‑BarringInfo in SIB1, the ME is switched on (1st time) and sends a *REGISTRATION REQUEST* to Cell A.

b) Cell A responds with a *REGISTRATION ACCEPT* message with the MPS indicator bit set to "Access identity 1 valid".

c) The ME is switched off, the NG-SS deactivates Cell A.

d) The NG-SS activates Cell A or B with SIB1 as specified in the table.

e) The ME is switched on again (2nd time) using the same USIM and sends a *REGISTRATION REQUEST* to the cell activated in step d).

f) The cell activated in step d) responds with a *REGISTRATION ACCEPT* message with MPS and MCS indicator bits set to zero in 5GS network feature support IE.

g) Using the MMI or EMMI a MO Data call is attempted if required by the test.

h) The test is repeated for each set of values in the table.

##### 5.4.3.4.3 Acceptance criteria

For the Table 5.4.3-1

- After step e) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step g) the UE shall make a successful or not successful MO data call in accordance with the result indicated in the table.

**Table 5.4.3-1**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#)** | **Access Category** | **USIM** | | **SIB1 of Cell A or B**  **after the 2nd power up of the ME** | | | **REGISTRATION ACCEPT (5GS network feature support IE)**  **on Cell A at 1st power up of the ME** | | **Result** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **Cell A or B** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **Registration successful?** | **MO Data call successful?** |
| 1.1 | 3 | 0x00 00 00 00 | 00000 | Cell A | Not Present | 246 / 081 | 1 | 0 | Yes | Yes |
| 1.2 | 3 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common (3,0x1000000'B) | 246 / 081 | 1 | 0 | No | N/A |
| 1.3 | 7 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common (7,0x0100000'B) | 246 / 081 | 1 | 0 | Yes | No |
| 1.4 | 3 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common (3,0x0100000'B) | 246 / 081 | 1 | 0 | Yes | Yes |
| 1.5 | 3 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_PerPLMN (3,0x0100000'B) | 246 / 082 | 1 | 0 | No | N/A |
| 1.6 | 3 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common (3,0x0000000'B) | 244 / 081 | 1 | 0 | No | N/A |
| 1.7 | 7 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common (7,0x0100000'B) | 244 / 081 | 1 | 0 | Yes | No |
| 1.8 | 7 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common (7,0x0100000'B) | 244 / 081 | 1 | 1 | Yes | No |

### 5.4.4 Unified Access Control – Access Identity 1 – no MPS indication by USIM and SUPI is changed

#### 5.4.4.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

The MPS indicator is stored together with a PLMN identity of the PLMN that provided it and is valid in that RPLMN or equivalent PLMN. The MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MPS indicator.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.4.2 Conformance requirement

1. When the UE is in the country of its HPLMN, and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

2. The UE shall not consider access identity 1 to be valid when the UE is not in the country of its HPLMN prior to receiving the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 1 valid" in RPLMN or equivalent PLMN.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

3. Upon receiving a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 valid" in RPLMN or equivalent PLMN, the UE shall act as a UE with access identity 1 configured for MPS in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid in RPLMN or equivalent PLMN" or until the UE selects a non-equivalent PLMN. Access identity 1 is only applicable while the UE is in N1 mode.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4.

4- The MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MPS indicator.

Reference:

- 3GPP TS 24.501 [42], Annex C.

5. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.4.3 Test purpose

1) To verify if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 1 and the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is received, UE considers access identity as 1 for access barring.

2) To verify that the MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid" or until the UE selects a non-equivalent PLMN.

3) To verify the MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and the MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME.

4) To verify that the UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

5) To verify that a UE operated with a USIM where the file EFUAC\_AIC does not indicate access identity 1, after a change of the REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid", or when the UE has selected a non-equivalent PLMN, the UE is acting as if it is configured for access identity 0.

#### 5.4.4.4 Method of test

##### 5.4.4.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

No Access Identity is configured in EFUAC\_AIC and no Access Classes are configured in EFACC as given in table 5.4.4-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  |  |  |  |  |  |  |  |  |
|  | B9 | B10 | B11 |  | B16 |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/000001.

- CellIdentity: "000000001"

For Table 5.4.4-1:

After turning on the cell for the 2nd time, uac‑BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.4-1, TAC="000002".

- CellIdentity: "000000002"

For Table 5.4.4-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.4.4.2 Procedure

Steps for the Table 5.4.4-1

a) NG-SS activates Cell A without uac‑BarringInfo in SIB1, the ME is switched on (1st time) and sends a *REGISTRATION REQUEST* to Cell A.

b) Cell A responds with a *REGISTRATION ACCEPT* message with the MPS indicator bit set to "Access identity 1 valid".

c) The ME is switched off, The NG-SS deactivates Cell A.

d) The NG-SS activates Cell A or B with SIB1 as specified in the table.

e) The ME is switched on again (2nd time) with a different USIM (e.g.: IMSI set to 24681685533963) and sends a *REGISTRATION REQUEST* to the Cell in step d).

f) Cell A or B (as specified in the table) responds with a *REGISTRATION ACCEPT* message with MPS and MCS indicator bits set to zero in 5GS network feature support IE.

g) Using the MMI or EMMI a MO Data call is attempted if required by the test.

h) The test is repeated for each set of values in the table.

##### 5.4.4.4.3 Acceptance criteria

For the Table 5.4.4-1

- After step e) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step g) the UE shall make a successful or not successful MO data call in accordance with the result indicated in the table

Table 5.4.4-1

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#)** | **Access Category** | **USIM** | | **SIB1 of Cell A or B**  **after the 2nd power up of the ME** | | | **REGISTRATION ACCEPT (5GS network feature support IE)**  **on Cell A at 1st power up of the ME** | | **Result** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **Cell A or B** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **Registration successful?** | **MO Data call successful?** |
| 1.1 | 3 | 0x00 00 00 00 | 00000 | Cell A | Not Present | 246 / 081 | 1 | 0 | Yes | Yes |
| 1.2 | 3 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 3,0x0100000'B) | 246 / 081 | 1 | 0 | No | NA |
| 1.3 | 7 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 7,0x0100000'B) | 246 / 081 | 1 | 0 | Yes | No |
| 1.4 | 3 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 246 / 081 | 1 | 0 | No | NA |
| 1.5 | 3 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common( 3,0x0100000'B) | 246 / 082 | 1 | 0 | No | NA |
| 1.6 | 3 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_PerPLMN( 3,0x01000001'B) | 244 / 081 | 1 | 0 | No | NA |
| 1.7 | 7 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | 1 | 0 | Yes | No |

### 5.4.5 Unified Access Control – Access Identity 2 – MCS indicated by USIM

#### 5.4.5.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EFUAC\_AIC in the USIM contains the configuration information pertaining to Access Identity 2 allocated for high priority services MCS.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.5.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Access Identity 2 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.5.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

#### 5.4.5.4 Method of test

##### 5.4.5.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identity 2 (and in some test cases additional Access Identities) in EFUAC\_AIC is configured and no Access Classes are configured in EFACC as given in tables 5.4.5-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Byte:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.5-1, TAC="000001".

- CellIdentity : "000000001"

For Table 5.4.5-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.5.4.2 Procedure

Steps for the Table 5.4.5-1

a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.

b) Using the MMI or EMMI a MO Data call is attempted if required by the test.

c) The test is repeated for each set of values in the table.

##### 5.4.5.4.3 Acceptance criteria

For the Table 5.4.5-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.5-1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | **SIB1** | | **REGISTRATION ACCEPT (5GS network feature support IE)** | | **Result** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **Registration successful?** | **MO Data call successful?** |
| 1.1 | 7 | 0x02 00 00 00 | 00000 | Not Present | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.2 | 3 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common(  3,0x0100000'B) | 246 / 081 | 0 | 0 | No | NA |
| 1.3 | 3 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN( 3,0x0100000'B) | 246 / 081 | 0 | 0 | No | NA |
| 1.4 | 3 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x0100000'B) | 246 / 082 | 0 | 0 | No | NA |
| 1.5 | 3 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x1000000'B) | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.6 | 3 | 0x03 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x1000000'B) | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.7 | 7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 246 / 081 | 0 | 0 | Yes | Yes |
| 1.8 | 3 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 244 / 081 | 0 | 0 | No | NA |
| 1.9 | 7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x0100000'B) | 246 / 081 | 0 | 0 | Yes | No |
| 1.10 | 7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN( 7,0x0100000'B) | 246 / 081 | 0 | 0 | Yes | No |
| 1.11 | 7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x0100000'B) | 246 / 082 | 0 | 0 | Yes | No |
| 1.12 | 7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | 0 | 0 | Yes | No |
| 1.13 | 7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x10000000'B) | 244 / 081 | 0 | 1 | Yes | Yes |
| 1.14 | 7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 7,0x10000000'B) | 244 / 081 | 0 | 1 | Yes | Yes |
| 1.15 | 7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common2( 3,0x1000000'B, 7,0x0100000'B) | 246 / 081 | 0 | 0 | Yes | No |
| 1.16 | 3 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common2( 7,0x0100000'B, 3,0x0000000'B) | 244 / 081 | 0 | 0 | No | NA |

### 5.4.5A Unified Access Control – Access Identity 2 – MCS indicated by USIM

#### 5.4.5A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EFUAC\_AIC in the USIM contains the configuration information pertaining to Access Identity 2 allocated for high priority services MCS.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC\_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

#### 5.4.5A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Access Identity 2 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.13.2

#### 5.4.5A.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

4) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

#### 5.4.5A.4 Method of test

##### 5.4.5A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identity 2 (and in some test cases additional Access Identities) in EFUAC\_AIC is configured and no Access Classes are configured in EFACC as given in table 5.4.5A-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Byte:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.5A-1, TAC="000001".

- CellIdentity : "000000001"

For Table 5.4.5A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.5A-1, TAC="000001".

- CellIdentity: "000000002"

For Table 5.4.5A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.5A.4.2 Procedure

Steps for the Table 5.4.5A-1

a) NG-SS activates Cell A and terminal is switched on and performs successful Registration.

b) Using the MMI or EMMI set up a successful MO Data call.

c) NG-SS sends *RRCRelease* with *suspendConfig* in *criticalExtensions* (with the choice *rrcRelease*).

- *ran-NotificationAreaInfo* in *suspendConfig* contains the *cellList* with cellIdentity of Cell A

cellList {

plmn-Identity {mcc, mnc}, -- see table 5.4.5A-1 for mcc/mnc

ran-AreaCells 000000001’B

}

d) Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

e) UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.

f) The test is repeated for each set of values in the table.

##### 5.4.5A.4.3 Acceptance criteria

For the Table 5.4.5A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.5A-1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | **SIB1** | | **REGISTRATION ACCEPT (5GS network feature support IE)** | | **Result** |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1,**  **b8-b4)** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **RRCResumeRequest with resumeCause set to**  **rna-Update successful?** |
| 2.1 | 8 | 0x02 00 00 00 | 00000 | Not Present | 246 / 081 | 0 | 0 | Yes |
| 2.2 | 8 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 8,0x0100000'B) | 246 / 081 | 0 | 0 | No |
| 2.3 | 8 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN( 8,0x0000000'B) | 246 / 081 | 0 | 0 | Yes |
| 2.4 | 8 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common( 8,0x0100000'B) | 244 / 081 | 0 | 1 | No |
| 2.5 | 8 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common2( 7,0x0100000'B, 8,0x0000000'B) | 244 / 081 | 0 | 0 | No |

### 5.4.6 Unified Access Control – Access Identity 2 – no MCS indication by USIM and SUPI is not changed

#### 5.4.6.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

The UE shall not consider access identity 2 to be valid when the UE is not in the country of its HPLMN prior to receiving the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 2 valid in RPLMN or equivalent PLMN".

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.6.2 Conformance requirement

1. The USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

2. The UE shall not consider access identity 2 to be valid when the UE is not in the country of its HPLMN prior to receiving the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 2 valid in RPLMN or equivalent PLMN".

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

3. The MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MCS indicator.

Reference:

- 3GPP TS 24.501 [42], Annex C.

4. Access Identity 2 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

6. Upon receiving a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid", the UE shall act as a UE with access identity 2 configured for MCS in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MCS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects a non-equivalent PLMN. Access identity 2 is only applicable while the UE is in N1 mode.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.3.4

6. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac‑BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac‑BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.6.3 Test purpose

1) To verify if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 2 and the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is received, UE considers access identity as 2 for access barring.

2) To verify the MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and the MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME,

3) To verify that the UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

4) To verify that the UE determines whether or not a particular access attempt is allowed based on uac‑BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5) To verify that a UE operated with a USIM where the file EFUAC\_AIC does not indicate access identity 2, after a change of the REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid", or when the UE has selected a non-equivalent PLMN, the UE is acting as if it is configured for access identity 0.

#### 5.4.6.4 Method of test

##### 5.4.6.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

No Access Identity is configured in EFUAC\_AIC and no Access Classes are configured in EFACC as given in tables 5.4.6-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | B9 | B10 | B11 |  | B16 |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- MCC, MNC: 246/081

- TAC: ="000001".

- CellIdentity: "000000001"

For Table 5.4.6-1:

After turning on the cell for the 2nd time, uac‑BarringInfo in SIB1 should be set as in the table:

Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.6-1, TAC="000002".

- CellIdentity: "000000002"

For Table 5.4.6-1:

uac-BarringInfo in SIB1 should be set as in the table:

Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.6.4.2 Procedure

Steps for the Table 5.4.6-1

a) NG-SS activates Cell A without uac‑BarringInfo in SIB1, the ME is switched on (1st time) and sends a REGISTRATION REQUEST to Cell A.

b) Cell A responds with a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid".

c) The ME is switched off and turned off Cell A.

d) Turn on Cell A or B with SIB1 as specified in the table.

e) The ME is switched on again (2nd time) using the same USIM and sends a REGISTRATION REQUEST to the Cell in step d).

f) Cell A or B (as specified in the table) responds with a REGISTRATION ACCEPT message with MPS and MCS indicator bits set to zero in 5GS network feature support IE.

g) Using the MMI or EMMI a MO Data call is attempted if required by the test.

h) The test is repeated for each set of values in the table.

##### 5.4.6.4.3 Acceptance criteria

For the Table 5.4.6-1

- After step e) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step g) the UE shall make a successful or not successful MO data call in accordance with the result indicated in the table.

Table 5.4.6-1

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#)** | **Access Category** | **USIM** | | **SIB1 of Cell A or B**  **after the 2nd power up of the ME** | | | **REGISTRATION ACCEPT (5GS network feature support IE)**  **on Cell A at 1st power up of the ME** | | **Result** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **Cell A or B** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **Registration successful?** | **MO Data call successful?** |
| 1.1 | 3 | 0x00 00 00 00 | 00000 | Cell A | Not Present | 246 / 081 | 1 | 0 | Yes | Yes |
| 1.2 | 3 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 3,0x0100000'B) | 246 / 081 | 0 | 1 | No | NA |
| 1.3 | 7 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 7,0x1000000'B) | 246 / 081 | 0 | 1 | Yes | No |
| 1.4 | 3 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 3,0x1000000'B) | 246 / 081 | 0 | 1 | Yes | Yes |
| 1.5 | 3 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common( 3,0x1000000'B) | 246 / 082 | 0 | 1 | No | NA |
| 1.6 | 3 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_PerPLMN( 3,0x1000000'B) | 244 / 081 | 0 | 1 | No | NA |
| 1.7 | 7 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | 0 | 1 | Yes | No |

### 5.4.7 Unified Access Control – Access Identity 2 – no MCS indication by USIM and SUPI is changed

#### 5.4.7.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

When the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

The MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MCS indicator.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.7.2 Conformance requirement

1. When the UE is in the country of its HPLMN, and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

2. The UE shall not consider access identity 2 to be valid when the UE is not in the country of its HPLMN prior to receiving the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 2 valid in RPLMN or equivalent PLMN".

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

3. The UE shall consider access identity 2 to be valid when the network informs the UE that the use of access identity 2 is valid in the RPLMN or equivalent PLMN by setting the MCS indicator bit of the 5GS network feature support IE to "Access identity 2 valid", in the REGISTRATION ACCEPT message, the UE shall act as a UE with access identity 2 configured for MCS in all NG-RAN of the registered PLMN and its equivalent PLMNs, until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects a non-equivalent PLMN. Access identity 2 is only applicable while the UE is in N1 mode.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4.

4. The MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MCS indicator.

Reference:

- 3GPP TS 24.501 [42], Annex C.

5. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac‑BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac‑BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.7.3 Test purpose

1) To verify if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country and the USIM file EFUAC\_AIC does not indicate the UE is configured for access identity 2 and the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is received, UE considers access identity as 2 for access barring.

2) To verify that the MCS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects a non-equivalent PLMN.

3) To verify the MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and the MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME.

4) To verify that the UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

5) To verify that a UE operated with a USIM where the file EFUAC\_AIC does not indicate access identity 2, after a change of the REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid", or when the UE has selected a non-equivalent PLMN, the UE is acting as if it is configured for access identity 0.

#### 5.4.7.4 Method of test

##### 5.4.7.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

No Access Identity is configured in EFUAC\_AIC and no Access Classes are configured in EFACC as given in table 5.4.7-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  |  |  |  |  |  |  |  |  |
|  | B9 | B10 | B11 |  | B16 |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/000001

- CellIdentity: "000000001"

For Table 5.4.7-1:

After turning on the cell for the 2nd time, uac‑BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.7-1, TAC="000002".

- CellIdentity: "000000002"

For Table 5.4.7-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.7.4.2 Procedure

Steps for the Table 5.4.7-1

a) NG-SS activates Cell A without uac‑BarringInfo in SIB1, the UE is switched on (1st time) and sends a REGISTRATION REQUEST to Cell A.

b) Cell A responds with a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid".

c) The UE is switched off and Cell A is turned off.

d) Turn on Cell A or B with SIB1 as specified in the table.

e) The UE is switched on again (2nd time) with a different USIM (e.g.: IMSI set to 24681685533963) and sends a REGISTRATION REQUEST to the Cell in step d).

f) Cell A or B (as specified in the table) responds with a REGISTRATION ACCEPT message with MPS and MCS indicator bits set to zero in 5GS network feature support IE.

g) Using the MMI or EMMI a MO Data call is attempted if required by the test.

h) The test is repeated for each set of values in the table.

##### 5.4.7.4.3 Acceptance criteria

For the Table 5.4.7-1

- After step e) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step g) the UE shall make a successful or not successful MO data call in accordance with the result indicated in the table.

Table 5.4.7-1

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#)** | **Access Category** | **USIM** | | **SIB1 of Cell A or B**  **after the 2nd power up of the ME** | | | **REGISTRATION ACCEPT (5GS network feature support IE)**  **on Cell A at 1st power up of the ME** | | **Result**  **(after 2nd power up)** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **Cell A or B** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **MPS indicator Bit** | **MCS indicator Bit** | **Registration successful?** | **MO Data call successful?** |
| 1.1 | 3 | 0x00 00 00 00 | 00000 | Cell A | Not Present | 246 / 081 | 0 | 1 | Yes | Yes |
| 1.2 | 3 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 3,0x1000000'B) | 246 / 081 | 0 | 1 | No | NA |
| 1.3 | 7 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 7,0x1000000'B) | 246 / 081 | 0 | 1 | Yes | No |
| 1.4 | 3 | 0x00 00 00 00 | 00000 | Cell A | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 246 / 081 | 0 | 1 | No | NA |
| 1.5 | 3 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common( 3,0x1000000'B) | 246 / 082 | 0 | 1 | No | NA |
| 1.6 | 3 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_PerPLMN( 3,0x1000000'B) | 244 / 081 | 0 | 1 | No | NA |
| 1.7 | 7 | 0x00 00 00 00 | 00000 | Cell B | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | 0 | 1 | Yes | No |

### 5.4.8 Unified Access Control – Access Identities 11 and 15 indicated by USIM

#### 5.4.8.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EFACC in the USIM contains the configuration information pertaining to access identities 11 and 15.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.8.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.

3. Access Identity 11 and 15 are valid in HPLMN (if the EHPLMN list is not present or is empty) or EHPLMN (if the EHPLMN list is present).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

#### 5.4.8.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

#### 5.4.8.4 Method of test

##### 5.4.8.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identities 11 and 15 are configured in EFACC and no Access Identities are configured in EFUAC\_AIC as given in tables 5.4.8-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Byte:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.8-1, TAC="000001".

- CellIdentity: "000000001"

For Table 5.4.8-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.8.4.2 Procedure

Steps for the Table 5.4.8-1

a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.

b) Using the MMI or EMMI a MO Data call is attempted if required by the test.

c) The test is repeated for each set of values in the table.

##### 5.4.8.4.3 Acceptance criteria

For the Table 5.4.8-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.8-1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | | **SIB1** | | **Result** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **Access Identies** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **Registration successful?** | **MO Data call successful?** |
| 1.1 | 7 | 0x00 00 00 00 | 00001 | 11 | Not Present | 246 / 081 | Yes | Yes |
| 1.2 | 3 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common( 3,0x0010000'B) | 246 / 081 | No | NA |
| 1.3 | 3 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_PerPLMN( 3,0x0010000'B) | 246 / 081 | No | NA |
| 1.4 | 3 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 246 / 082 | No | NA |
| 1.5 | 3 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common( 3,0x0001000'B) | 246 / 081 | Yes | Yes |
| 1.6 | 3 | 0x00 00 00 00 | 10001 | 11, 15 | UAC\_BarringInfo\_Common( 3,0x0000001'B) | 246 / 081 | Yes | Yes |
| 1.7 | 7 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common( 7,0x0010000'B) | 246 / 081 | Yes | No |
| 1.8 | 7 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 246 / 082 | Yes | No |
| 1.9 | 7 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | Yes | No |
| 1.10 | 7 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common2( 3,0x0001000'B, 7,0x0010000'B) | 246 / 081 | Yes | No |
| 1.11 | 3 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common( 3,0x0000001'B) | 246 / 081 | No | NA |
| 1.12 | 3 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_PerPLMN( 3,0x0000001'B) | 246 / 081 | No | NA |
| 1.13 | 3 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 246 / 082 | No | NA |
| 1.14 | 3 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common( 3,0x0010000'B) | 246 / 081 | Yes | Yes |
| 1.15 | 7 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common( 7,0x0000001'B) | 246 / 081 | Yes | No |
| 1.16 | 7 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 246 / 082 | Yes | No |
| 1.17 | 7 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | Yes | No |
| 1.18 | 7 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common2( 3,0x0001000'B, 7,0x0000001'B) | 246 / 081 | Yes | No |

### 5.4.8A Unified Access Control – Access Identities 11 and 15 indicated by USIM, Access Category 8

#### 5.4.8A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EFACC in the USIM contains the configuration information pertaining to access identities 11 and 15.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC\_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

#### 5.4.8A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.

3. Access Identity 11 and 15 are valid in HPLMN (if the EHPLMN list is not present or is empty) or EHPLMN (if the EHPLMN list is present).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

5. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.13.2.

#### 5.4.8A.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

4) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

#### 5.4.8A.4 Method of test

##### 5.4.8A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identities 11 and 15 are configured in EFACC and no Access Identities are configured in EFUAC\_AIC as given in table 5.4.8A-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Byte:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.8A-1, TAC="000001".

- CellIdentity: "000000001"

For Table 5.4.8A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.8A-1, TAC="000001".

- CellIdentity: "000000002"

For Table 5.4.8A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.8A.4.2 Procedure

Steps for the Table 5.4.8A-1

a) NG-SS activates Cell A and terminal is switched on and performs successful Registration.

b) Using the MMI or EMMI set up a successful MO Data call.

c) NG-SS sends *RRCRelease* with *suspendConfig* in *criticalExtensions* (with the choice *rrcRelease*).

- *ran-NotificationAreaInfo* in *suspendConfig* contains the *cellList* with cellIdentity of Cell A

cellList {

plmn-Identity {mcc, mnc}, -- see table 5.4.8A-1 for mcc/mnc

ran-AreaCells 000000001’B

}

d) Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

e) UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.

f) The test is repeated for each set of values in the table.

##### 5.4.8.4.3 Acceptance criteria

For the Table 5.4.8A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.8A-1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | | **SIB1** | | **Result** |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1,**  **b8-b4)** | **Access identity** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **RRCResumeRequest with resumeCause set to**  **rna-Update successful?** |
| 2.1 | 8 | 0x00 00 00 00 | 00001 | 11 | Not Present | 246 / 081 | Yes |
| 2.2 | 8 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common( 8,0x0010000'B) | 246 / 081 | No |
| 2.3 | 8 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_PerPLMN( 8,0x0000000'B) | 246 / 081 | Yes |
| 2.4 | 8 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common( 8,0x0000000'B) | 246 / 082 | No |
| 2.5 | 8 | 0x00 00 00 00 | 00001 | 11 | UAC\_BarringInfo\_Common2( 7,0x0000001'B, 8,0x0000000'B) | 244 / 081 | No |
| 2.6 | 8 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common( 8,0x0000001'B) | 246 / 081 | No |
| 2.7 | 8 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_PerPLMN( 8,0x0000000'B) | 246 / 081 | Yes |
| 2.8 | 8 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common( 8,0x0000000'B) | 246 / 082 | No |
| 2.9 | 8 | 0x00 00 00 00 | 10000 | 15 | UAC\_BarringInfo\_Common2( 7,0x0000001'B, 8,0x0000000'B ) | 244 / 081 | No |

### 5.4.9 Unified Access Control – Access Identities 12, 13 and 14 indicated by USIM

#### 5.4.9.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EFACC in the USIM contains the configuration information pertaining to access identities 12, 13 and 14.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

#### 5.4.9.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.

3. Access Identities 12, 13 and 14 are valid in HPLMN and visited PLMNs of home country only.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

#### 5.4.9.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

#### 5.4.9.4 Method of test

##### 5.4.9.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identities 12, 13 and 14 are configured in EFACC and no Access Identities are configured in EFUAC\_AIC as given in tables 5.4.9-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Byte:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.9-1, TAC="000001".

- CellIdentity : "000000001"

For Table 5.4.9-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.9.4.2 Procedure

Steps for the Table 5.4.9-1

a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.

b) Using the MMI or EMMI a MO Data call is attempted if required by the test.

c) The test is repeated for each set of values in the table.

##### 5.4.9.4.3 Acceptance criteria

For the Table 5.4.9-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.9-1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | | **SIB1** | | **Result** | |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **Access Identity** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **Registration successful?** | **MO Data call successful?** | |
| 1.1 | 7 | 0x00 00 00 00 | 00010 | 12 | Not Present | 246 / 081 | Yes | Yes | |
| 1.2 | 3 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 3,0x0001000'B) | 246 / 081 | No | NA | |
| 1.3 | 3 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_PerPLMN( 3,0x0001000'B) | 246 / 081 | No | NA | |
| 1.4 | 3 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 246 / 082 | Yes | Yes | |
| 1.5 | 3 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 3,0x0001000'B) | 246 / 082 | No | NA | |
| 1.6 | 3 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 244 / 081 | No | NA | |
| 1.7 | 3 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 3,0x0000100'B) | 246 / 081 | Yes | Yes | |
| 1.8 | 3 | 0x00 00 00 00 | 01110 | 12,13,14 | UAC\_BarringInfo\_Common( 3,0x0000110'B) | 246 / 081 | Yes | Yes | |
| 1.9 | 7 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 7,0x0001000'B) | 246 / 081 | Yes | No | |
| 1.10 | 7 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 246 / 082 | Yes | Yes | |
| 1.11 | 7 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | Yes | No | |
| 1.12 | 7 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common2 ( 3,0x0000100'B, 7,0x0001000'B ) | 246 / 081 | Yes | No | |
| 1.13 | 3 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common( 3,0x0000100'B) | 246 / 081 | No | NA | |
| 1.14 | 3 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_PerPLMN( 3,0x0000100'B) | 246 / 081 | No | NA | |
| 1.15 | 3 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 246 / 082 | Yes | Yes | |
| 1.16 | 3 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common( 3,0x0000100'B) | 246 / 082 | No | NA | |
| 1.17 | 3 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common( 3,0x0000010'B) | 246 / 082 | Yes | Yes | |
| 1.18 | 7 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common( 7,0x0000100'B) | 246 / 081 | Yes | No | |
| 1.19 | 7 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | Yes | No | |
| 1.20 | 7 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common2( 3,0x0000010'B, 7,0x0000100'B) | 246 / 081 | Yes | No | |
| 1.21 | 3 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common( 3,0x0000010'B) | 246 / 081 | No | NA | |
| 1.22 | 3 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_PerPLMN( 3,0x0000010'B) | 246 / 081 | No | NA | |
| 1.23 | 3 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common( 3,0x0000000'B) | 246 / 082 | Yes | Yes | |
| 1.24 | 3 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common( 3,0x0000010'B) | 246 / 082 | No | NA | |
| 1.25 | 3 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common( 3,0x0001100'B) | 246 / 082 | Yes | Yes | |
| 1.26 | 7 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common( 7,0x0000010'B) | 246 / 081 | Yes | No | |
| 1.27 | 7 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common( 7,0x0000000'B) | 244 / 081 | Yes | No | |
| 1.28 | 7 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common2( 3,0x0000100'B, 7,0x0000010'B) | 246 / 081 | Yes | No | |

### 5.4.9A Unified Access Control – Access Identities 12, 13 and 14 indicated by USIM, Access Category 8

#### 5.4.9A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EFACC in the USIM contains the configuration information pertaining to access identities 12, 13 and 14.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC\_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

#### 5.4.9A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.

3. Access Identities 12, 13 and 14 are valid in HPLMN and visited PLMNs of home country only.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

5. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.13.2.

#### 5.4.9A.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

4) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

#### 5.4.9A.4 Method of test

##### 5.4.9A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identities 12, 13 and 14 are configured in EFACC and no Access Identities are configured in EFUAC\_AIC as given in table 5.4.9-2.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Byte:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** |  |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x |  |  |  |

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.9A-1, TAC="000001".

- CellIdentity : "000000001"

For Table 5.4.9A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.9A-1, TAC="000001".

- CellIdentity: "000000002"

For Table 5.4.9A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

##### 5.4.9A.4.2 Procedure

Steps for the Table 5.4.9A-1

a) NG-SS activates Cell A and terminal is switched on and performs successful Registration.

b) Using the MMI or EMMI set up a successful MO Data call.

c) NG-SS sends *RRCRelease* with *suspendConfig* in *criticalExtensions* (with the choice *rrcRelease*).

- *ran-NotificationAreaInfo* in *suspendConfig* contains the *cellList* with cellIdentity of Cell A

cellList {

plmn-Identity {mcc, mnc}, -- see table 5.4.9A-1 for mcc/mnc

ran-AreaCells 000000001’B

}

d) Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

e) UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.

f) The test is repeated for each set of values in the table.

##### 5.4.9A.4.3 Acceptance criteria

For the Table 5.4.9A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.9A-1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category** | **USIM** | | | **SIB1** | | **Result** |
| **EFUAC\_AIC** | **EFACC**  **(Byte 1**  **b8-b4)** | **Access Identity** | **uac-BarringInfo** | **PLMN-Identity**  **(MCC/MNC)** | **RRCResumeRequest with resumeCause set to**  **rna-Update successful?** |
| 2.1 | 8 | 0x00 00 00 00 | 00010 | 12 | Not Present | 246 / 081 | Yes |
| 2.2 | 8 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 8,0x0001000'B) | 246 / 081 | No |
| 2.3 | 8 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_PerPLMN( 8,0x0000000'B) | 246 / 081 | Yes |
| 2.4 | 8 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common( 8,0x0010000'B) | 246 / 082 | Yes |
| 2.5 | 8 | 0x00 00 00 00 | 00010 | 12 | UAC\_BarringInfo\_Common2 ( 7,0x0010000'B, 8,0x0000000'B) | 244 / 081 | No |
| 2.6 | 8 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common( 8,0x0000100'B) | 246 / 081 | No |
| 2.7 | 8 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_PerPLMN( 8,0x0000000'B) | 246 / 081 | Yes |
| 2.8 | 8 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common( 8,0x0000100'B) | 246 / 082 | No |
| 2.9 | 8 | 0x00 00 00 00 | 00100 | 13 | UAC\_BarringInfo\_Common2 ( 7,0x0001000'B, 8,0x0000000'B) | 244 / 081 | No |
| 2.10 | 8 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common( 8,0x0000010'B) | 246 / 081 | No |
| 2.11 | 8 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_PerPLMN( 8,0x0000000'B) | 246 / 081 | Yes |
| 2.12 | 8 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common( 8,0x0000010'B) | 246 / 082 | No |
| 2.13 | 8 | 0x00 00 00 00 | 01000 | 14 | UAC\_BarringInfo\_Common2 ( 7,0x0000100'B, 8,0x0000000'B) | 244 / 081 | No |

### 5.4.10 Unified Access Control – Operator-Defined Access Category

#### 5.4.10.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information a list of barring parameters associated with an Access Identity and an Access Category in SIB1. Access category numbers in the 32-63 range are used for operator-defined Access Categories.

The EFUAC\_AIC in the USIM contains the configuration information pertaining to access identities allocated for high priority services that can be used by the subscriber.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

Operator-defined access category definitions can be signaled to the UE using NAS signaling. Each operator-defined access category definition consists of the parameters a precedence value, an operator-defined access category number, one or more access category criteria type and optionally, a standardized access category.

When the UE needs to initiate an access attempt that triggers access barring check, the UE shall determine one or more access identities from the set of standardized access identities, and one access category from the set of standardized access categories and operator-defined access categories, to be associated with that access attempt.

In order to determine the access category applicable for the access attempt, the NAS shall check the Access category mapping rules, and use the access category of the lowest rule number for which there is a match for barring check. In the case of operator-defined access categories, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value.

#### 5.4.10.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in Table 6.22.2.3-1.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Operator may provide one or more PLMN-specific Operator-defined access category definitions to the UE using NAS signaling (Operator-defined access category definitions information element), and the UE handles the Operator-defined access category definitions stored for the Registered PLMN, as specified in TS 24.501.

References:

- 3GPP TS 23.501 [49], clause 5.2.5

- 3GPP TS 24.501 [42] clause 9.11.3.38

4. When the UE needs to initiate an access attempt in one of the events listed in clause 4.5.1, the UE shall determine one or more access identities from the set of standardized access identities, and one access category from the set of standardized access categories and operator-defined access categories, to be associated with that access attempt.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

5. An access attempt matches the criteria of an operator-defined access category definition, if the access attempt matches all access category criteria types included in the criteria with any of the associated access criteria type values.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.3

6. In order to determine the access category applicable for the access attempt, the NAS shall check the rules in table 4.5.2.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see clause 4.5.3).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

7. If the UE receives Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the REGISTRATION ACCEPT message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4

8. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.10.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM initialisation procedure, and subsequently adopts this value.

2) To verify if UE uses operator-defined access categories received within Operator-defined access category definitions information element in the REGISTRATION ACCEPT.

3) To verify the UE checks the access category applicable for the access attempt, as per the Access category mapping rules and chooses the matching lowest rule.

4) To verify the UE checks operator-defined access category parameters precedence value, operator-defined access category number and access category criteria type associated with the Operator-defined Access Category when determining the Access Category for the access attempt.

5) To verify UE stops using the operator-defined access category definitions stored for the previously selected PLMN.

6) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

7) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

#### 5.4.10.4 Method of test

##### 5.4.10.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC** and **EFACC**

Access Identities are configured in EFUAC\_AIC and Access Classes are configured in EFACC as given in Table 5.4.10-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support available

Support for URSP by USIM not available

Coding:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | B9 | B10 | B11 |  | B16 | B17 |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x | xxxx 0xxx |  |  |

ME shall be configured with following URSP rules:

Rule Precedence = 1

Traffic Descriptor:

DNN=TestGp.rs1

Route Selection Descriptor:

Precedence = 1

Network Slice Selection, S-NSSAI: ′01 01 01 01′ (ST: MBB, SD: ′010101′)

SSC Mode Selection: SSC Mode 1

Access Type preference: 3GPP access

Rule Precedence = 2

Traffic Descriptor:

DNN = TestGp.rs2

Route Selection Descriptor:

Precedence = 1

Network Slice Selection, S-NSSAI: ′01 01 01 02′ (ST: MBB, SD: ′010102′)

SSC Mode Selection: SSC Mode 1

Rule Precedence = 3

Traffic Descriptor:

DNN = TestGp.rs3

Route Selection Descriptor:

Precedence = 1

Network Slice Selection, S-NSSAI: ′01 01 01 02′ (ST: MBB, SD: ′010102′)

SSC Mode Selection: SSC Mode 1

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- MCC, MNC: 246/081

- TAC: "000001".

- CellIdentity: "000000001"

For Table 5.4.10-1:

After turning on the cell for the 2nd time, uac‑BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the table.

REGISTRATION ACCEPT IEIs.

- Operator-Defined Access Category Definitions IEI is configured as defined in Table 5.4.10-1

- Refer to Annex A tables A4-A5 for Methods ODAC\_definitions1() and ODAC\_definitions2().

- For HPLMN Cells:Allowed S-NSSAI IEI is configured to include S-NSSAIs ′01 01 01 01′, ′01 01 01 02′ and ′01 01 01 03′.

For VPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs ('01 01 01 01’, '01 01 01 01’), ('01 01 01 02’, '01 01 01 02’), and ('01 01 01 03’, '01 01 01 03’).

##### 5.4.10.4.2 Procedure

Steps for the Table 5.4.10-1

a) NG-SS activates Cell A with uac‑BarringInfo in SIB1 as in the table, the ME is switched on with the UICC and sends a *REGISTRATION REQUEST* to Cell A.

b) Cell A responds with a *REGISTRATION ACCEPT* message with the Operator-Defined Access Category Definitions IEI as defined in the Table.

c) Attempt 1st MO Data call to DNN TestGp.rs1/S-NSSAI '01 01 01 01' using the MMI or EMMI.

d) For sequences 1.1 – 1.14:

Attempt 2nd MO Data call to DNN TestGp.rs2/S-NSSAI '01 01 01 02' using the MMI or EMMI.

For sequences 1.15 – 1.17:

Attempt 2nd MO Data call to DNN TestGp.rs3/S-NSSAI '01 01 01 02' using the MMI or EMMI

e) The test is repeated for each set of values in the table.

#### 5.4.10.5 Acceptance criteria

For the Table 5.4.10-1

- The UE shall make a successful or not successful 1st MO data call in accordance with the result indicated in the table.

- The UE shall make a successful or not successful 2nd MO data call in accordance with the result indicated in the table.

able 5.4.10-1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category for**  **Call 1&2** | **USIM** | | **SIB1 of Cell A** | | **REGISTRATION ACCEPT** | **Result** | |
| **EFUAC\_AIC** | **EFACC (Byte 1 b8-b4)** | **uac-BarringInfo** | **PLMN-Identity (MCC/MNC)** | **(Operator-defined access category definitions IE)** | **MO Data call 1 successful?** | **MO Data call 2 successful?** |
| 1.1 | 32,7 | 0x00 00 00 00 | 00000 | Not Present | 246 / 081 | ODAC\_definitions1(0) | Yes | Yes |
| 1.2 | 32,7 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_Common ( 32,0x0000000'B) | 246 / 081 | ODAC\_definitions1(0) | No | Yes |
| 1.3 | 50,7 | 0x00 00 00 00 | 00000 | UAC\_BarringInfo\_Common ( 50,0x0100000'B) | 246 / 081 | ODAC\_definitions1(18) | No | Yes |
| 1.4 | 63,7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common ( 7,0x1000000'B) | 246 / 082 | ODAC\_definitions1(31) | Yes | No |
| 1.5 | 63,7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common ( 63,0x0100000'B) | 246 / 081 | ODAC\_definitions1(31) | No | Yes |
| 1.6 | 48,7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common2 ( 7,0x1000000'B, 48,0x1000000'B) | 246 / 082 | ODAC\_definitions1(16) | No | No |
| 1.7 | 48,7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common ( 48,0x1000000'B) | 246 / 082 | ODAC\_definitions1(16) | Yes | Yes |
| 1.8 | 50,7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_PerPLMN ( 50,0x1100000'B) | 244 / 081 | ODAC\_definitions1(18) | No | Yes |
| 1.9 | 50,7 | 0x00 00 00 00 | 00001 | UAC\_BarringInfo\_Common ( 50,0x0001000'B) | 244 / 081 | ODAC\_definitions1(18) | No | Yes |
| 1.10 | 33,7 | 0x02 00 00 00 | 00000 | UAC\_BarringInfo\_Common2 ( 33,0x0100000'B, 7,0x1000000'B) | 246 / 082 | ODAC\_definitions1(1) | No | Yes |
| 1.11 | 34,7 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common2 ( 7,0x1000000'B, 34,0x0100000'B) | 246 / 082 | ODAC\_definitions1(2) | Yes | No |
| 1.12 | 7,34 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common2 ( 32,0x1000000'B, 34,0x0100000'B) | 246 / 081 | ODAC\_definitions2(2,0) | Yes | Yes |
| 1.13 | 7,32 | 0x00 00 00 00 | 01000 | UAC\_BarringInfo\_Common2 ( 32,0x0000000'B, 34,0x0000010'B) | 246 / 082 | ODAC\_definitions2(0,2) | Yes | Yes |
| 1.14 | 7,48 | 0x00 00 00 00 | 00100 | UAC\_BarringInfo\_Common2 (  48,0x0100000'B, 7,0x0000100'B) | 246 / 082 | ODAC\_definitions2(16,31) | No | Yes |
| 1.15 | 7,32 | 0x01 00 00 00 | 00000 | UAC\_BarringInfo\_Common2 ( 32,0x1000000'B, 34,0x0100000'B) | 246 / 081 | ODAC\_definitions2(2,0) | Yes | No |
| 1.16 | 7,34 | 0x00 00 00 00 | 01000 | UAC\_BarringInfo\_Common2 (  32,0x0000000'B, 34,0x0000010'B) | 246 / 082 | ODAC\_definitions2(0,2) | Yes | No |
| 1.17 | 7,63 | 0x00 00 00 00 | 00100 | UAC\_BarringInfo\_Common2 ( 48,0x0100000'B, 7,0x0000100'B) | 246 / 082 | ODAC\_definitions2(16,31) | No | Yes |

### 5.4.11 Unified Access Control – Operator-Defined Access Categories, no change in SUPI

#### 5.4.11.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information a list of barring parameters associated with an Access Identity and an Access Category in SIB1. Access category numbers in the 32-63 range are used for operator-defined Access Categories.

The EFUAC\_AIC in the USIM contains the configuration information pertaining to access identities allocated for high priority services that can be used by the subscriber.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

Operator-defined access category definitions can be signalled to the UE using NAS signalling. Each operator-defined access category definition consists of the parameters: a precedence value, an operator-defined access category number, one or more access category criteria type and optionally, a standardized access category.

Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

In order to determine the access category applicable for the access attempt, the NAS shall check the Access category mapping rules, and use the access category of the lowest rule number for which there is a match for barring check. In the case of operator-defined access categories, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value.

#### 5.4.11.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Operator may provide one or more PLMN-specific Operator-defined access category definitions to the UE using NAS signalling (Operator-defined access category definitions information element), and the UE handles the Operator-defined access category definitions stored for the Registered PLMN, as specified in 3GPP TS 24.501.

References:

- 3GPP TS 23.501 [49], clause 5.2.5

- 3GPP TS 24.501 [42] clause 9.11.3.38

4. Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

Reference:

- 3GPP TS 24.501 [42], Annex C

5. In order to determine the access category applicable for the access attempt, the NAS shall check the rules in 3GPP TS 24.501 [42] Table 4.5.2.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see 3GPP TS 24.501 [42] clause 4.5.3).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

6. If the UE receives Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the REGISTRATION ACCEPT message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4

7. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.11.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify if UE uses operator-defined access categories received within Operator-defined access category definitions information element in the REGISTRATION ACCEPT.

3) To verify the UE checks the access category applicable for the access attempt, as per the Access category mapping rules and chooses the matching lowest rule.

4) To verify the UE checks operator-defined access category parameters precedence value, operator-defined access category number and access category criteria type associated with the Operator-defined Access Category when determining the Access Category for the access attempt.

5) To verify the Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN.

6) To verify the Operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

7) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

8) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

#### 5.4.11.4 Method of test

##### 5.4.11.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

**EFUAC\_AIC and EFACC**

Access Identity is configured in EFUAC\_AIC and no Access Classes are configured in EFACC as given in Table 5.4.11-1.

**EFIMSI (IMSI)**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support available

Support for URSP by USIM not available

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | B9 | B10 | B11 |  | B16 | B17 |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x | xxxx 0xxx |  |  |

ME shall be configured with following URSP rules.

Rule Precedence =1

Traffic Descriptor:

DNN=TestGp.rs1

Route Selection Descriptor:

Precedence=1

Network Slice Selection, S-NSSAI: '01 01 01 01’ (ST: MBB, SD: '010101’)

SSC Mode Selection: SSC Mode 1

Access Type preference: 3GPP access

Rule Precedence = 2

Traffic Descriptor:

DNN=TestGp.rs2

Route Selection Descriptor:

Precedence =1

Network Slice Selection, S-NSSAI: 01 01 01 02 (ST: MBB, SD: 010102)

SSC Mode Selection: SSC Mode 1

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- MCC, MNC: 246/081

- TAC: "000001"

- CellIdentity: "000000001"

For Table 5.4.11-1:

uac‑BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the tables A1-A3.

Cell B:

NOTE: This cell is not required for the sequences in Table 5.4.11-1.

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see Table 5.4.11-1, TAC="000002".

- CellIdentity: "000000002"

For Table 5.4.11-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the tables A1-A3.

REGISTRATION ACCEPT IEIs.

- Operator-Defined Access Category Definitions IEI is configured as defined in Table 5.4.11-1.

- Refer to Annex A tables A4-A5 for Methods ODAC\_definitions1() and ODAC\_definitions2()

For HPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs '01 01 01 01’, '01 01 01 02’and '01 01 01 03’.

For VPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs ('01 01 01 01’, '01 01 01 01’), ('01 01 01 02’, '01 01 01 02’), and ('01 01 01 03’, '01 01 01 03’).

##### 5.4.11.4.2 Procedure

For the Table 5.4.11-1

a) NG-SS activates Cell A with uac‑BarringInfo in SIB1 as in the table, the ME is switched on with the UICC and sends the 1st *REGISTRATION REQUEST* to Cell A.

b) Cell A responds with a *REGISTRATION ACCEPT* message with the Operator-Defined Access Category Definitions IEI as defined in the Table.

If the Cell 2 in the table is Cell A,

c) Remove the UICC.

d) Reinsert the same UICC.

e) ME sends the 2nd *REGISTRATION REQUEST* to Cell A and NG-SS sends the 2nd *REGISTRATION ACCEPT.*

If the Cell 2 in the table is Cell B,

c) Remove the UICC and deactivate the Cell A.

d) Re-insert the same UICC and activate Cell B.

e) ME sends the 2nd *REGISTRATION REQUEST* to Cell B and NG-SS sends the 2nd *REGISTRATION ACCEPT*.

f) Attempt 1st MO Data call to DNN TestGp.rs1/S-NSSAI '01 01 01 01' using the MMI or EMMI.

g) Attempt 2nd MO Data call to DNN TestGp.rs2/S-NSSAI '01 01 01 02' using the MMI or EMMI.

##### 5.4.11.4.3 Acceptance criteria

For the Table 5.4.11-1

- The UE shall make a successful or not successful 1st MO data call in accordance with the result indicated in the table.

- The UE shall make a successful or not successful 2nd MO data call in accordance with the result indicated in the table.

Table 5.4.11-1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category for**  **Call 1&2** | **USIM** | | **Cell 2** | | **SIB 1: uac-BarringInfo (for all the Cells)** | **Operator-defined access category definitions IEI in** | **Result** | |
| **EFUAC\_AIC** | **EFACC (Byte 1 b8-b4)** | **Cell Id of** | **PLMN-Identity (MCC/MNC)** | **1st :REGISTRATION ACCEPT 2nd :REGISTRATION ACCEPT** | **MO Data call 1 successful?** | **MO Data call 2 successful?** |
| 1.1 | 7,33 | 0x00 00 00 00 | 00000 | Cell A | 246 / 081 | Not Present | ODAC\_definitions1(0) ODAC\_definitions2(1,16) | Yes | Yes |
| 1.2 | 7,33 | 0x00 00 00 00 | 00000 | Cell A | 246 / 081 | UAC\_BarringInfo\_Common( 33,0x0000000'B) | ODAC\_definitions1(0) ODAC\_definitions2(1,16) | Yes | No |
| 1.3 | 34,7 | 0x01 00 00 00 | 00000 | Cell A | 246 / 081 | UAC\_BarringInfo\_Common2 ( 34,0x1000000'B, 50,0x1000000'B ) | ODAC\_definitions2(18,1) ODAC\_definitions1(2) | No | Yes |
| 1.4 | 7,63 | 0x01 00 00 00 | 00000 | Cell B | 244 / 081 | UAC\_BarringInfo\_Common2 ( 63,0x0000000'B, 7,0x0100000'B ) | ODAC\_definitions1(3) ODAC\_definitions2(31,18) | No | No |
| 1.5 | 63,7 | 0x02 00 00 00 | 00000 | Cell A | 246 / 081 | UAC\_BarringInfo\_Common( 63,0x0100000'B) | ODAC\_definitions1(31) ODAC - Not present | No | Yes |
| 1.6 | 7,7 | 0x00 00 00 00 | 10000 | Cell B | 246 / 082 | UAC\_BarringInfo\_Common( 48,0x0010000'B) | ODAC\_definitions1(16) ODAC - Not present | Yes | Yes |
| 1.7 | 7,7 | 0x00 00 00 00 | 00100 | Cell B | 246 / 082 | UAC\_BarringInfo\_Common2 ( 32,0x0000100'B, 34,0x0000100'B ) | ODAC\_definitions2(0,2) ODAC - Empty | Yes | Yes |

### 5.4.12 Unified Access Control – Operator-Defined Access Categories, SUPI change

#### 5.4.12.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information a list of barring parameters associated with an Access Identity and an Access Category in SIB1. Access category numbers in the 32-63 range are used for operator-defined Access Categories.

The EFUAC\_AIC in the USIM contains the configuration information pertaining to access identities allocated for high priority services that can be used by the subscriber.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

Operator-defined access category definitions can be signaled to the UE using NAS signaling. Each operator-defined access category definition consists of the parameters a precedence value, an operator-defined access category number, one or more access category criteria type and optionally, a standardized access category.

Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

In order to determine the access category applicable for the access attempt, the NAS shall check the Access category mapping rules, and use the access category of the lowest rule number for which there is a match for barring check. In the case of operator-defined access categories, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value.

#### 5.4.12.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Operator may provide one or more PLMN-specific Operator-defined access category definitions to the UE using NAS signalling (Operator-defined access category definitions information element), and the UE handles the Operator-defined access category definitions stored for the Registered PLMN, as specified in 3GPP TS 24.501.

References:

- 3GPP TS 23.501 [49], clause 5.2.5

- 3GPP TS 24.501 [42] clause 9.11.3.38

4. Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

Reference:

- 3GPP TS 24.501 [42], Annex C

5. In order to determine the access category applicable for the access attempt, the NAS shall check the rules in 3GPP TS 24.501 [42] Table 4.5.2.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see 3GPP TS 24.501 [42] clause 4.5.3).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

6. If the UE receives Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the REGISTRATION ACCEPT message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4

7. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

#### 5.4.12.3 Test purpose

1) To verify that the Terminal reads the access control value from EFUAC\_AIC and EFACC as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

2) To verify if UE uses operator-defined access categories received within Operator-defined access category definitions information element in the REGISTRATION ACCEPT.

3) To verify the UE checks the access category applicable for the access attempt, as per the Access category mapping rules and chooses the matching lowest rule.

4) To verify the UE checks operator-defined access category parameters precedence value, operator-defined access category number and access category criteria type associated with the Operator-defined Access Category when determining the Access Category for the access attempt.

5) To verify the Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN.

6) To verify the Operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

7) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

8) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

#### 5.4.12.4 Method of test

##### 5.4.12.4.1 Initial conditions

Both UICC 1 and UICC 2 are configured as the default 5G-NR UICC with the following exceptions:

**EFIMSI (IMSI)**

**UICC 1:**

Logically: 246081357935793

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 39 |

**UICC 2:**

Logically: 246081357935799

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** |
| Hex | 08 | 29 | 64 | 80 | 31 | 75 | 39 | 75 | 99 |

**EFUAC\_AIC** and **EFACC**

Access Identity is configured in EFUAC\_AIC and no Access Classes are configured in EFACC as given in Table 5.4.12-1.

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support available

Support for URSP by USIM not available

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | B9 | B10 | B11 |  | B16 | B17 |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xx10 011x | xxxx 0xxx |  |  |

ME shall be configured with following URSP rules.

Rule Precedence =1

Traffic Descriptor:

DNN=TestGp.rs1

Route Selection Descriptor:

Precedence=1

Network Slice Selection, S-NSSAI: '01 01 01 01’ (ST: MBB, SD: '010101’)

SSC Mode Selection: SSC Mode 1

Access Type preference: 3GPP access

Rule Precedence = 2

Traffic Descriptor:

DNN=TestGp.rs2

Route Selection Descriptor:

Precedence =1

Network Slice Selection, S-NSSAI: '01 01 01 02’ (ST: MBB, SD: '010102’)

SSC Mode Selection: SSC Mode 1

**NETWORK (NG-SS)**

Cell A:

Transmits on the BCCH, with the following network parameters:

- MCC, MNC: 246/081

- TAC: "000001"

- CellIdentity: "000000001"

For Table 5.4.12-1:

uac‑BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the tables A1-A3.

Cell B:

This cell is required for some sequences as in the Table 5.4.12-1.

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see Table 5.4.12-1, TAC="000002".

- CellIdentity: "000000002"

For Table 5.4.12-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC\_BarringInfo\_xxxxxx() in the tables A1-A3.

REGISTRATION ACCEPT IEIs.

- Operator-Defined Access Category Definitions IEI is configured as defined in Table 5.4.12-1.

- Refer to Annex A tables A4-A5 for Methods ODAC\_definitions1() and ODAC\_definitions2().

For HPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs '01 01 01 01’, '01 01 01 02’and '01 01 01 03’.

For VPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs ('01 01 01 01’, '01 01 01 01’), ('01 01 01 02’, '01 01 01 02’), and ('01 01 01 03’, '01 01 01 03’).

##### 5.4.12.4.2 Procedure

For the Table 5.4.12-1

a) NG-SS activates Cell A with uac‑BarringInfo in SIB1 as in the table, the ME is switched on with the UICC 1 and sends the 1st *REGISTRATION REQUEST* to Cell A.

b) Cell A responds with a *REGISTRATION ACCEPT* message with the Operator-Defined Access Category Definitions IEI as defined in the Table.

If the Cell 2 in the table is Cell A,

c) Remove the UICC 1 from the ME.

d) Insert the UICC 2.

e) ME sends the 2nd *REGISTRATION REQUEST* to Cell A and NG-SS sends the 2nd *REGISTRATION ACCEPT.*

If the Cell 2 in the table is Cell B,

c) Remove the UICC 1 from the ME and deactivate the Cell A.

d) Insert the UICC 2 and activate Cell B.

e) ME sends the 2nd *REGISTRATION REQUEST* to Cell B and NG-SS sends the 2nd *REGISTRATION ACCEPT*.

f) Attempt 1st MO Data call to DNN TestGp.rs1/S-NSSAI '01 01 01 01'’ using the MMI or EMMI.

g) Attempt 2nd MO Data call to DNN TestGp.rs2/S-NSSAI '01 01 01 02' using the MMI or EMMI.

##### 5.4.12.4.3 Acceptance criteria

For the Table 5.4.12-1

- The UE shall make a successful or not successful 1st MO data call in accordance with the result indicated in the table.

- The UE shall make a successful or not successful 2nd MO data call in accordance with the result indicated in the table.

**Table 5.4.12-1**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TC Seq#** | **Access Category for**  **Call 1 & 2** | **USIM** | | **Cell 2** | | **SIB 1: uac-BarringInfo (for all the Cells)** | **Operator-defined access category definitions IEI in** | **Result** | |
| **EFUAC\_AIC** | **EFACC (Byte 1 b8-b4)** | **Cell Id of** | **PLMN-Identity (MCC/MNC)** | **1st: REGISTRATION ACCEPT 2nd: REGISTRATION ACCEPT** | **MO Data call 1 successful?** | **MO Data call 2 successful?** |
| 1.1 | 7,33 | 0x00 00 00 00 | 00000 | Cell A | 246 / 081 | Not Present | ODAC\_definitions1(0) ODAC\_definitions2(1,16) | Yes | Yes |
| 1.2 | 7,33 | 0x00 00 00 00 | 00000 | Cell A | 246 / 081 | UAC\_BarringInfo\_Common( 33,0x0000000'B) | ODAC\_definitions1(0) ODAC\_definitions2(1,16) | Yes | No |
| 1.3 | 34,7 | 0x01 00 00 00 | 00000 | Cell A | 246 / 081 | UAC\_BarringInfo\_Common2 ( 34,0x1000000'B, 50,0x1000000'B ) | ODAC\_definitions2(18,1) ODAC\_definitions1(2) | No | Yes |
| 1.4 | 7,63 | 0x01 00 00 00 | 00000 | Cell B | 244 / 081 | UAC\_BarringInfo\_Common2 ( 63,0x0000000'B, 7,0x0100000'B ) | ODAC\_definitions1(3) ODAC\_definitions2(31,18) | No | No |
| 1.5 | 7,7 | 0x02 00 00 00 | 00000 | Cell A | 246 / 081 | UAC\_BarringInfo\_Common( 63,0x0100000'B) | ODAC\_definitions1(31) ODAC - Not present | Yes | Yes |
| 1.6 | 7,7 | 0x00 00 00 00 | 10000 | Cell B | 246 / 082 | UAC\_BarringInfo\_Common( 48,0x0010000'B) | ODAC\_definitions1(16) ODAC - Not present | Yes | Yes |
| 1.7 | 7,7 | 0x00 00 00 00 | 00100 | Cell B | 246 / 082 | UAC\_BarringInfo\_Common2 (  32,0x0000100'B, 34,0x0000100'B ) | ODAC\_definitions2(0,2) ODAC - Empty | Yes | Yes |
| 1.8 | 7,7 | 0x00 00 00 00 | 00100 | Cell B | 246 / 082 | UAC\_BarringInfo\_Common2 (  50,0x0000100'B, 33,0x0000100'B ) | ODAC\_definitions2(18,1) ODAC - Not present | Yes | Yes |

## 5.5 Handling of operator controlled features

### 5.5.1 Display of registered 5G PLMN name from USIM

#### 5.5.1.1 Definition and applicability

If the operator’s decision, as indicated by the USIM, is that the ME shall use EFOPL5G in association with EFPNN or EFPNNI to display the Operator 5G PLMN name from USIM, then the ME shall be able to associate the prioritised list of Tracking Area Identity (TAI) identities for NG-RAN in EFOPL5G with the the operator name contained in EFPNN. This prioritized list takes precedence over any network name stored within the ME’s internal list and any network name received when registered to the PLMN, as defined by TS 24.501 [42].

#### 5.5.1.2 Conformance requirement

1) EFOPL5G association with the EFPNN shall be performed by the USIM if service n°129 is "available" in EFUST.

2) The ME shall display the correct Operator network name per 4.4.11.9 in TS 31.102 [4].

Reference:

- TS 31.102 [4], clauses 4.4.11.9.

- TS 24.008 [16], clause 10.5.3.5a

#### 5.5.1.3 Test purpose

1) To verify that ME displays the 5G Operator PLMN name correctly for the following cases.

a) Entire range of TAC for a specific PLMN is configured in EFOPL5G.

b) Specific range of TAC for a specific PLMN is configured in EFOPL5G.

c) Specific TAC for a specific PLMN is configured in EFOPL5G.

#### 5.5.1.4 Method of tests

##### 5.5.1.4.1 Initial conditions

The default 5G-NR UICC is used (with the following additions) and the UICC is installed into the Terminal.

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

(Packed Switched Domain) shall be set to '1'

Enabled Services Table available

Operator Controlled PLMN selector with Access Technology available

PLMN Network Name is available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

5GS Operator PLMN List available

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | | B2 | | B3 | | | B4 | | B5 | | | B6 | | B7 | | B8 | | |
| Binary: | xxxx xx1x | | xxxx xxxx | | xxxx 1x00 | | | xxxx x1xx | | xxxx xx11 | | | xxx1 xx1x | | xxxx xxxx | | xxxx xxxx | | |
|  |  |  | |  | |  |  | |  | |  |  | |  | |  | |  |
|  | B9 | | B10 | | B11 | | |  | | B16 | | | B17 | |  | |  | | |
|  | xxxx xxxx | | xxxx xxxx | | xx11 xxxx | | | ..... | | Xxxx x11x | | | xxxx xxx1 | |  | |  | | |

5G-NR UICC is configured with:

**EFOPLMNwACT**

Logically:

1st PLMN: 244 010 (MCC MNC)

1st ACT: NG-RAN

2nd PLMN: 244 020 (MCC MNC)

2nd ACT: NG-RAN

3rd PLMN: 244 030 (MCC MNC)

3rd ACT: NG-RAN

4th PLMN: 244 040 (MCC MNC)

4th ACT: NG-RAN

5th PLMN: 244 050 (MCC MNC)

5th ACT: NG-RAN

6th PLMN: 244 060 (MCC MNC)

6th ACT: NG-RAN

7th PLMN: 244 070 (MCC MNC)

7th ACT: NG-RAN

8th PLMN: 244 080 (MCC MNC)

8th ACT: NG-RAN

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** | **B10** |
| Hex | 42 | 04 | 10 | 08 | 00 | 42 | 04 | 20 | 08 | 00 |
|  | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** | **B17** | **B18** | **B19** | **B20** |
|  | 42 | 04 | 30 | 08 | 00 | 42 | 04 | 40 | 08 | 00 |
|  | **B21** | **B22** | **B23** | **B24** | **B25** | **B26** | **B27** | **B28** | **B29** | **B30** |
|  | 42 | 04 | 50 | 08 | 00 | 42 | 04 | 60 | 08 | 00 |
|  | **B31** | **B32** | **B33** | **B34** | **B35** | **B36** | **B37** | **B38** | **B39** | **B40** |
|  | 42 | 04 | 70 | 08 | 00 | 42 | 04 | 80 | 08 | 00 |

**EFOPL5G**

Record 1:

Logically: MCC: 244, MNC: 010, TAC: Entire range, PNN Record Identifier: 01

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 42 | 04 | 10 | 00 | 00 | 00 | FF | FF |
|  | **B9** | **B10** |
|  | FE | 01 |

Record 2:

Logically: MCC: 244, MNC: 020, TAC: 000003 - 000006, PNN Record Identifier: 02

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 42 | 04 | 20 | 00 | 00 | 03 | 00 | 00 |
|  | **B9** | **B10** |
|  | 06 | 02 |

Record 3:

Logically: MCC: 244, MNC: 030, TAC: 000003, PNN Record Identifier: 02

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 42 | 04 | 30 | 00 | 00 | 03 | 00 | 00 |
|  | **B9** | **B10** |
|  | 03 | 02 |

**EFPNN**

Record 1:

Logically: Long name: PLMN 5G

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 43 | 08 | 87 | 50 | 66 | D3 | 09 | AA |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | 1D | 01 | FF | FF | FF | FF | FF | FF |
|  | **B17** | **B18** | **B19** | **B20** |
|  | FF | FF | FF | FF |

Record 2:

Logically: Long name: ABCD

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 43 | 05 | 84 | 41 | E1 | 90 | 08 | FF |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | FF | FF | FF | FF | FF | FF | FF | FF |
|  | **B17** | **B18** | **B19** | **B20** |
|  | FF | FF | FF | FF |

Record 3:

Logically: Long name: CCCDDD

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 43 | 07 | 86 | C3 | E1 | 90 | 48 | 24 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | 02 | FF | FF | FF | FF | FF | FF | FF |
|  | **B17** | **B18** | **B19** | **B20** |
|  | FF | FF | FF | FF |

##### 5.5.1.4.2 Procedure

a) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/010/000001, and Access Control: unrestricted.

b) The UE is switched on.

c) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

d) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.

e) The UE sends REGISTRATION COMPLETE to NG-SS.

f) Wait for 30 seconds.

g) UE is switched off, and then NG-SS is powered down.

h) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/020/000004, and Access Control: unrestricted.

i) The UE is switched on.

j) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI".

k) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.

l) The UE sends REGISTRATION COMPLETE to NG-SS.

m) Wait for 30 seconds.

n) UE is switched off, and then NG-SS is powered down.

o) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/030/000003, and Access Control: unrestricted.

p) The UE is switched on.

q) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI".

r) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.

s) The UE sends REGISTRATION COMPLETE to NG-SS.

t) Wait for 30 seconds.

u) UE is switched off, and then NG-SS is powered down.

##### 5.5.1.4.3 Acceptance criteria

1) After step f, ME shall display "PLMN 5G" as Operator 5G PLMN name.

2) After step m, ME shall display "ABCD" as Operator 5G PLMN name.

3) After step t, ME shall display "ABCD" as Operator 5G PLMN name.

### 5.5.2 Display of registered 5G PLMN name from ME

#### 5.5.2.1 Definition and applicability

If the operator’s decision, as indicated by the USIM, is that the ME shall use EFOPL5G in association with EFPNN or EFPNNI to display the Operator 5G PLMN name from ME or other sources, then the displayed network name will be either from the one stored within the ME’s internal list or any network name received when registered to the PLMN, as defined by TS 24.501 [42].

#### 5.5.2.2 Conformance requirement

1) EFOPL5G association with the EFPNN shall be performed by the USIM if service n°129 is "available" in EFUST.

2) The ME shall display the correct Operator network name per 4.4.11.9 in TS 31.102 [4].

Reference:

- TS 31.102 [4], clause 4.4.11.9.

- TS 24.008 [16], clause 10.5.3.5a.

#### 5.5.2.3 Test purpose

1) To verify that ME displays the 5G Operator PLMN name correctly for the following cases.

a) ME registers to a TAI outside the range referenced in EFOPL5G.

b) ME registers to a TAI configured in EFOPL5G and PNN record identified is set as 00.

#### 5.5.2.4 Method of tests

##### 5.5.2.4.1 Initial conditions

The default 5G-NR UICC is used (with the following additions) and the UICC is installed into the Terminal.

**EFUST (USIM Service Table)**

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

(Packed Switched Domain) shall be set to '1'

Enabled Services Table available

Operator Controlled PLMN selector with Access Technology available

PLMN Network Name is available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

5GS Operator PLMN List available

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Byte: | B1 | | B2 | | B3 | | | B4 | | B5 | | | B6 | | B7 | | B8 | | |
| Binary: | xxxx xx1x | | xxxx xxxx | | xxxx 1x00 | | | xxxx x1xx | | xxxx xx11 | | | xxx1 xx1x | | xxxx xxxx | | xxxx xxxx | | |
|  |  |  | |  | |  |  | |  | |  |  | |  | |  | |  |
|  | B9 | | B10 | | B11 | | |  | | B16 | | | B17 | |  | |  | | |
|  | xxxx xxxx | | xxxx xxxx | | xx11 xxxx | | | ..... | | Xxxx x11x | | | xxxx xxx1 | |  | |  | | |

5G-NR UICC is configured with:

**EFOPLMNwACT**

Logically: 1st PLMN: 244 010 (MCC MNC)

1st ACT: NG-RAN

2nd PLMN: 244 020 (MCC MNC)

2nd ACT: NG-RAN

3rd PLMN: 244 030 (MCC MNC)

3rd ACT: NG-RAN

4th PLMN: 244 040 (MCC MNC)

4th ACT: NG-RAN

5th PLMN: 244 050 (MCC MNC)

5th ACT: NG-RAN

6th PLMN: 244 060 (MCC MNC)

6th ACT: NG-RAN

7th PLMN: 244 070 (MCC MNC)

7th ACT: NG-RAN

8th PLMN: 244 080 (MCC MNC)

8th ACT: NG-RAN

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** | **B9** | **B10** |
| Hex | 42 | 04 | 10 | 08 | 00 | 42 | 04 | 20 | 08 | 00 |
|  | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** | **B17** | **B18** | **B19** | **B20** |
|  | 42 | 04 | 30 | 08 | 00 | 42 | 04 | 40 | 08 | 00 |
|  | **B21** | **B22** | **B23** | **B24** | **B25** | **B26** | **B27** | **B28** | **B29** | **B30** |
|  | 42 | 04 | 50 | 08 | 00 | 42 | 04 | 60 | 08 | 00 |
|  | **B31** | **B32** | **B33** | **B34** | **B35** | **B36** | **B37** | **B38** | **B39** | **B40** |
|  | 42 | 04 | 70 | 08 | 00 | 42 | 04 | 80 | 08 | 00 |

**EFOPL5G**

Record 1:

Logically: MCC: 244, MNC: 010, TAC: Entire range, PNN Record Identifier: 01

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 42 | 04 | 10 | 00 | 00 | 00 | FF | FF |
|  | **B9** | **B10** |
|  | FE | 01 |

Record 2:

Logically: MCC: 244, MNC: 020, TAC: 000003 - 000006, PNN Record Identifier: 02

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 42 | 04 | 20 | 00 | 00 | 03 | 00 | 00 |
|  | **B9** | **B10** |
|  | 06 | 02 |

Record 3:

Logically: MCC: 244, MNC: 030, TAC: 000005 - 000009, PNN Record Identifier: 00

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 42 | 04 | 30 | 00 | 00 | 05 | 00 | 00 |
|  | **B9** | **B10** |
|  | 09 | 00 |

**EFPNN**

Record 1:

Logically: Long name: PLMN 5G

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 43 | 08 | 87 | 50 | 66 | D3 | 09 | AA |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | 1D | 01 | FF | FF | FF | FF | FF | FF |
|  | **B17** | **B18** | **B19** | **B20** |
|  | FF | FF | FF | FF |

Record 2:

Logically: Long name: ABCD

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 43 | 05 | 84 | 41 | E1 | 90 | 08 | FF |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | FF | FF | FF | FF | FF | FF | FF | FF |
|  | **B17** | **B18** | **B19** | **B20** |
|  | FF | FF | FF | FF |

Record 3:

Logically: Long name: CCCDDD

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 43 | 07 | 86 | C3 | E1 | 90 | 48 | 24 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
|  | 02 | FF | FF | FF | FF | FF | FF | FF |
|  | **B17** | **B18** | **B19** | **B20** |
|  | FF | FF | FF | FF |

##### 5.5.2.4.2 Procedure

a) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/020/000007, and Access Control: unrestricted.

b) The UE is switched on.

c) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

d) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.

e) The UE sends REGISTRATION COMPLETE to NG-SS.

f) Wait for 30 seconds.

g) UE is switched off, and then NG-SS is powered down.

h) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/030/000006, and Access Control: unrestricted.

i) The UE is switched on.

j) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI".

k) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.

l) The UE sends REGISTRATION COMPLETE to NG-SS.

m) Wait for 30 seconds.

n) UE is switched off, and then NG-SS is powered down.

##### 5.5.2.4.3 Acceptance criteria

1) After step f):

- the ME shall not display the PNN: "ABCD" stored on the USIM;

- the ME displays the registered MCC: "244" and MNC: "020".

2) After step m):

- the ME shall not display the PNN: "PLMN 5G", "ABCD" or "CCCDDD";

- the ME displays the registered MCC: "244" and MNC: "030".

NOTE: MCC/MNC combinations are displayed as formatted by the ME manufacturer. MCC/MNC combinations with correct values are valid, independent from the formatting (e.g. with or without a separator). Different from the MCC/MNC combinations anything else configured by ME as Operator 5G PLMN name may be displayed.

## 5.6 Handling subscription identifier privacy for 5G - SUPI type in NAI format

### 5.6.1 SUCI calculation by ME using null scheme

#### 5.6.1.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers in the USIM that the operator allows. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in the order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

The ME shall calculate the SUCI using the null-scheme if the highest priority of the protection schemes listed in the USIM is the null-scheme.

#### 5.6.1.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) SUPI is available in EFSUPI\_NAI if Service n°130 is "available" in EFUST

3) A subscriber identifier is in the form of a SUPI in NAI format

4) The SUPI may contain:

- a network-specific identifier, used for private networks as defined in TS 22.261 [43] or

- a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or

- a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].

5) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure for EFSUCI\_Calc\_Info.

6) The ME shall calculate the SUCI using the null-scheme if highest priority of the protection schemes listed in the USIM is the null-scheme.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.10, 4.4.11.11, 5.2.33, 5.3.47 and 5.3.51;

- TS 33.501 [41], clause Annex C;

- TS 23.003 [19], clause 28.2, 28.7.2.

- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.6.1.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFSUPI\_NAI commands are performed correctly by the ME.

2) To verify that the ME performs the SUCI calculation procedure using null-scheme.

#### 5.6.1.4 Method of test

##### 5.6.1.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC non-IMSI SUPI Type is used with the following exception:

**EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF)**

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – null-scheme

Key Index 1: 0

Protection Scheme Identifier 2 – ECIES scheme profile B

Key Index 2: 1

Protection Scheme Identifier 3 – ECIES scheme profile A

Key Index 3: 2

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 27

Home Network Public Key 1:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | A0 | 06 | 00 | 00 | 02 | 01 | 01 | 02 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| A1 | 6B | 80 | 01 | 1B | 81 | 41 | 04 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 72 | DA | 71 | 97 | 62 | 34 | CE | 83 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 3A | 69 | 07 | 42 | 58 | 67 | B8 | 2E |
| **B33** | **B34** | **B35** | **B36** | **B37** | **B38** | **B39** | **B40** |
| 07 | 4D | 44 | EF | 90 | 7D | FB | 4B |
| **B41** | **B42** | **B43** | **B44** | **B45** | **B46** | **B47** | **B48** |
| 3E | 21 | C1 | C2 | 25 | 6E | BC | D1 |
| **B49** | **B50** | **B51** | **B52** | **B53** | **B54** | **B55** | **B56** |
| 5A | 7D | ED | 52 | FC | BB | 09 | 7A |
| **B57** | **B58** | **B59** | **B60** | **B61** | **B62** | **B63** | **B64** |
| 4E | D2 | 50 | E0 | 36 | C7 | B9 | C8 |
| **B65** | **B66** | **B67** | **B68** | **B69** | **B70** | **B71** | **B72** |
| C7 | 00 | 4C | 4E | ED | C4 | F0 | 68 |
| **B73** | **B74** | **B75** | **B76** | **B77** | **B78** | **B79** | **B80** |
| CD | 7B | F8 | D3 | F9 | 00 | E3 | B4 |
| **B81** | **B82** | **B83** | **B84** | **B85** | **B86** | **B87** | **B88** |
| 80 | 01 | 1E | 81 | 20 | 5A | 8D | 38 |
| **B89** | **B90** | **B91** | **B92** | **B93** | **B94** | **B95** | **B96** |
| 86 | 48 | 20 | 19 | 7C | 33 | 94 | B9 |
| **B97** | **B98** | **B99** | **B100** | **B101** | **B102** | **B103** | **B104** |
| 26 | 13 | B2 | 0B | 91 | 63 | 3C | BD |
| **B105** | **B106** | **B107** | **B108** | **B109** | **B110** | **B111** | **B112** |
| 89 | 71 | 19 | 27 | 3B | F8 | E4 | A6 |
| **B113** | **B114** | **B115** | **B116** | **B117** |
| F4 | EE | C0 | A6 | 50 |

The UICC is installed into the ME.

##### 5.6.1.4.2 Procedure

a) The UE is switched on.

b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

#### 5.6.1.5 Acceptance criteria

1) After step a) the ME shall readEFSUPI\_NAI, EFRouting\_Indicator and EFSUCI\_Calc\_Info.

2) In step b) the UE shall include the SUCI NAI in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format: 2

The NAI format for the SUCI takes the form:

type3.rid17.schid0.userid00-00-5E-00-53-00@5gc.mnc012.mcc345.3gppnetwork.org

where,

SUPI Type: 3

Home Network Identifier: 5gc.mnc012.mcc345.3gppnetwork.org

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 00-00-5E-00-53-00

### 5.6.2 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile A

#### 5.6.2.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give to the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier.

#### 5.6.2.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the USIM if Service n°124 is "available" and Service n°125 is "available" in EFUST

2) SUPI is available in EFSUPI\_NAI if Service n°130 is "available" in EFUST

3) A subscriber identifier is in the form of a SUPI in NAI format

4) The SUPI may contain:

- a NSI, used for private networks as defined in TS 22.261 [43] or

- a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or

- a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].

5) The ME shall use the GET IDENTITY command in SUCI context to retrieve the SUCI calculated by the USIM.

6) This GET IDENTITY command shall be as per 7.5.2 in 3GPP TS 31.102 [4].

7) The USIM shall calculate the SUCI using the ECIES scheme profile A.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.10, 4.4.11.11, 5.3.48 and 7.5.

- 3GPP TS 33.501 [41], clauses 6.12.1, 6.12.2 and Annex C.

- TS 23.003 [19], clauses 2.2A, 2.2B, 28.2, 28.7.2, 28.7.3, 28.15.2 and 28.15.5.

- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.6.2.3 Test purpose

1) To verify that the GET IDENTITY command is performed correctly by the ME.

2) To verify that the ME includes the SUCI received from the USIM within GET IDENTITY response in the 5GS mobile identity IE.

#### 5.6.2.4 Method of test

##### 5.6.2.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The NG-SS shall be configured with Home Network Private Key for profile A:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | C5 | 3C | 22 | 20 | 8B | 61 | 86 | 0B |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 06 | C6 | 2E | 54 | 06 | A7 | B3 | 30 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| C2 | B5 | 77 | AA | 55 | 58 | 98 | 15 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 10 | D1 | 28 | 24 | 7D | 38 | BD | 1D |

5G-NR UICC – non-IMSI SUPI Type is configured with:

Protection Scheme Identifier : ECIES scheme profile A

Key Index: 1

Home Network Public Key Identifier: 30

Home Network Public Key:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 5A | 8D | 38 | 86 | 48 | 20 | 19 | 7C |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 33 | 94 | B9 | 26 | 13 | B2 | 0B | 91 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 63 | 3C | BD | 89 | 71 | 19 | 27 | 3B |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| F8 | E4 | A6 | F4 | EE | C0 | A6 | 50 |

EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF): Not available to the ME.

**EFUST (USIM Service Table)**

Settings from clause 4.10.1 of the present document apply with the following changes:

Logically:

|  |  |  |  |
| --- | --- | --- | --- |
| Service n°125: |  | SUCI calculation by the USIM | available |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** | **B17** |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xxx1 111x | xxxx xx1x |  |  |

**EFSUPI\_NAI (SUPI as Network Access Identifier)**

Logically: verylongusername1@3gpp.com

SUPI Type: NSI

Username: verylongusername1

Realm: 3gpp.com

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 80 | 1A | 76 | 65 | 72 | 79 | 6C | 6F |
| **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 6E | 67 | 75 | 73 | 65 | 72 | 6E | 61 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 6D | 65 | 31 | 40 | 33 | 67 | 70 | 70 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 2E | 63 | 6F | 6D |  |  |  |  |

##### 5.6.2.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

#### 5.6.2.5 Acceptance criteria

1) After step a) the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC

2) After step b) the UE shall include the SUCI NAI in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 1

The NAI format for the SUCI takes the form:

type1.rid17.schid1.hnkey30.ecckey<ECC ephemeral public key>.cip< encryption of "verylongusername1" >.mac<MAC tag value>@3gpp.com

where,

SUPI Type: 1

Home Network Identifier: 3gpp.com

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of "verylongusername1" and MAC tag value

Example with test data from 3GPP TS 33.501 [43] Annex C :

type1.rid17.schid1.hnkey30.ecckey977D8B2FDAA7B64AA700D04227D5B440630EA4EC50F9082273A26BB678C92222.cip8E358A1582ADB15322C10E515141D2039A.mac12E1D7783A97F1AC@3gpp.com

### 5.6.3 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B

#### 5.6.3.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give to the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier.

#### 5.6.3.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the USIM if Service n°124 is "available" and Service n°125 is "available" in EFUST

2) SUPI is available in EFSUPI\_NAI if Service n°130 is "available" in EFUST

3) A subscriber identifier is in the form of a SUPI in NAI format

4) The SUPI may contain:

- a NSI, used for private networks as defined in TS 22.261 [43] or

- a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or

- a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].

5) The ME shall use the GET IDENTITY command in SUCI context to retrieve the SUCI calculated by the USIM.

6) This GET IDENTITY command shall be as per 7.5.2 in 3GPP TS 31.102 [4].

7) The USIM shall calculate the SUCI using the ECIES scheme profile B.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.10, 4.4.11.11, 5.3.48 and 7.5.

- 3GPP TS 33.501 [41], clauses 6.12.1, 6.12.2 and Annex C.

- TS 23.003 [19], clauses 2.2A, 2.2B, 28.2, 28.7.2, 28.7.3, 28.15.2 and 28.15.5.

- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.6.3.3 Test purpose

1) To verify that the GET IDENTITY command is performed correctly by the ME.

2) To verify that the ME includes the SUCI received from the USIM within GET IDENTITY response in the 5GS mobile identity IE.

#### 5.6.3.4 Method of test

##### 5.6.3.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC – non-IMSI SUPI Type is used and installed into the Terminal.

The NG-SS shall be configured with Home Network Private Key for profile B:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | F1 | AB | 10 | 74 | 47 | 7E | BC | C7 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| F5 | 54 | EA | 1C | 5F | C3 | 68 | B1 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 61 | 67 | 30 | 15 | 5E | 00 | 41 | AC |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 44 | 7D | 63 | 01 | 97 | 5F | EC | DA |

5G-NR UICC – non-IMSI SUPI Type is configured with:

Protection Scheme Identifier: ECIES scheme profile B

Key Index: 1

Home Network Public Key Identifier: 27

Home Network Public Key:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 04 | 72 | DA | 71 | 97 | 62 | 34 | CE |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 83 | 3A | 69 | 07 | 42 | 58 | 67 | B8 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 2E | 07 | 4D | 44 | EF | 90 | 7D | FB |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 4B | 3E | 21 | C1 | C2 | 25 | 6E | BC |
| **B33** | **B34** | **B35** | **B36** | **B37** | **B38** | **B39** | **B40** |
| D1 | 5A | 7D | ED | 52 | FC | BB | 09 |
| **B41** | **B42** | **B43** | **B44** | **B45** | **B46** | **B47** | **B48** |
| 7A | 4E | D2 | 50 | E0 | 36 | C7 | B9 |
| **B49** | **B50** | **B51** | **B52** | **B53** | **B54** | **B55** | **B56** |
| C8 | C7 | 00 | 4C | 4E | ED | C4 | F0 |
| **B57** | **B58** | **B59** | **B60** | **B61** | **B62** | **B63** | **B64** |
| 68 | CD | 7B | F8 | D3 | F9 | 00 | E3 |
| **B65** |
| B4 |

EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF): Not available to the ME.

**EFUST (USIM Service Table)**

Settings from clause 4.10.1 of the present document apply with the following changes:

Logically:

|  |  |  |  |
| --- | --- | --- | --- |
| Service n°125: |  | SUCI calculation by the USIM | available |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** | **B17** |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xxx1 111x | xxxx xx1x |  |  |

**EFSUPI\_NAI (SUPI as Network Access Identifier)**

Logically: verylongusername1@3gpp.com

SUPI Type: NSI

Username: verylongusername1

Realm: 3gpp.com

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 80 | 1A | 76 | 65 | 72 | 79 | 6C | 6F |
| **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 6E | 67 | 75 | 73 | 65 | 72 | 6E | 61 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 6D | 65 | 31 | 40 | 33 | 67 | 70 | 70 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 2E | 63 | 6F | 6D |  |  |  |  |

##### 5.6.3.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

#### 5.6.3.5 Acceptance criteria

1) After step a) the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC

2) After step b) the UE shall include the SUCI NAI in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 1

The NAI format for the SUCI takes the form:

type1.rid17.schid2.hnkey27.ecckey<ECC ephemeral public key>.cip< encryption of "verylongusername1" >.mac<MAC tag value>@3gpp.com

where,

SUPI Type: 1

Home Network Identifier: 3gpp.com

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of "verylongusername1" and MAC tag value

Example with test data from 3GPP TS 33.501 [43] Annex C :

type1.rid17.schid2.hnkey27.ecckey03759BB22C563D9F4A6B3C1419E543FC2F39D6823F02A9D71162B39399218B244B.cipBE22D8B9F856A52ED381CD7EAF4CF2D525.mac3CDDC61A0A7882EB@3gpp.com

### 5.6.4 UE identification after SUPI is changed

#### 5.6.4.1 Definition and applicability

A globally unique temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages.

#### 5.6.4.2 Conformance requirement

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

a) 5G-GUTI;

b) last visited registered TAI;

c) 5GS update status; and

d) 5G NAS security context parameters from a full native 5G NAS security context.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM in the EFSUPI\_NAI.. These 5GMM parameters can only be used if the SUPI from the USIM in the EFSUPI\_NAI matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

Reference:

- TS 24.501 [42], clauses 5.3.3, 5.5.1.2 and Annex C.

#### 5.6.4.3 Test purpose

1) To verify that the READ EFSUPI\_NAI command is performed correctly by the ME.

2) To verify that the ME deletes the 5GMM parameters from non-volatile memory in case SUPI is changed.

3) To verify that the GET IDENTITY command is performed correctly by the ME.

4) To verify that the ME includes the SUCI received from the USIM within GET IDENTITY response in the 5GS mobile identity IE.

#### 5.6.4.4 Method of test

##### 5.6.4.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC – non-IMSI SUPI Type is used and installed into the Terminal.

**EFUST (USIM Service Table)**

Settings from clause 4.10.1 of the present document apply with the following changes:

Logically:

|  |  |  |  |
| --- | --- | --- | --- |
| Service n°125: |  | SUCI calculation by the USIM | available |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Binary: | xxxx xx1x | xxxx xxxx | xxxx 1x00 | xxxx x1xx | xxxx xx11 | xxxx xxxx | xxxx xxxx | xxxx xxxx |
|  | **B9** | **B10** | **B11** |  | **B16** | **B17** |  |  |
|  | xxxx xxxx | xxxx xxxx | xx11 xxxx | ..... | xxx1 111x | xxxx xx1x |  |  |

5G-NR UICC – non-IMSI SUPI Type is configured with:

Protection Scheme Identifier : null-scheme

Key Index: 0

EFSUCI\_Calc\_Info (Subscription Concealed Identifier Calculation Information EF): Not available to the ME.

##### 5.6.4.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicates the 5GS registration type IE as "initial registration".

c) The NG-SS sends a *REGISTRATION ACCEPT* message with the following parameters:

5G-GUTI: 24408300010266436587

TAI: 244 083 000001

d) The UE sends a *REGISTRATION COMPLETE* message to the NG-SS.

e) The UE is switched off, change the UICC configuration by setting the SUPI value from 00-00-5E-00-53-00@5gc.mnc012.mcc345.3gppnetwork.org to 00-00-5E-00-53-01@5gc.mnc012.mcc345.3gppnetwork.org.

f) The UE is switched on.

g) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI" with the new SUCI corresponding to the new SUPI value.

#### 5.6.4.5 Acceptance criteria

1) After step a) and f) the ME shall readEFSUPI\_NAI and then the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC.

2) In step g) the UE shall not use the 5G-GUTI or the Last visited registered TAI parameters in the REGISTRATION REQUEST message, instead it shall use the new SUCI as 5GS mobile identity IE.

3) The UE shall include the new SUCI.

SUPI format: 2

The NAI format for the SUCI takes the form:

type3.rid17.schid0.userid00-00-5E-00-53-01@5gc.mnc012.mcc345.3gppnetwork.org

where,

SUPI Type: 3

Home Network Identifier: 5gc.mnc012.mcc345.3gppnetwork.org

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 00-00-5E-00-53-01

### 5.6.5 UE identification by SUCI during initial registration – SUCI calculation by ME using profile A

#### 5.6.5.1 Definition and applicability

If the operator's decision is that the ME shall calculate the SUCI, the Home Network Operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

#### 5.6.5.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) SUPI is available in EFSUPI\_NAI if Service n°130 is "available" in EFUST

3) A subscriber identifier is in the form of a SUPI in NAI format

4) The SUPI may contain:

- a NSI, used for private networks as defined in TS 22.261 [43] or

- a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or

- a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].

5) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure for EFSUCI\_Calc\_Info.

6) The ME shall calculate the SUCI using the ECIES scheme profile A if highest priority of the protection schemes listed in the USIM is the ECIES scheme profile A.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.10, 4.4.11.11, 5.3.48 and 7.5.

- 3GPP TS 33.501 [41], clauses 6.12.1, 6.12.2 and Annex C.

- TS 23.003 [19], clauses 2.2A, 2.2B, 28.2, 28.7.2, 28.7.3, 28.15.2 and 28.15.5.

- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.6.5.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFSUPI\_NAI commands are performed correctly by the ME.

2) To verify that the terminal performs SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile A and the Home Network Public Key).

#### 5.6.5.4 Method of test

##### 5.6.5.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The NG-SS shall be configured with Home Network Private Key for profile A:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | C5 | 3C | 22 | 20 | 8B | 61 | 86 | 0B |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 06 | C6 | 2E | 54 | 06 | A7 | B3 | 30 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| C2 | B5 | 77 | AA | 55 | 58 | 98 | 15 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 10 | D1 | 28 | 24 | 7D | 38 | BD | 1D |

5G-NR UICC – non-IMSI SUPI Type is configured with:

**EFSUCI\_Calc\_Info**(**Subscription Concealed Identifier Calculation Information EF**)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – ECIES scheme profile A

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile B

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 30

Home Network Public Key 1:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Home Network Public Key 2 Identifier: 27

Home Network Public Key 2:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

**EFSUPI\_NAI (SUPI as Network Access Identifier)**

Logically: verylongusername1@3gpp.com

SUPI Type: NSI

Username: verylongusername1

Realm: 3gpp.com

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 80 | 1A | 76 | 65 | 72 | 79 | 6C | 6F |
| **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 6E | 67 | 75 | 73 | 65 | 72 | 6E | 61 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 6D | 65 | 31 | 40 | 33 | 67 | 70 | 70 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 2E | 63 | 6F | 6D |  |  |  |  |

##### 5.6.5.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

#### 5.6.5.5 Acceptance criteria

1) After step a) the ME shall readEFSUPI\_NAI, EFUST, EFRouting\_Indicator and EFSUCI\_Calc\_Info.

2) After step b) the UE shall include the SUCI NAI in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 1

The NAI format for the SUCI takes the form:

type1.rid17.schid1.hnkey30.ecckey<ECC ephemeral public key>.cip< encryption of "verylongusername1" >.mac<MAC tag value>@3gpp.com

where,

SUPI Type: 1

Home Network Identifier: 3gpp.com

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of "verylongusername1" and MAC tag value

Example with test data from 3GPP TS 33.501 [43] Annex C:

type1.rid17.schid1.hnkey30.ecckey977D8B2FDAA7B64AA700D04227D5B440630EA4EC50F9082273A26BB678C92222.cip8E358A1582ADB15322C10E515141D2039A.mac12E1D7783A97F1AC@3gpp.com

### 5.6.6 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B

#### 5.6.6.1 Definition and applicability

If the operator's decision is that the ME shall calculate the SUCI, the Home Network Operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

#### 5.6.6.2 Conformance requirement

1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EFUST

2) SUPI is available in EFSUPI\_NAI if Service n°130 is "available" in EFUST

3) A subscriber identifier is in the form of a SUPI in NAI format

4) The SUPI may contain:

- a NSI, used for private networks as defined in TS 22.261 [43] or

- a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or

- a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].

5) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure for EFSUCI\_Calc\_Info.

6) The ME shall calculate the SUCI using the ECIES scheme profile B if highest priority of the protection schemes listed in the USIM is the ECIES scheme profile B.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.10, 4.4.11.11, 5.3.48 and 7.5.

- 3GPP TS 33.501 [41], clauses 6.12.1, 6.12.2 and Annex C.

- TS 23.003 [19], clauses 2.2A, 2.2B, 28.2, 28.7.2, 28.7.3, 28.15.2 and 28.15.5.

- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

#### 5.6.6.3 Test purpose

1) To verify that the READ EFSUCI\_Calc\_Info, EFRouting\_Indicator and EFSUPI\_NAI commands are performed correctly by the ME.

2) To verify that the terminal performs SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile B and the Home Network Public Key).

#### 5.6.6.4 Method of test

##### 5.6.6.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC – non-IMSI SUPI Type is used and installed into the Terminal.

The NG-SS shall be configured with Home Network Private Key for profile B:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | F1 | AB | 10 | 74 | 47 | 7E | BC | C7 |
|  | **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| F5 | 54 | EA | 1C | 5F | C3 | 68 | B1 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 61 | 67 | 30 | 15 | 5E | 00 | 41 | AC |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 44 | 7D | 63 | 01 | 97 | 5F | EC | DA |

5G-NR UICC – non-IMSI SUPI Type is configured with:

**EFSUPI\_NAI (SUPI as Network Access Identifier)**

Logically: verylongusername1@3gpp.com

SUPI Type: NSI

Username: verylongusername1

Realm: 3gpp.com

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Coding:** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **B8** |
| Hex | 80 | 1A | 76 | 65 | 72 | 79 | 6C | 6F |
| **B9** | **B10** | **B11** | **B12** | **B13** | **B14** | **B15** | **B16** |
| 6E | 67 | 75 | 73 | 65 | 72 | 6E | 61 |
| **B17** | **B18** | **B19** | **B20** | **B21** | **B22** | **B23** | **B24** |
| 6D | 65 | 31 | 40 | 33 | 67 | 70 | 70 |
| **B25** | **B26** | **B27** | **B28** | **B29** | **B30** | **B31** | **B32** |
| 2E | 63 | 6F | 6D |  |  |  |  |

##### 5.6.6.4.2 Procedure

a) The UE is switched on.

b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".

c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

#### 5.6.6.5 Acceptance criteria

1) After step a) the ME shall readEFSUPI\_NAI, EFUST, EFRouting\_Indicator and EFSUCI\_Calc\_Info.

2) After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 1

The NAI format for the SUCI takes the form:

type1.rid17.schid2.hnkey27.ecckey<ECC ephemeral public key>.cip< encryption of "verylongusername1" >.mac<MAC tag value>@3gpp.com

where,

SUPI Type: 1

Home Network Identifier: 3gpp.com

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of "verylongusername1" and MAC tag value

Example with test data from 3GPP TS 33.501 [43] Annex C:

type1.rid17.schid2.hnkey27.ecckey03759BB22C563D9F4A6B3C1419E543FC2F39D6823F02A9D71162B39399218B244B.cipBE22D8B9F856A52ED381CD7EAF4CF2D525.mac3CDDC61A0A7882EB@3gpp.com