

3GPP TSG CN Plenary Meeting #21
17th – 19th September 2003 Frankfurt, GERMANY.

NP-030386

Source: TSG CN WG4
Title: Corrections on Location Services
Agenda item: 8.4
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	656		N4-030826	Rel-5	Reduce maximum length of "LCS Requestor ID" and "LCS Codeword"	F	5.6.2
29.002	657		N4-030828	Rel-6	Reduce maximum length of "LCS Requestor ID" and "LCS Codeword"	A	6.2.0
24.080	029		N4-030827	Rel-5	Reduce maximum length of "LCS Requestor ID" and "LCS Codeword"	F	5.3.0

CHANGE REQUEST

⌘ **24.080 CR 029** ⌘ rev - ⌘ Current version: **5.3.0** ⌘

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

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Reduce maximum length of "LCS Requestor ID" and "LCS Codeword".		
Source:	⌘ CN4		
Work item code:	⌘ LCS1	Date:	⌘ 12/08/2003
Category:	⌘ F Sub-Category: Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Release:	⌘ REL-5
		Use <u>one</u> of the following releases:	2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change: ⌘ **This is an essential correction.**

There is a serious problem on the length of LCS-LocationNotification message. The maximum length of the LCS-LocationNotification message exceeds the limit of 251 octets, which is the maximum number of octets in a L3 message, derived by TS 44.006.

The main problem is that the "LCS Requestor ID" and "LCS Codeword" are defined as sequences of maximum length of 128 octets.

LCS Requestor ID

According to the definition in 3GPP TS 23.271:

Requestor Identity: This identifier is identifying the Requestor and can be e.g. MSISDN or logical name.

In case an MSISDN is used as an LCS Requestor ID a maximum length of 9 octets is sufficient as a requestorIDString since according to 3GPP TS 29.002 the MSISDN is defined as an octet string of maximum 9 octets.

Even in the case that a logical name is registered as requestor ID, it is quite unreasonable to have such long requestor ID since it is not functional needed to distinguish different requestors.

Another disadvantage of such long RequestorID is that it is unfeasible to display it on the UE terminal.

LCS Codeword

	<p>According to the definition in 3GPP TS 23.271:</p> <p>Codeword: access code, which is used by a Requestor or LCS Client in order to gain acceptance of a location request for a Target UE. The codeword is part of the privacy information that may be registered by a Target UE user.</p> <p>The Codeword shouldn't be so long considering that it is an access code. Especially in the case that the target UE registers the codeword by him/herself it is quit inconvenient or unacceptable to register so long codeword.</p> <p>Therefore, it is proposed to reduce the length of the Codeword to a realistic value so that to make the codeword functionality a user-friendly function.</p> <p>SA2 approved this change. See also LS N4-030765, S2-032592.</p>
Summary of change:	⌘ Reduce the LCS RequestorID maximum length to an USSD-String of maximum 63 characters and LCS Codeword to an USSD-String of maximum 20 characters in MAP-PROVIDE-SUBSCRIBER-LOCATION.
Consequences if not approved:	⌘ There is a possibility that the maximum number of parameters are sent in a L3 message and in such a case the maximum allowed number of octets in the message is exceeded. This will result in LCS RequestorID and LCS Codeword parameters not to be received correctly in the UE leading to a total failure of the MAP-PROVIDE-SUBSCRIBER-LOCATION process.

Clauses affected:	⌘ ANNEX A												
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> <td></td> </tr> <tr> <td>X</td> <td></td> <td>Other core specifications</td> </tr> <tr> <td></td> <td>X</td> <td>Test specifications</td> </tr> <tr> <td></td> <td>X</td> <td>O&M Specifications</td> </tr> </table>	Y	N		X		Other core specifications		X	Test specifications		X	O&M Specifications
Y	N												
X		Other core specifications											
	X	Test specifications											
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Other comments:	⌘ Although there is no change on the text of the normative part, implementations need to be changed because of a change in the imported definitions from TS 29.002.												

How to create CRs using this form:

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

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

*** First modified section ***

```

lcs-LocationNotification OPERATION ::= {
  ARGUMENT SEQUENCE {
    notificationType [0] IMPLICIT ENUMERATED {
      notifyLocationAllowed ( 0 ),
      notifyAndVerify-LocationAllowedIfNoResponse ( 1 ),
      notifyAndVerify-LocationNotAllowedIfNoResponse ( 2 ),
      ... ,
      locationNotAllowed ( 3 ) },
    locationType [1] IMPLICIT SEQUENCE {
      locationEstimateType [0] IMPLICIT ENUMERATED {
        currentLocation ( 0 ),
        currentOrLastKnownLocation ( 1 ),
        initialLocation ( 2 ),
        ... ,
        activateDeferredLocation ( 3 ),
        cancelDeferredLocation ( 4 ) },
      ... ,
      deferredLocationEventType [1] IMPLICIT BIT STRING {
        msAvailable ( 0 ) } ( SIZE( 1 .. 16 ) ) OPTIONAL},
    lcsClientExternalID [2] IMPLICIT SEQUENCE {
      externalAddress [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) OPTIONAL,
      extensionContainer [1] IMPLICIT SEQUENCE {
        privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
          SEQUENCE {
            extId MAP-EXTENSION .&extensionId ( {
              '...'} ) ,
            extType MAP-EXTENSION .&ExtensionType ( {
              '...'} { @extId } ) OPTIONAL} OPTIONAL,
            pcs-Extensions [1] IMPLICIT SEQUENCE {
              ... } OPTIONAL,
            ... } OPTIONAL,
            ... } OPTIONAL,
          lcsClientName [3] IMPLICIT SEQUENCE {
            dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
            nameString [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63 ) ),
            ... } OPTIONAL,
          ... ,
          lcsRequestorID [4] IMPLICIT SEQUENCE {
            dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
            requestorIDString [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63127 ) ),
            ... } OPTIONAL,
          lcsCodeword [5] IMPLICIT SEQUENCE {
            dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
            lcsCodewordString [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 20127 ) ),
            ... } OPTIONAL,
          lcsServiceTypeID [6] IMPLICIT INTEGER ( 0 .. 127 ) OPTIONAL}
    RESULT SEQUENCE {
      verificationResponse [0] IMPLICIT ENUMERATED {
        permissionDenied ( 0 ),
        permissionGranted ( 1 ),
        ... } OPTIONAL,
      ... }
    ERRORS {
      systemFailure |
      unexpectedDataValue }
    CODE local : 116
  }
}

```

*** End of document ***

CHANGE REQUEST

⌘ **29.002 CR 656** ⌘ rev - ⌘ Current version: **5.6.2** ⌘

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Clauses affected: ⌘ 17.7.13, ANNEX A, ANNEX B

Other specs affected:	⌘	<table border="1"><tr><td>Y</td><td>N</td></tr><tr><td>X</td><td></td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td><td></td></tr></table>	Y	N	X			X		X		Other core specifications	⌘ 24.080-029
	Y	N											
	X												
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Other comments: ⌘

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***** First modified section *****

17.7.13 Location service data types

```
1 MAP-LCS-DataTypes {
2   itu-t identified-organization (4) etsi (0) mobileDomain (0)
3   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version8 (8)}
4
5 DEFINITIONS
6 IMPLICIT TAGS
7 ::=
8 BEGIN
9
```

```

10 EXPORTS
11   RoutingInfoForLCS-Arg,
12   RoutingInfoForLCS-Res,
13   ProvideSubscriberLocation-Arg,
14   ProvideSubscriberLocation-Res,
15   SubscriberLocationReport-Arg,
16   SubscriberLocationReport-Res,
17   LocationType,
18   LCSClientName,
19   LCS-QoS,
20   Horizontal-Accuracy,
21   ResponseTime,
22   Ext-GeographicalInformation,
23   SupportedGADShapes,
24   Add-GeographicalInformation,
25   LCSRequestorID,
26   LCSCodeword
27 ;
28
29 IMPORTS
30   AddressString,
31   ISDN-AddressString,
32   IMEI,
33   IMSI,
34   LMSI,
35   SubscriberIdentity,
36   AgeOfLocationInformation,
37   LCSClientExternalID,
38   LCSClientInternalID,
39   LCSServiceTypeID
40 FROM MAP-CommonDataTypes {
41   itu-t identified-organization (4) etsi (0) mobileDomain (0)
42   gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}
43
44   ExtensionContainer
45 FROM MAP-ExtensionDataTypes {
46   itu-t identified-organization (4) etsi (0) mobileDomain (0)
47   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}
48
49   USSD-DataCodingScheme,
50   USSD-String
51 FROM MAP-SS-DataTypes {
52   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
53   map-SS-DataTypes (14) version8 (8)}
54
55   APN
56 FROM MAP-MS-DataTypes {
57   itu-t identified-organization (4) etsi (0) mobileDomain (0)
58   gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}
59
60   Additional-Number
61 FROM MAP-SM-DataTypes {
62   itu-t identified-organization (4) etsi (0) mobileDomain (0)
63   gsm-Network (1) modules (3) map-SM-DataTypes (16) version8 (8)}
64 ;
65
66

```

<pre> 67 RoutingInfoForLCS-Arg ::= SEQUENCE { 68 mlcNumber 69 targetMS 70 extensionContainer 71 ...} </pre>	<pre> [0] ISDN-AddressString, [1] SubscriberIdentity, [2] ExtensionContainer OPTIONAL, </pre>
<pre> 73 RoutingInfoForLCS-Res ::= SEQUENCE { 74 targetMS 75 lcsLocationInfo 76 extensionContainer 77 ... 78 } </pre>	<pre> [0] SubscriberIdentity, [1] LCSLocationInfo, [2] ExtensionContainer OPTIONAL, </pre>

79

```

80 LCSLocationInfo ::= SEQUENCE {
81     networkNode-Number      ISDN-AddressString,
82     -- NetworkNode-number can be either msc-number or sgsn-number
83     lmsi                     [0] LMSI                OPTIONAL,
84     extensionContainer       [1] ExtensionContainer    OPTIONAL,
85     ... ,
86     gprsNodeIndicator        [2] NULL                OPTIONAL,
87     -- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
88     additional-Number        [3] Additional-Number     OPTIONAL
89 }
90
91 ProvideSubscriberLocation-Arg ::= SEQUENCE {
92     locationType              LocationType,
93     mlc-Number                ISDN-AddressString,
94     lcs-ClientID              [0] LCS-ClientID         OPTIONAL,
95     privacyOverride           [1] NULL                OPTIONAL,
96     imsi                      [2] IMSI                OPTIONAL,
97     msisdn                    [3] ISDN-AddressString   OPTIONAL,
98     lmsi                      [4] LMSI                OPTIONAL,
99     imei                      [5] IMEI                OPTIONAL,
100    lcs-Priority               [6] LCS-Priority        OPTIONAL,
101    lcs-QoS                    [7] LCS-QoS             OPTIONAL,
102    extensionContainer         [8] ExtensionContainer    OPTIONAL,
103    ... ,
104    supportedGADShapes         [9] SupportedGADShapes   OPTIONAL,
105    lcs-ReferenceNumber        [10] LCS-ReferenceNumber  OPTIONAL,
106    lcsServiceTypeID           [11] LCSServiceTypeID    OPTIONAL,
107    lcsCodeword                [12] LCSCodeword         OPTIONAL }
108
109    -- one of imsi or msisdn is mandatory
110    -- If a location estimate type indicates activate deferred location or cancel deferred
111    -- location, a lcs-Reference number shall be included.
112
113 LocationType ::= SEQUENCE {
114     locationEstimateType      [0] LocationEstimateType,
115     ... ,
116     deferredLocationEventType [1] DeferredLocationEventType OPTIONAL }
117
118 LocationEstimateType ::= ENUMERATED {
119     currentLocation           (0),
120     currentOrLastKnownLocation (1),
121     initialLocation           (2),
122     ... ,
123     activateDeferredLocation  (3),
124     cancelDeferredLocation     (4) }
125 -- exception handling:
126 -- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
127 -- shall be rejected by the receiver with a return error cause of unexpected data value
128
129 DeferredLocationEventType ::= BIT STRING {
130     msAvailable               (0) } (SIZE (1..16))
131 -- exception handling
132 -- a ProvideSubscriberLocation-Arg containing other values than listed above in
133 -- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
134 -- unexpected data value.
135
136 LCS-ClientID ::= SEQUENCE {
137     lcsClientType              [0] LCSClientType,
138     lcsClientExternalID        [1] LCSClientExternalID  OPTIONAL,
139     lcsClientDialedByMS        [2] AddressString        OPTIONAL,
140     lcsClientInternalID        [3] LCSClientInternalID  OPTIONAL,
141     lcsClientName              [4] LCSClientName          OPTIONAL,
142     ... ,
143     lcsAPN                     [5] APN                    OPTIONAL,
144     lcsRequestorID             [6] LCSRequestorID        OPTIONAL }
145
146 LCSClientType ::= ENUMERATED {
147     emergencyServices           (0),
148     valueAddedServices          (1),
149     plmnOperatorServices        (2),
150     lawfulInterceptServices     (3),
151     ... }
152 -- exception handling:
153 -- unrecognized values may be ignored if the LCS client uses the privacy override
154 -- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
155 -- a return error shall then be returned if received in a MAP invoke
156

```



```

157 LCSClientName ::= SEQUENCE {
158     dataCodingScheme          [0] USSD-DataCodingScheme,
159     nameString                [2] NameString,
160     ...}
161
162 -- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
163 -- following encoding
164 -- bit 7 6 5 4 3 2 1 0
165 --     0 0 0 0 1 1 1 1
166
167 NameString ::= USSD-String (SIZE (1..maxNameStringLength))
168
169 maxNameStringLength INTEGER ::= 63
170
171 LCSRequestorID ::= SEQUENCE {
172     dataCodingScheme          [0] USSD-DataCodingScheme,
173     requestorIDString         [1] RequestorIDString,
174     ...}
175
176 RequestorIDString ::= USSD-String (SIZE (1..maxRequestorIDStringLength))
177
178 maxRequestorIDStringLength INTEGER ::= 6327
179
180 LCS-Priority ::= OCTET STRING (SIZE (1))
181 -- 0 = highest priority
182 -- 1 = normal priority
183 -- all other values treated as 1
184
185 LCS-QoS ::= SEQUENCE {
186     horizontal-accuracy       [0] Horizontal-Accuracy          OPTIONAL,
187     verticalCoordinateRequest [1] NULL                      OPTIONAL,
188     vertical-accuracy         [2] Vertical-Accuracy            OPTIONAL,
189     responseTime              [3] ResponseTime                 OPTIONAL,
190     extensionContainer        [4] ExtensionContainer            OPTIONAL,
191     ...}
192
193 Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
194 -- bit 8 = 0
195 -- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
196 -- error should be less than the error indicated by the uncertainty code with 67%
197 -- confidence.
198
199 Vertical-Accuracy ::= OCTET STRING (SIZE (1))
200 -- bit 8 = 0
201 -- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
202 -- The vertical location error should be less than the error indicated
203 -- by the uncertainty code with 67% confidence.
204
205 ResponseTime ::= SEQUENCE {
206     responseTimeCategory      ResponseTimeCategory,
207     ...}
208 -- note: an expandable SEQUENCE simplifies later addition of a numeric response time.
209
210 ResponseTimeCategory ::= ENUMERATED {
211     lowdelay (0),
212     delaytolerant (1),
213     ... }
214 -- exception handling:
215 -- an unrecognized value shall be treated the same as value 1 (delaytolerant)
216
217 SupportedGADShapes ::= BIT STRING {
218     ellipsoidPoint (0),
219     ellipsoidPointWithUncertaintyCircle (1),
220     ellipsoidPointWithUncertaintyEllipse (2),
221     polygon (3),
222     ellipsoidPointWithAltitude (4),
223     ellipsoidPointWithAltitudeAndUncertaintyElipsoid (5),
224     ellipsoidArc (6) } (SIZE (7..16))
225 -- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
226 -- exception handling: bits 7 to 15 shall be ignored if received.
227
228 LCS-ReferenceNumber ::= OCTET STRING (SIZE(1))
229

```

```

230 LCSCodeword ::= SEQUENCE {
231     dataCodingScheme          [0] USSD-DataCodingScheme,
232     lcsCodewordString        [1] LCSCodewordString,
233     ...}
234
235 LCSCodewordString ::= USSD-String (SIZE (1..maxLCSCodewordStringLength))
236
237 maxLCSCodewordStringLength INTEGER ::= 2027
238
239 ProvideSubscriberLocation-Res ::= SEQUENCE {
240     locationEstimate          Ext-GeographicalInformation,
241     ageOfLocationEstimate     [0] AgeOfLocationInformation    OPTIONAL,
242     extensionContainer        [1] ExtensionContainer          OPTIONAL,
243     ... ,
244     add-LocationEstimate      [2] Add-GeographicalInformation  OPTIONAL,
245     deferredmt-lrResponseIndicator [3] NULL                OPTIONAL,
246     positioningData          [4] PositioningDataInformation  OPTIONAL }
247
248 -- if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.
249
250 -- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
251 -- geographic shapes supported in the ProvideSubscriberLocation-Arg
252 -- The locationEstimate and the add-locationEstimate parameters shall not be sent if
253 -- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
254 -- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
255 -- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
256 -- shall be rejected with error FacilityNotSupported with additional indication
257 -- shapeOfLocationEstimateNotSupported
258

```

```

259 Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
260 -- Refers to geographical Information defined in 3GPP TS 23.032.
261 -- This is composed of 1 or more octets with an internal structure according to
262 -- 3GPP TS 23.032
263 -- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
264 -- (a) Ellipsoid point with uncertainty circle
265 -- (b) Ellipsoid point with uncertainty ellipse
266 -- (c) Ellipsoid point with altitude and uncertainty ellipsoid
267 -- (d) Ellipsoid Arc
268 -- (e) Ellipsoid Point
269 -- Any other value in octet 1 shall be treated as invalid
270 -- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
271 -- Degrees of Latitude 3 octets
272 -- Degrees of Longitude 3 octets
273 -- Uncertainty code 1 octet
274 -- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
275 -- Degrees of Latitude 3 octets
276 -- Degrees of Longitude 3 octets
277 -- Uncertainty semi-major axis 1 octet
278 -- Uncertainty semi-minor axis 1 octet
279 -- Angle of major axis 1 octet
280 -- Confidence 1 octet
281 -- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
282 -- Degrees of Latitude 3 octets
283 -- Degrees of Longitude 3 octets
284 -- Altitude 2 octets
285 -- Uncertainty semi-major axis 1 octet
286 -- Uncertainty semi-minor axis 1 octet
287 -- Angle of major axis 1 octet
288 -- Uncertainty altitude 1 octet
289 -- Confidence 1 octet
290 -- Octets 2 to 13 for case (d) - Ellipsoid Arc
291 -- Degrees of Latitude 3 octets
292 -- Degrees of Longitude 3 octets
293 -- Inner radius 2 octets
294 -- Uncertainty radius 1 octet
295 -- Offset angle 1 octet
296 -- Included angle 1 octet
297 -- Confidence 1 octet
298 -- Octets 2 to 7 for case (e) - Ellipsoid Point
299 -- Degrees of Latitude 3 octets
300 -- Degrees of Longitude 3 octets
301 --
302 --
303 -- An Ext-GeographicalInformation parameter comprising more than one octet and
304 -- containing any other shape or an incorrect number of octets or coding according
305 -- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
306 --
307 -- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
308 -- by the receiver if an Add-GeographicalInformation parameter is received
309 -- in the same message.
310 --
311 -- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
312 -- invalid data by the receiver if an Add-GeographicalInformation parameter is not
313 -- received in the same message.

```

```

314
315 maxExt-GeographicalInformation INTEGER ::= 20
316 -- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
317 -- versions of 3GPP TS 29.002

```

```

318
319 PositioningDataInformation ::= OCTET STRING (SIZE (2..maxPositioningDataInformation))
320 -- Refers to the Positioning Data defined in 3GPP TS 49.031.
321 -- This is composed of 2 or more octets with an internal structure according to
322 -- 3GPP TS 49.031.

```

```

323
324 maxPositioningDataInformation INTEGER ::= 10
325 --
326

```

```

327 Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
328 -- Refers to geographical Information defined in 3GPP TS 23.032.
329 -- This is composed of 1 or more octets with an internal structure according to
330 -- 3GPP TS 23.032
331 -- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
332 -- Octets 2 to n (where n is the total number of octets necessary to encode the shape
333 -- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
334 the
335 -- encoding defined in 3GPP TS 23.032
336 --
337 -- An Add-GeographicalInformation parameter, whether valid or invalid, received
338 -- together with a valid Ext-GeographicalInformation parameter in the same message
339 -- shall be discarded.
340 --
341 -- An Add-GeographicalInformation parameter containing any shape not defined in
342 -- 3GPP TS 23.032 or an incorrect number of octets or coding according to
343 -- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
344 -- together with a valid Ext-GeographicalInformation parameter in the same message.

```

```

346 maxAdd-GeographicalInformation INTEGER ::= 91
347 -- the maximum length allows support for all the shapes currently defined in 3GPP TS
348 23.032

```

```

350 SubscriberLocationReport-Arg ::= SEQUENCE {
351     lcs-Event                LCS-Event,
352     lcs-ClientID             LCS-ClientID,
353     lcsLocationInfo          LCSLocationInfo,
354     msisdn                   [0] ISDN-AddressString           OPTIONAL,
355     imsi                     [1] IMSI                         OPTIONAL,
356     imei                     [2] IMEI                         OPTIONAL,
357     na-ESRD                  [3] ISDN-AddressString           OPTIONAL,
358     na-ESRK                  [4] ISDN-AddressString           OPTIONAL,
359     locationEstimate          [5] Ext-GeographicalInformation  OPTIONAL,
360     ageOfLocationEstimate     [6] AgeOfLocationInformation    OPTIONAL,
361     extensionContainer        [7] ExtensionContainer           OPTIONAL,
362     ... ,
363     add-LocationEstimate      [8] Add-GeographicalInformation  OPTIONAL,
364     deferredmt-lrData         [9] Deferredmt-lrData           OPTIONAL,
365     lcs-ReferenceNumber       [10] LCS-ReferenceNumber         OPTIONAL,
366     positioningData           [11] PositioningDataInformation  OPTIONAL }
367
368 -- one of msisdn or imsi is mandatory
369 -- a location estimate that is valid for the locationEstimate parameter should
370 -- be transferred in this parameter in preference to the add-LocationEstimate.
371 -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
372 -- indicates a deferredmt-lrResponse.
373 -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
374 -- and the add-locationEstimate parameters shall not be sent if the
375 -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
376 -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
377 -- as supported in supportedGADShapes. In such a case terminationCause
378 -- in deferredmt-lrData shall be present with value
379 -- shapeOfLocationEstimateNotSupported.
380 -- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
381 -- included.

```

```

383 Deferredmt-lrData ::= SEQUENCE {
384     deferredLocationEventType DeferredLocationEventType,
385     terminationCause          [0] TerminationCause           OPTIONAL,
386     lcsLocationInfo           [1] LCSLocationInfo             OPTIONAL,
387     ... }
388 -- lcsLocationInfo may be included only if a terminationCause is present
389 -- indicating mt-lrRestart.

```

```

391 LCS-Event ::= ENUMERATED {
392     emergencyCallOrigination (0),
393     emergencyCallRelease (1),
394     mo-lr (2),
395     ... ,
396     deferredmt-lrResponse (3) }
397 -- exception handling:
398 -- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
399 -- shall be rejected by a receiver with a return error cause of unexpected data value

```

400

```

401 TerminationCause ::= ENUMERATED {
402     normal (0),
403     errorundefined (1),
404     internalTimeout (2),
405     congestion (3),
406     mt-lrRestart (4),
407     privacyViolation (5),
408     ...,
409     shapeOfLocationEstimateNotSupported (6) }
410 -- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
411 -- either because the sending node knows that the terminal has moved under coverage
412 -- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
413 -- has been deregistered due to a Cancel Location received from HLR.
414 --
415 -- exception handling
416 -- an unrecognized value shall be treated the same as value 1 (errorundefined)
417
418 SubscriberLocationReport-Res ::= SEQUENCE {
419     extensionContainer          ExtensionContainer          OPTIONAL,
420     ...}
421
422
423
424 END
425

```



```

IcsClientDialedByMS [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) OPTIONAL,
IcsClientInternalID [3] IMPLICIT ENUMERATED {
  broadcastService ( 0 ),
  o-andM-HPLMN ( 1 ),
  o-andM-VPLMN ( 2 ),
  anonymousLocation ( 3 ),
  targetMSsubscribedService ( 4 ),
  ... } OPTIONAL,
IcsClientName [4] IMPLICIT SEQUENCE {
  dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
  nameString [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63 ) ),
  ... } OPTIONAL,
... ,
IcsAPN [5] IMPLICIT OCTET STRING ( SIZE( 2 .. 63 ) ) OPTIONAL,
IcsRequestorID [6] IMPLICIT SEQUENCE {
  dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
  requestorIDString [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63+27 ) ),
  ... } OPTIONAL} OPTIONAL,
privacyOverride [1] IMPLICIT NULL OPTIONAL,
imsi [2] IMPLICIT OCTET STRING ( SIZE( 3 .. 8 ) ) OPTIONAL,
msisdn [3] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ) OPTIONAL,
lmsi [4] IMPLICIT OCTET STRING ( SIZE( 4 ) ) OPTIONAL,
imei [5] IMPLICIT OCTET STRING ( SIZE( 8 ) ) OPTIONAL,
Ics-Priority [6] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
Ics-QoS [7] IMPLICIT SEQUENCE {
  horizontal-accuracy [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
  verticalCoordinateRequest [1] IMPLICIT NULL OPTIONAL,
  vertical-accuracy [2] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
  responseTime [3] IMPLICIT SEQUENCE {
    responseTimeCategory ENUMERATED {
      lowdelay ( 0 ),
      delaytolerant ( 1 ),
      ... },
    ... } OPTIONAL,
  ... } OPTIONAL,
extensionContainer [4] IMPLICIT SEQUENCE {
  privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
  SEQUENCE {
    extId MAP-EXTENSION .&extensionId ( {
      ... } ),
    extType MAP-EXTENSION .&ExtensionType ( {
      ... } { @extId } ) OPTIONAL} OPTIONAL,
  pcs-Extensions [1] IMPLICIT SEQUENCE {
    ... } OPTIONAL,
  ... } OPTIONAL,
  ... } OPTIONAL,
extensionContainer [8] IMPLICIT SEQUENCE {
  privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
  SEQUENCE {
    extId MAP-EXTENSION .&extensionId ( {
      ... } ),
    extType MAP-EXTENSION .&ExtensionType ( {
      ... } { @extId } ) OPTIONAL} OPTIONAL,
  pcs-Extensions [1] IMPLICIT SEQUENCE {
    ... } OPTIONAL,
  ... } OPTIONAL,
  ... },
supportedGADShapes [9] IMPLICIT BIT STRING {
  ellipsoidPoint ( 0 ),
  ellipsoidPointWithUncertaintyCircle ( 1 ),
  ellipsoidPointWithUncertaintyEllipse ( 2 ),
  polygon ( 3 ),
  ellipsoidPointWithAltitude ( 4 ),
  ellipsoidPointWithAltitudeAndUncertaintyElipsoid ( 5 ),
  ellipsoidArc ( 6 ) } ( SIZE( 7 .. 16 ) ) OPTIONAL,
Ics-ReferenceNumber [10] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
IcsServiceTypeID [11] IMPLICIT INTEGER ( 0 .. 127 ) OPTIONAL,
IcsCodeword [12] IMPLICIT SEQUENCE {
  dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
  IcsCodewordString [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 20+27 ) ),
  ... } OPTIONAL}
RESULT SEQUENCE {
  locationEstimate OCTET STRING ( SIZE( 1 .. 20 ) ),
  ageOfLocationEstimate [0] IMPLICIT INTEGER ( 0 .. 32767 ) OPTIONAL,

```

```

extensionContainer      [1] IMPLICIT SEQUENCE {
  privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
    SEQUENCE {
      extId  MAP-EXTENSION .&extensionId ( {
        '
        ... } ),
      extType  MAP-EXTENSION .&ExtensionType ( {
        '
        ... } { @extId } ) OPTIONAL} OPTIONAL,
  pcs-Extensions  [1] IMPLICIT SEQUENCE {
    ... } OPTIONAL,
  ... } OPTIONAL,
... ,
add-LocationEstimate  [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 91 ) ) OPTIONAL,
deferredmt-IrResponseIndicator [3] IMPLICIT NULL OPTIONAL,
positioningData      [4] IMPLICIT OCTET STRING ( SIZE( 2 .. 10 ) ) OPTIONAL}
ERRORS {
  systemFailure |
  dataMissing |
  unexpectedDataValue |
  facilityNotSupported |
  unidentifiedSubscriber |
  illegalSubscriber |
  illegalEquipment |
  absentSubscriber |
  unauthorizedRequestingNetwork |
  unauthorizedLCSCient |
  positionMethodFailure }
CODE local : 83
}

```

```

subscriberLocationReport OPERATION ::= {
  ARGUMENT SEQUENCE {
    lcs-Event      ENUMERATED {
      emergencyCallOrigination ( 0 ),
      emergencyCallRelease ( 1 ),
      mo-Ir ( 2 ),
      ... ,
      deferredmt-IrResponse ( 3 ) },
    lcs-ClientID SEQUENCE {
      lcsClientType [0] IMPLICIT ENUMERATED {
        emergencyServices ( 0 ),
        valueAddedServices ( 1 ),
        plmnOperatorServices ( 2 ),
        lawfulInterceptServices ( 3 ),
        ... },
      lcsClientExternalID [1] IMPLICIT SEQUENCE {
        externalAddress [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ) OPTIONAL,
        extensionContainer [1] IMPLICIT SEQUENCE {
          privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
            SEQUENCE {
              extId  MAP-EXTENSION .&extensionId ( {
                '
                ... } ),
              extType  MAP-EXTENSION .&ExtensionType ( {
                '
                ... } { @extId } ) OPTIONAL} OPTIONAL,
            pcs-Extensions [1] IMPLICIT SEQUENCE {
              ... } OPTIONAL,
            ... } OPTIONAL,
            ... } OPTIONAL,
            ... } OPTIONAL,
          lcsClientDialedByMS [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) OPTIONAL,
          lcsClientInternalID [3] IMPLICIT ENUMERATED {
            broadcastService ( 0 ),
            o-andM-HPLMN ( 1 ),
            o-andM-VPLMN ( 2 ),
            anonymousLocation ( 3 ),
            targetMSsubscribedService ( 4 ),
            ... } OPTIONAL,
          lcsClientName [4] IMPLICIT SEQUENCE {
            dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
            nameString [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63 ) ),
            ... } OPTIONAL,
          ... ,
          lcsAPN [5] IMPLICIT OCTET STRING ( SIZE( 2 .. 63 ) ) OPTIONAL,
          lcsRequestorID [6] IMPLICIT SEQUENCE {
            dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),

```



```

requestorIDString [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63427 ) ),
... } OPTIONAL,
lcsLocationInfo SEQUENCE {
networkNode-Number OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ),
lmsi [0] IMPLICIT OCTET STRING ( SIZE( 4 ) ) OPTIONAL,
extensionContainer [1] IMPLICIT SEQUENCE {
privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
SEQUENCE {
extld MAP-EXTENSION .&extensionId ( {
'
...} ),
extType MAP-EXTENSION .&ExtensionType ( {
'
...} { @extld } ) OPTIONAL} OPTIONAL,
pcs-Extensions [1] IMPLICIT SEQUENCE {
... } OPTIONAL,
... } OPTIONAL,
... ,
gprsNodeIndicator [2] IMPLICIT NULL OPTIONAL,
additional-Number [3] CHOICE {
msc-Number [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ),
sgsn-Number [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) )} OPTIONAL,
msisdn [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ) OPTIONAL,
imsi [1] IMPLICIT OCTET STRING ( SIZE( 3 .. 8 ) ) OPTIONAL,
imei [2] IMPLICIT OCTET STRING ( SIZE( 8 ) ) OPTIONAL,
na-ESRD [3] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ) OPTIONAL,
na-ESRK [4] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ) OPTIONAL,
locationEstimate [5] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) OPTIONAL,
ageOfLocationEstimate [6] IMPLICIT INTEGER ( 0 .. 32767 ) OPTIONAL,
extensionContainer [7] IMPLICIT SEQUENCE {
privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
SEQUENCE {
extld MAP-EXTENSION .&extensionId ( {
'
...} ),
extType MAP-EXTENSION .&ExtensionType ( {
'
...} { @extld } ) OPTIONAL} OPTIONAL,
pcs-Extensions [1] IMPLICIT SEQUENCE {
... } OPTIONAL,
... } OPTIONAL,
... ,
add-LocationEstimate [8] IMPLICIT OCTET STRING ( SIZE( 1 .. 91 ) ) OPTIONAL,
deferredmt-lrData [9] IMPLICIT SEQUENCE {
deferredLocationEventType BIT STRING {
msAvailable ( 0 ) } ( SIZE( 1 .. 16 ) ),
terminationCause [0] IMPLICIT ENUMERATED {
normal ( 0 ),
errorundefined ( 1 ),
internalTimeout ( 2 ),
congestion ( 3 ),
mt-lrRestart ( 4 ),
privacyViolation ( 5 ),
... ,
shapeOfLocationEstimateNotSupported ( 6 )} OPTIONAL,
lcsLocationInfo [1] IMPLICIT SEQUENCE {
networkNode-Number OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ),
lmsi [0] IMPLICIT OCTET STRING ( SIZE( 4 ) ) OPTIONAL,
extensionContainer [1] IMPLICIT SEQUENCE {
privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
SEQUENCE {
extld MAP-EXTENSION .&extensionId ( {
'
...} ),
extType MAP-EXTENSION .&ExtensionType ( {
'
...} { @extld } ) OPTIONAL} OPTIONAL,
pcs-Extensions [1] IMPLICIT SEQUENCE {
... } OPTIONAL,
... } OPTIONAL,
... ,
gprsNodeIndicator [2] IMPLICIT NULL OPTIONAL,
additional-Number [3] CHOICE {
msc-Number [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ),
sgsn-Number [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) )} OPTIONAL,
... } OPTIONAL,
lcs-ReferenceNumber [10] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,

```

```
positioningData [11] IMPLICIT OCTET STRING ( SIZE( 2 .. 10 ) ) OPTIONAL
RESULT SEQUENCE {
  extensionContainer SEQUENCE {
    privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
      SEQUENCE {
        extId MAP-EXTENSION .&extensionId ( {
          '
          ... } ),
        extType MAP-EXTENSION .&ExtensionType ( {
          '
          ... } { @extId } ) OPTIONAL } OPTIONAL,
        pcs-Extensions [1] IMPLICIT SEQUENCE {
          ... } OPTIONAL,
          ... } OPTIONAL,
          ... }
ERRORS {
  systemFailure |
  dataMissing |
  resourceLimitation |
  unexpectedDataValue |
  unknownSubscriber |
  unauthorizedRequestingNetwork |
  unknownOrUnreachableLCSCient }
CODE local : 86
}
```

END

*** End of document ***

CHANGE REQUEST

⌘ **29.002 CR 657** ⌘ rev - ⌘ Current version: **6.2.0** ⌘

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

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Reduce maximum length of "LCS Requestor ID" and "LCS Codeword".		
Source:	⌘ CN4		
Work item code:	⌘ LCS2	Date:	⌘ 12/08/2003
Category:	⌘ A	Release:	⌘ REL-6
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change: ⌘ There is a serious problem on the length of LCS-LocationNotification message. The maximum length of the LCS-LocationNotification message exceeds the limit of 251 octets, which is the maximum number of octets in a L3 message, derived by TS 44.006.

The main problem is that the "LCS Requestor ID" and "LCS Codeword" are defined as sequences of maximum length of 128 octets.

LCS Requestor ID

According to the definition in 3GPP TS 23.271:

Requestor Identity: This identifier is identifying the Requestor and can be e.g. MSISDN or logical name.

In case an MSISDN is used as an LCS Requestor ID a maximum length of 9 octets is sufficient as a requestorIDString since according to 3GPP TS 29.002 the MSISDN is defined as an octet string of maximum 9 octets.

Even in the case that a logical name is registered as requestor ID, it is quite unreasonable to have such long requestor ID since it is not functional needed to distinguish different requestors.

Another disadvantage of such long RequestorID is that it is unfeasible to display it on the UE terminal.

LCS Codeword

According to the definition in 3GPP TS 23.271:

Codeword: access code, which is used by a Requestor or LCS Client in order to

gain acceptance of a location request for a Target UE. The codeword is part of the privacy information that may be registered by a Target UE user.

The Codeword shouldn't be so long considering that it is an access code. Especially in the case that the target UE registers the codeword by him/herself it is quit inconvenient or unacceptable to register so long codeword.

Therefore, it is proposed to reduce the length of the Codeword to a realistic value so that to make the codeword functionality a user-friendly function.

SA2 approved this change. See also LS N4-030765, S2-032592.

Summary of change: ⌘ Reduce the LCS RequestorID maximum length to an USSD-String of maximum 63 characters and LCS Codeword to an USSD-String of maximum 20 characters in MAP-PROVIDE-SUBSCRIBER-LOCATION.

Consequences if not approved: ⌘ There is a possibility that the maximum number of parameters are sent in a L3 message and in such a case the maximum allowed number of octets in the message is exceeded. This will result in LCS RequestorID and LCS Codeword parameters not to be received correctly in the UE leading to a total failure of the MAP-PROVIDE-SUBSCRIBER-LOCATION process.

Clauses affected: ⌘ 17.7.13, ANNEX A, ANNEX B

Other specs affected:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Other core specifications	⌘ 24.080	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Test specifications
	<input type="checkbox"/>	<input checked="" type="checkbox"/>			O&M Specifications

Other comments: ⌘

How to create CRs using this form:

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

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

***** First modified section *****

17.7.13 Location service data types

```

MAP-LCS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}

DEFINITIONS
IMPLICIT TAGS
 ::=
BEGIN

EXPORTS
    RoutingInfoForLCS-Arg,
    RoutingInfoForLCS-Res,
    ProvideSubscriberLocation-Arg,
    ProvideSubscriberLocation-Res,
    SubscriberLocationReport-Arg,
    SubscriberLocationReport-Res,
    LocationType,
    LCSClientName,
    LCS-QoS,
    Horizontal-Accuracy,
    ResponseTime,
    Ext-GeographicalInformation,
    SupportedGADShapes,
    Add-GeographicalInformation,
    LCSRequestorID,
    LCSCodeword
;

IMPORTS
    AddressString,
    ISDN-AddressString,
    IMEI,
    IMSI,
    LMSI,
    SubscriberIdentity,
    AgeOfLocationInformation,
    LCSClientExternalID,
    LCSClientInternalID,
    LCSServiceTypeID
FROM MAP-CommonDataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}

    ExtensionContainer
FROM MAP-ExtensionDataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}

    USSD-DataCodingScheme,
    USSD-String
FROM MAP-SS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
    map-SS-DataTypes (14) version9 (9)}

    APN,
    GSN-Address,
    SupportedLCS-CapabilitySets
FROM MAP-MS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}

    Additional-Number
FROM MAP-SM-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-SM-DataTypes (16) version9 (9)}
;

```

RoutingInfoForLCS-Arg ::= SEQUENCE {			
mlcNumber	[0]	ISDN-AddressString,	
targetMS	[1]	SubscriberIdentity,	
extensionContainer	[2]	ExtensionContainer	OPTIONAL,
...			

```

RoutingInfoForLCS-Res ::= SEQUENCE {
    targetMS                               [0] SubscriberIdentity,
    lcsLocationInfo                        [1] LCSLocationInfo,
    extensionContainer                     [2] ExtensionContainer           OPTIONAL,
    . . . ,
    v-gmlc-Address                         [3] GSN-Address               OPTIONAL,
    h-gmlc-Address                         [4] GSN-Address               OPTIONAL,
    ppr-Address                            [5] GSN-Address               OPTIONAL }

```

```

LCSLocationInfo ::= SEQUENCE {
    networkNode-Number                    ISDN-AddressString,
    -- NetworkNode-number can be either msc-number or sgsn-number
    lmsi                                  [0] LMSI                       OPTIONAL,
    extensionContainer                     [1] ExtensionContainer           OPTIONAL,
    . . . ,
    gprsNodeIndicator                     [2] NULL                       OPTIONAL,
    -- gprsNodeIndicator is set only if the SGSN number is sent as the Network Node Number
    additional-Number                     [3] Additional-Number           OPTIONAL,
    supportedLCS-CapabilitySets           [4] SupportedLCS-CapabilitySets OPTIONAL,
    additional-LCS-CapabilitySets         [5] SupportedLCS-CapabilitySets OPTIONAL
}

```

```

ProvideSubscriberLocation-Arg ::= SEQUENCE {
    locationType                          LocationType,
    mlc-Number                            ISDN-AddressString,
    lcs-ClientID                          [0] LCS-ClientID               OPTIONAL,
    privacyOverride                       [1] NULL                       OPTIONAL,
    imsi                                   [2] IMSI                       OPTIONAL,
    msisdn                                 [3] ISDN-AddressString         OPTIONAL,
    lmsi                                   [4] LMSI                       OPTIONAL,
    imei                                   [5] IMEI                       OPTIONAL,
    lcs-Priority                           [6] LCS-Priority              OPTIONAL,
    lcs-QoS                                 [7] LCS-QoS                    OPTIONAL,
    extensionContainer                     [8] ExtensionContainer           OPTIONAL,
    . . . ,
    supportedGADShapes                    [9] SupportedGADShapes         OPTIONAL,
    lcs-ReferenceNumber                   [10] LCS-ReferenceNumber        OPTIONAL,
    lcsServiceTypeID                      [11] LCSServiceTypeID           OPTIONAL,
    lcsCodeword                           [12] LCSCodeword               OPTIONAL,
    lcs-PrivacyCheck                      [13] LCS-PrivacyCheck           OPTIONAL }

-- one of imsi or msisdn is mandatory
-- If a location estimate type indicates activate location or cancel deferred
-- location, a lcs-Reference number shall be included.

```

```

LocationType ::= SEQUENCE {
    locationEstimateType                  [0] LocationEstimateType,
    . . . ,
    deferredLocationEventType             [1] DeferredLocationEventType  OPTIONAL }

```

```

LocationEstimateType ::= ENUMERATED {
    currentLocation                       (0),
    currentOrLastKnownLocation            (1),
    initialLocation                       (2),
    . . . ,
    activateDeferredLocation              (3),
    cancelDeferredLocation                 (4) }

-- exception handling:
-- a ProvideSubscriberLocation-Arg containing an unrecognized LocationEstimateType
-- shall be rejected by the receiver with a return error cause of unexpected data value

```

```

DeferredLocationEventType ::= BIT STRING {
    msAvailable                           (0) } (SIZE (1..16))

-- exception handling
-- a ProvideSubscriberLocation-Arg containing other values than listed above in
-- DeferredLocationEventType shall be rejected by the receiver with a return error cause of
-- unexpected data value.

```

```

LCS-ClientID ::= SEQUENCE {
    lcsClientType                         [0] LCSClientType,
    lcsClientExternalID                   [1] LCSClientExternalID         OPTIONAL,
    lcsClientDialedByMS                   [2] AddressString               OPTIONAL,
    lcsClientInternalID                   [3] LCSClientInternalID       OPTIONAL,
    lcsClientName                          [4] LCSClientName               OPTIONAL,
    . . . ,
    lcsAPN                                 [5] APN                       OPTIONAL,
    lcsRequestorID                        [6] LCSRequestorID            OPTIONAL }

```

```

LCSClientType ::= ENUMERATED {
    emergencyServices           (0),
    valueAddedServices         (1),
    plmnOperatorServices       (2),
    lawfulInterceptServices    (3),
    ... }
-- exception handling:
-- unrecognized values may be ignored if the LCS client uses the privacy override
-- otherwise, an unrecognized value shall be treated as unexpected data by a receiver
-- a return error shall then be returned if received in a MAP invoke

```

```

LCSClientName ::= SEQUENCE {
    dataCodingScheme           [0] USSD-DataCodingScheme,
    nameString                 [2] NameString,
    ...,
    lcs-FormatIndicator        [3] LCS-FormatIndicator           OPTIONAL }
-- The USSD-DataCodingScheme shall indicate use of the default alphabet through the
-- following encoding
-- bit 7 6 5 4 3 2 1 0
--    0 0 0 0 1 1 1 1

```

```

NameString ::= USSD-String (SIZE (1..maxNameStringLength))

```

```

maxNameStringLength INTEGER ::= 63

```

```

LCSRequestorID ::= SEQUENCE {
    dataCodingScheme           [0] USSD-DataCodingScheme,
    requestorIDString         [1] RequestorIDString,
    ...,
    lcs-FormatIndicator        [2] LCS-FormatIndicator           OPTIONAL }

```

```

RequestorIDString ::= USSD-String (SIZE (1..maxRequestorIDStringLength))

```

```

maxRequestorIDStringLength INTEGER ::= 6327

```

```

LCS-FormatIndicator ::= ENUMERATED {
    logicalName               (0),
    e-mailAddress             (1),
    msisdn                    (2),
    url                       (3),
    sipUrl                    (4),
    ... }

```

```

LCS-Priority ::= OCTET STRING (SIZE (1))
-- 0 = highest priority
-- 1 = normal priority
-- all other values treated as 1

```

```

LCS-QoS ::= SEQUENCE {
    horizontal-accuracy        [0] Horizontal-Accuracy           OPTIONAL,
    verticalCoordinateRequest  [1] NULL                          OPTIONAL,
    vertical-accuracy          [2] Vertical-Accuracy             OPTIONAL,
    responseTime               [3] ResponseTime                 OPTIONAL,
    extensionContainer         [4] ExtensionContainer            OPTIONAL,
    ...}

```

```

Horizontal-Accuracy ::= OCTET STRING (SIZE (1))
-- bit 8 = 0
-- bits 7-1 = 7 bit Uncertainty Code defined in 3GPP TS 23.032. The horizontal location
-- error should be less than the error indicated by the uncertainty code with 67%
-- confidence.

```

```

Vertical-Accuracy ::= OCTET STRING (SIZE (1))
-- bit 8 = 0
-- bits 7-1 = 7 bit Vertical Uncertainty Code defined in 3GPP TS 23.032.
-- The vertical location error should be less than the error indicated
-- by the uncertainty code with 67% confidence.

```

```

ResponseTime ::= SEQUENCE {
    responseTimeCategory      ResponseTimeCategory,
    ...}
-- note: an expandable SEQUENCE simplifies later addition of a numeric response time.

```

```

ResponseTimeCategory ::= ENUMERATED {
    lowdelay (0),
    delaytolerant (1),
    ... }
-- exception handling:
-- an unrecognized value shall be treated the same as value 1 (delaytolerant)

```

```

SupportedGADShapes ::= BIT STRING {
    ellipsoidPoint (0),
    ellipsoidPointWithUncertaintyCircle (1),
    ellipsoidPointWithUncertaintyEllipse (2),
    polygon (3),
    ellipsoidPointWithAltitude (4),
    ellipsoidPointWithAltitudeAndUncertaintyElipsoid (5),
    ellipsoidArc (6) } (SIZE (7..16))
-- A node shall mark in the BIT STRING all Shapes defined in 3GPP TS 23.032 it supports.
-- exception handling: bits 7 to 15 shall be ignored if received.

```

```

LCS-ReferenceNumber ::= OCTET STRING (SIZE(1))

```

```

LCSCodeword ::= SEQUENCE {
    dataCodingScheme [0] USSD-DataCodingScheme,
    lcsCodewordString [1] LCSCodewordString,
    ...}

```

```

LCSCodewordString ::= USSD-String (SIZE (1..maxLCSCodewordStringLength))

```

```

maxLCSCodewordStringLength INTEGER ::= 2027

```

```

LCS-PrivacyCheck ::= SEQUENCE {
    callSessionUnrelated [0] PrivacyCheckRelatedAction,
    callSessionRelated [1] PrivacyCheckRelatedAction OPTIONAL,
    ...}

```

```

PrivacyCheckRelatedAction ::= ENUMERATED {
    allowedWithoutNotification (0),
    allowedWithNotification (1),
    allowedIfNoResponse (2),
    restrictedIfNoResponse (3),
    notAllowed (4),
    ...}
-- exception handling:
-- a ProvideSubscriberLocation-Arg containing an unrecognized PrivacyCheckRelatedAction
-- shall be rejected by the receiver with a return error cause of unexpected data value

```

```

ProvideSubscriberLocation-Res ::= SEQUENCE {
    locationEstimate Ext-GeographicalInformation,
    ageOfLocationEstimate [0] AgeOfLocationInformation OPTIONAL,
    extensionContainer [1] ExtensionContainer OPTIONAL,
    ... ,
    add-LocationEstimate [2] Add-GeographicalInformation OPTIONAL,
    deferredmt-lrResponseIndicator [3] NULL OPTIONAL,
    positioningData [4] PositioningDataInformation OPTIONAL }
-- if deferredmt-lrResponseIndicator is set, locationEstimate is ignored.
-- the add-LocationEstimate parameter shall not be sent to a node that did not indicate the
-- geographic shapes supported in the ProvideSubscriberLocation-Arg
-- The locationEstimate and the add-locationEstimate parameters shall not be sent if
-- the supportedGADShapes parameter has been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate is not marked
-- as supported in supportedGADShapes. In such a case ProvideSubscriberLocation
-- shall be rejected with error FacilityNotSupported with additional indication
-- shapeOfLocationEstimateNotSupported

```



```

Ext-GeographicalInformation ::= OCTET STRING (SIZE (1..maxExt-GeographicalInformation))
-- Refers to geographical Information defined in 3GPP TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3GPP TS 23.032
-- Octet 1: Type of shape, only the following shapes in 3GPP TS 23.032 are allowed:
--   (a) Ellipsoid point with uncertainty circle
--   (b) Ellipsoid point with uncertainty ellipse
--   (c) Ellipsoid point with altitude and uncertainty ellipsoid
--   (d) Ellipsoid Arc
--   (e) Ellipsoid Point
-- Any other value in octet 1 shall be treated as invalid
-- Octets 2 to 8 for case (a) - Ellipsoid point with uncertainty circle
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--   Uncertainty code             1 octet
-- Octets 2 to 11 for case (b) - Ellipsoid point with uncertainty ellipse:
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--   Uncertainty semi-major axis  1 octet
--   Uncertainty semi-minor axis  1 octet
--   Angle of major axis          1 octet
--   Confidence                    1 octet
-- Octets 2 to 14 for case (c) - Ellipsoid point with altitude and uncertainty ellipsoid
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--   Altitude                     2 octets
--   Uncertainty semi-major axis  1 octet
--   Uncertainty semi-minor axis  1 octet
--   Angle of major axis          1 octet
--   Uncertainty altitude         1 octet
--   Confidence                    1 octet
-- Octets 2 to 13 for case (d) - Ellipsoid Arc
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--   Inner radius                 2 octets
--   Uncertainty radius           1 octet
--   Offset angle                 1 octet
--   Included angle               1 octet
--   Confidence                    1 octet
-- Octets 2 to 7 for case (e) - Ellipsoid Point
--   Degrees of Latitude           3 octets
--   Degrees of Longitude         3 octets
--
-- An Ext-GeographicalInformation parameter comprising more than one octet and
-- containing any other shape or an incorrect number of octets or coding according
-- to 3GPP TS 23.032 shall be treated as invalid data by a receiver.
--
-- An Ext-GeographicalInformation parameter comprising one octet shall be discarded
-- by the receiver if an Add-GeographicalInformation parameter is received
-- in the same message.
--
-- An Ext-GeographicalInformation parameter comprising one octet shall be treated as
-- invalid data by the receiver if an Add-GeographicalInformation parameter is not
-- received in the same message.

```

```

maxExt-GeographicalInformation INTEGER ::= 20
-- the maximum length allows for further shapes in 3GPP TS 23.032 to be included in later
-- versions of 3GPP TS 29.002

```

```

PositioningDataInformation ::= OCTET STRING (SIZE (2..maxPositioningDataInformation))
-- Refers to the Positioning Data defined in 3GPP TS 49.031.
-- This is composed of 2 or more octets with an internal structure according to
-- 3GPP TS 49.031.

```

```

maxPositioningDataInformation INTEGER ::= 10
--

```

```

Add-GeographicalInformation ::= OCTET STRING (SIZE (1..maxAdd-GeographicalInformation))
-- Refers to geographical Information defined in 3GPP TS 23.032.
-- This is composed of 1 or more octets with an internal structure according to
-- 3GPP TS 23.032
-- Octet 1: Type of shape, all the shapes defined in 3GPP TS 23.032 are allowed:
-- Octets 2 to n (where n is the total number of octets necessary to encode the shape
-- according to 3GPP TS 23.032) are used to encode the shape itself in accordance with
the
-- encoding defined in 3GPP TS 23.032
--
-- An Add-GeographicalInformation parameter, whether valid or invalid, received
-- together with a valid Ext-GeographicalInformation parameter in the same message
-- shall be discarded.
--
-- An Add-GeographicalInformation parameter containing any shape not defined in
-- 3GPP TS 23.032 or an incorrect number of octets or coding according to
-- 3GPP TS 23.032 shall be treated as invalid data by a receiver if not received
-- together with a valid Ext-GeographicalInformation parameter in the same message.

```

```

maxAdd-GeographicalInformation INTEGER ::= 91
-- the maximum length allows support for all the shapes currently defined in 3GPP TS
23.032

```

```

SubscriberLocationReport-Arg ::= SEQUENCE {
    lcs-Event                LCS-Event,
    lcs-ClientID             LCS-ClientID,
    lcsLocationInfo          LCSLocationInfo,
    msisdn                   [0] ISDN-AddressString          OPTIONAL,
    imsi                     [1] IMSI                        OPTIONAL,
    imei                     [2] IMEI                        OPTIONAL,
    na-ESRD                  [3] ISDN-AddressString          OPTIONAL,
    na-ESRK                  [4] ISDN-AddressString          OPTIONAL,
    locationEstimate         [5] Ext-GeographicalInformation  OPTIONAL,
    ageOfLocationEstimate    [6] AgeOfLocationInformation    OPTIONAL,
    extensionContainer        [7] ExtensionContainer          OPTIONAL,
    ... ,
    add-LocationEstimate     [8] Add-GeographicalInformation  OPTIONAL,
    deferredmt-lrData        [9] Deferredmt-lrData           OPTIONAL,
    lcs-ReferenceNumber      [10] LCS-ReferenceNumber         OPTIONAL,
    positioningData          [11] PositioningDataInformation  OPTIONAL }

-- one of msisdn or imsi is mandatory
-- a location estimate that is valid for the locationEstimate parameter should
-- be transferred in this parameter in preference to the add-LocationEstimate.
-- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
-- indicates a deferredmt-lrResponse.
-- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
-- and the add-locationEstimate parameters shall not be sent if the
-- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
-- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
-- as supported in supportedGADShapes. In such a case terminationCause
-- in deferredmt-lrData shall be present with value
-- shapeOfLocationEstimateNotSupported.
-- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
-- included.

```

```

Deferredmt-lrData ::= SEQUENCE {
    deferredLocationEventType DeferredLocationEventType,
    terminationCause         [0] TerminationCause           OPTIONAL,
    lcsLocationInfo          [1] LCSLocationInfo            OPTIONAL,
    ... }
-- lcsLocationInfo may be included only if a terminationCause is present
-- indicating mt-lrRestart.

```

```

LCS-Event ::= ENUMERATED {
    emergencyCallOrigination (0),
    emergencyCallRelease (1),
    mo-lr (2),
    ... ,
    deferredmt-lrResponse (3) }
-- exception handling:
-- a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
-- shall be rejected by a receiver with a return error cause of unexpected data value

```

```

TerminationCause ::= ENUMERATED {
    normal (0),
    errorundefined (1),
    internalTimeout (2),
    congestion (3),
    mt-lrRestart (4),
    privacyViolation (5),
    ...,
    shapeOfLocationEstimateNotSupported (6) }
-- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
-- either because the sending node knows that the terminal has moved under coverage
-- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
-- has been deregistered due to a Cancel Location received from HLR.
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
    
```

```

SubscriberLocationReport-Res ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ... }
    
```

END

***** Next modified section *****

maxLCSCodewordStringLength.....value reference INTEGER, ~~204~~27
 DEFINED in MAP-LCS-DataTypes : 253
 USED in MAP-LCS-DataTypes : 251

maxLongSignalInfoLength.....value reference INTEGER, 2560
 DEFINED in MAP-CommonDataTypes : 251
 USED in MAP-CommonDataTypes : 249

***** Next modified section *****

maxPositioningDataInformation.....value reference INTEGER, 10
 DEFINED in MAP-LCS-DataTypes : 356
 USED in MAP-LCS-DataTypes : 351

maxRequestorIDStringLength.....value reference INTEGER, ~~63~~427
 DEFINED in MAP-LCS-DataTypes : 187
 USED in MAP-LCS-DataTypes : 185

maxSignalInfoLength.....value reference INTEGER, 200
 DEFINED in MAP-CommonDataTypes : 209
 USED in MAP-CommonDataTypes : 25 207

***** Next modified section *****

```

provideSubscriberLocation OPERATION ::= {
    ARGUMENT SEQUENCE {
        locationType SEQUENCE {
            locationEstimateType [0] IMPLICIT ENUMERATED {
                currentLocation (0),
                currentOrLastKnownLocation (1),
                initialLocation (2),
                ...,
                activateDeferredLocation (3),
                cancelDeferredLocation (4) },
            ...,
            deferredLocationEventType [1] IMPLICIT BIT STRING {
                msAvailable (0) } ( SIZE( 1 .. 16 ) ) OPTIONAL},
        mlc-Number OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ),
        lcs-ClientID [0] IMPLICIT SEQUENCE {
            lcsClientType [0] IMPLICIT ENUMERATED {
                emergencyServices (0),
                valueAddedServices (1),
                plmnOperatorServices (2),
                lawfulInterceptServices (3),
                ... },
        }
    }
    
```

```

IcsClientExternalID [1] IMPLICIT SEQUENCE {
  externalAddress [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ) OPTIONAL,
  extensionContainer [1] IMPLICIT SEQUENCE {
    privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
      SEQUENCE {
        extId MAP-EXTENSION .&extensionId ( {
          '
          ... } ),
        extType MAP-EXTENSION .&ExtensionType ( {
          '
          ... } { @extId } ) OPTIONAL } OPTIONAL,
    pcs-Extensions [1] IMPLICIT SEQUENCE {
      ... } OPTIONAL,
      ... } OPTIONAL,
      ... } OPTIONAL,
IcsClientDialedByMS [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) OPTIONAL,
IcsClientInternalID [3] IMPLICIT ENUMERATED {
  broadcastService ( 0 ),
  o-andM-HPLMN ( 1 ),
  o-andM-VPLMN ( 2 ),
  anonymousLocation ( 3 ),
  targetMSsubscribedService ( 4 ),
  ... } OPTIONAL,
IcsClientName [4] IMPLICIT SEQUENCE {
  dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
  nameString [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63 ) ),
  ... ,
  Ics-FormatIndicator [3] IMPLICIT ENUMERATED {
    logicalName ( 0 ),
    e-mailAddress ( 1 ),
    msisdN ( 2 ),
    url ( 3 ),
    sipUrl ( 4 ),
    ... } OPTIONAL } OPTIONAL,
... ,
IcsAPN [5] IMPLICIT OCTET STRING ( SIZE( 2 .. 63 ) ) OPTIONAL,
IcsRequestorID [6] IMPLICIT SEQUENCE {
  dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
  requestorIDString [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63+27 ) ),
  ... ,
  Ics-FormatIndicator [2] IMPLICIT ENUMERATED {
    logicalName ( 0 ),
    e-mailAddress ( 1 ),
    msisdN ( 2 ),
    url ( 3 ),
    sipUrl ( 4 ),
    ... } OPTIONAL } OPTIONAL } OPTIONAL,
privacyOverride [1] IMPLICIT NULL OPTIONAL,
imsi [2] IMPLICIT OCTET STRING ( SIZE( 3 .. 8 ) ) OPTIONAL,
msisdN [3] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ) OPTIONAL,
Imsi [4] IMPLICIT OCTET STRING ( SIZE( 4 ) ) OPTIONAL,
imei [5] IMPLICIT OCTET STRING ( SIZE( 8 ) ) OPTIONAL,
Ics-Priority [6] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
Ics-QoS [7] IMPLICIT SEQUENCE {
  horizontal-accuracy [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
  verticalCoordinateRequest [1] IMPLICIT NULL OPTIONAL,
  vertical-accuracy [2] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
  responseTime [3] IMPLICIT SEQUENCE {
    responseTimeCategory ENUMERATED {
      lowdelay ( 0 ),
      delaytolerant ( 1 ),
      ... },
    ... } OPTIONAL,
  ... } OPTIONAL,
extensionContainer [4] IMPLICIT SEQUENCE {
  privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
    SEQUENCE {
      extId MAP-EXTENSION .&extensionId ( {
        '
        ... } ),
      extType MAP-EXTENSION .&ExtensionType ( {
        '
        ... } { @extId } ) OPTIONAL } OPTIONAL,
    pcs-Extensions [1] IMPLICIT SEQUENCE {
      ... } OPTIONAL,
      ... } OPTIONAL,
      ... } OPTIONAL,
extensionContainer [8] IMPLICIT SEQUENCE {

```

```

privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
  SEQUENCE {
    extId  MAP-EXTENSION .&extensionId ( {
      '
      ... } ),
    extType  MAP-EXTENSION .&ExtensionType ( {
      '
      ... } { @extId } ) OPTIONAL } OPTIONAL,
pcs-Extensions [1] IMPLICIT SEQUENCE {
  ... } OPTIONAL,
... } OPTIONAL,
... ,
supportedGADShapes [9] IMPLICIT BIT STRING {
  ellipsoidPoint ( 0 ),
  ellipsoidPointWithUncertaintyCircle ( 1 ),
  ellipsoidPointWithUncertaintyEllipse ( 2 ),
  polygon ( 3 ),
  ellipsoidPointWithAltitude ( 4 ),
  ellipsoidPointWithAltitudeAndUncertaintyElipsoid ( 5 ),
  ellipsoidArc ( 6 ) } ( SIZE( 7 .. 16 ) ) OPTIONAL,
lcs-ReferenceNumber [10] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
lcsServiceTypeID [11] IMPLICIT INTEGER ( 0 .. 127 ) OPTIONAL,
lcsCodeword [12] IMPLICIT SEQUENCE {
  dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
  lcsCodewordString [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 20427 ) ),
  ... } OPTIONAL,
lcs-PrivacyCheck [13] IMPLICIT SEQUENCE {
  callSessionUnrelated [0] IMPLICIT ENUMERATED {
    allowedWithoutNotification ( 0 ),
    allowedWithNotification ( 1 ),
    allowedIfNoResponse ( 2 ),
    restrictedIfNoResponse ( 3 ),
    notAllowed ( 4 ),
    ... },
  callSessionRelated [1] IMPLICIT ENUMERATED {
    allowedWithoutNotification ( 0 ),
    allowedWithNotification ( 1 ),
    allowedIfNoResponse ( 2 ),
    restrictedIfNoResponse ( 3 ),
    notAllowed ( 4 ),
    ... } OPTIONAL,
  ... } OPTIONAL }
RESULT SEQUENCE {
  locationEstimate OCTET STRING ( SIZE( 1 .. 20 ) ),
  ageOfLocationEstimate [0] IMPLICIT INTEGER ( 0 .. 32767 ) OPTIONAL,
  extensionContainer [1] IMPLICIT SEQUENCE {
    privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
      SEQUENCE {
        extId  MAP-EXTENSION .&extensionId ( {
          '
          ... } ),
        extType  MAP-EXTENSION .&ExtensionType ( {
          '
          ... } { @extId } ) OPTIONAL } OPTIONAL,
      pcs-Extensions [1] IMPLICIT SEQUENCE {
        ... } OPTIONAL,
      ... } OPTIONAL,
    ... ,
    add-LocationEstimate [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 91 ) ) OPTIONAL,
    deferredmt-IrResponseIndicator [3] IMPLICIT NULL OPTIONAL,
    positioningData [4] IMPLICIT OCTET STRING ( SIZE( 2 .. 10 ) ) OPTIONAL }
ERRORS {
  systemFailure |
  dataMissing |
  unexpectedDataValue |
  facilityNotSupported |
  unidentifiedSubscriber |
  illegalSubscriber |
  illegalEquipment |
  absentSubscriber |
  unauthorizedRequestingNetwork |
  unauthorizedLCSCClient |
  positionMethodFailure }
CODE local : 83
}

```

```
subscriberLocationReport OPERATION ::= {
```

```

ARGUMENT SEQUENCE {
  Ics-Event      ENUMERATED {
    emergencyCallOrigination ( 0 ),
    emergencyCallRelease    ( 1 ),
    mo-Ir                ( 2 ),
    ... ,
    deferredmt-IrResponse ( 3 ) },
  Ics-ClientID   SEQUENCE {
    IcsClientType [0] IMPLICIT ENUMERATED {
      emergencyServices ( 0 ),
      valueAddedServices ( 1 ),
      plmnOperatorServices ( 2 ),
      lawfulInterceptServices ( 3 ),
      ... },
    IcsClientExternalID [1] IMPLICIT SEQUENCE {
      externalAddress [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ) OPTIONAL,
      extensionContainer [1] IMPLICIT SEQUENCE {
        privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
          SEQUENCE {
            extId MAP-EXTENSION .&extensionId ( {
              '
              ... } ),
            extType MAP-EXTENSION .&ExtensionType ( {
              '
              ... } { @extId } ) OPTIONAL } OPTIONAL,
            pcs-Extensions [1] IMPLICIT SEQUENCE {
              ... } OPTIONAL,
              ... } OPTIONAL,
              ... } OPTIONAL,
            IcsClientDialedByMS [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 ) ) OPTIONAL,
            IcsClientInternalID [3] IMPLICIT ENUMERATED {
              broadcastService ( 0 ),
              o-andM-HPLMN ( 1 ),
              o-andM-VPLMN ( 2 ),
              anonymousLocation ( 3 ),
              targetMSsubscribedService ( 4 ),
              ... } OPTIONAL,
            IcsClientName [4] IMPLICIT SEQUENCE {
              dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
              nameString [2] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63 ) ),
              ... ,
              Ics-FormatIndicator [3] IMPLICIT ENUMERATED {
                logicalName ( 0 ),
                e-mailAddress ( 1 ),
                msisdn ( 2 ),
                url ( 3 ),
                sipUrl ( 4 ),
                ... } OPTIONAL } OPTIONAL,
              ... ,
              IcsAPN [5] IMPLICIT OCTET STRING ( SIZE( 2 .. 63 ) ) OPTIONAL,
              IcsRequestorID [6] IMPLICIT SEQUENCE {
                dataCodingScheme [0] IMPLICIT OCTET STRING ( SIZE( 1 ) ),
                requestorIDString [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 160 ) ) ( SIZE( 1 .. 63+27 ) ),
                ... ,
                Ics-FormatIndicator [2] IMPLICIT ENUMERATED {
                  logicalName ( 0 ),
                  e-mailAddress ( 1 ),
                  msisdn ( 2 ),
                  url ( 3 ),
                  sipUrl ( 4 ),
                  ... } OPTIONAL } OPTIONAL,
                IcsLocationInfo SEQUENCE {
                  networkNode-Number OCTET STRING ( SIZE( 1 .. 20 ) ) ( SIZE( 1 .. 9 ) ),
                  Imsi [0] IMPLICIT OCTET STRING ( SIZE( 4 ) ) OPTIONAL,
                  extensionContainer [1] IMPLICIT SEQUENCE {
                    privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
                      SEQUENCE {
                        extId MAP-EXTENSION .&extensionId ( {
                          '
                          ... } ),
                        extType MAP-EXTENSION .&ExtensionType ( {
                          '
                          ... } { @extId } ) OPTIONAL } OPTIONAL,
                        pcs-Extensions [1] IMPLICIT SEQUENCE {
                          ... } OPTIONAL,
                          ... } OPTIONAL,
                        ... ,

```

```

gprsNodeIndicator      [2] IMPLICIT NULL OPTIONAL,
additional-Number      [3] CHOICE {
  msc-Number [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 )) ( SIZE( 1 .. 9 )),
  sgsn-Number [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 )) ( SIZE( 1 .. 9 ))} OPTIONAL,
supportedLCS-CapabilitySets [4] IMPLICIT BIT STRING {
  lcsCapabilitySet1 ( 0 ),
  lcsCapabilitySet2 ( 1 ),
  lcsCapabilitySet3 ( 2 ),
  lcsCapabilitySet4 ( 3 )} ( SIZE( 2 .. 16 )) OPTIONAL,
additional-LCS-CapabilitySets [5] IMPLICIT BIT STRING {
  lcsCapabilitySet1 ( 0 ),
  lcsCapabilitySet2 ( 1 ),
  lcsCapabilitySet3 ( 2 ),
  lcsCapabilitySet4 ( 3 )} ( SIZE( 2 .. 16 )) OPTIONAL},
msisdn [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 )) ( SIZE( 1 .. 9 )) OPTIONAL,
imsi [1] IMPLICIT OCTET STRING ( SIZE( 3 .. 8 )) OPTIONAL,
imei [2] IMPLICIT OCTET STRING ( SIZE( 8 )) OPTIONAL,
na-ESRD [3] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 )) ( SIZE( 1 .. 9 )) OPTIONAL,
na-ESRK [4] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 )) ( SIZE( 1 .. 9 )) OPTIONAL,
locationEstimate [5] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 )) OPTIONAL,
ageOfLocationEstimate [6] IMPLICIT INTEGER ( 0 .. 32767 ) OPTIONAL,
extensionContainer [7] IMPLICIT SEQUENCE {
  privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 )) OF
  SEQUENCE {
    extId MAP-EXTENSION .&extensionId ( {
      '
      ... } ),
    extType MAP-EXTENSION .&ExtensionType ( {
      '
      ... } { @extId } ) OPTIONAL} OPTIONAL,
  pcs-Extensions [1] IMPLICIT SEQUENCE {
    ... } OPTIONAL,
  ... } OPTIONAL,
  ... ,
add-LocationEstimate [8] IMPLICIT OCTET STRING ( SIZE( 1 .. 91 )) OPTIONAL,
deferredmt-IrData [9] IMPLICIT SEQUENCE {
  deferredLocationEventType BIT STRING {
    msAvailable ( 0 )} ( SIZE( 1 .. 16 )),
  terminationCause [0] IMPLICIT ENUMERATED {
    normal ( 0 ),
    errorundefined ( 1 ),
    internalTimeout ( 2 ),
    congestion ( 3 ),
    mt-IrRestart ( 4 ),
    privacyViolation ( 5 ),
    ... ,
    shapeOfLocationEstimateNotSupported ( 6 )} OPTIONAL,
  lcsLocationInfo [1] IMPLICIT SEQUENCE {
    networkNode-Number OCTET STRING ( SIZE( 1 .. 20 )) ( SIZE( 1 .. 9 )),
    imsi [0] IMPLICIT OCTET STRING ( SIZE( 4 )) OPTIONAL,
    extensionContainer [1] IMPLICIT SEQUENCE {
      privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 )) OF
      SEQUENCE {
        extId MAP-EXTENSION .&extensionId ( {
          '
          ... } ),
        extType MAP-EXTENSION .&ExtensionType ( {
          '
          ... } { @extId } ) OPTIONAL} OPTIONAL,
      pcs-Extensions [1] IMPLICIT SEQUENCE {
        ... } OPTIONAL,
      ... } OPTIONAL,
      ... ,
gprsNodeIndicator      [2] IMPLICIT NULL OPTIONAL,
additional-Number      [3] CHOICE {
  msc-Number [0] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 )) ( SIZE( 1 .. 9 )),
  sgsn-Number [1] IMPLICIT OCTET STRING ( SIZE( 1 .. 20 )) ( SIZE( 1 .. 9 ))} OPTIONAL,
supportedLCS-CapabilitySets [4] IMPLICIT BIT STRING {
  lcsCapabilitySet1 ( 0 ),
  lcsCapabilitySet2 ( 1 ),
  lcsCapabilitySet3 ( 2 ),
  lcsCapabilitySet4 ( 3 )} ( SIZE( 2 .. 16 )) OPTIONAL,
additional-LCS-CapabilitySets [5] IMPLICIT BIT STRING {
  lcsCapabilitySet1 ( 0 ),
  lcsCapabilitySet2 ( 1 ),
  lcsCapabilitySet3 ( 2 ),
  lcsCapabilitySet4 ( 3 )} ( SIZE( 2 .. 16 )) OPTIONAL} OPTIONAL,

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... } OPTIONAL,
lcs-ReferenceNumber [10] IMPLICIT OCTET STRING ( SIZE( 1 ) ) OPTIONAL,
positioningData [11] IMPLICIT OCTET STRING ( SIZE( 2 .. 10 ) ) OPTIONAL
RESULT SEQUENCE {
  extensionContainer SEQUENCE {
    privateExtensionList [0] IMPLICIT SEQUENCE ( SIZE( 1 .. 10 ) ) OF
      SEQUENCE {
        extId MAP-EXTENSION .&extensionId ( {
          '
          ... } ),
        extType MAP-EXTENSION .&ExtensionType ( {
          '
          ... } { @extId } ) OPTIONAL } OPTIONAL,
        pcs-Extensions [1] IMPLICIT SEQUENCE {
          ... } OPTIONAL,
          ... } OPTIONAL,
          ... }
ERRORS {
  systemFailure |
  dataMissing |
  resourceLimitation |
  unexpectedDataValue |
  unknownSubscriber |
  unauthorizedRequestingNetwork |
  unknownOrUnreachableLCSCient }
CODE local : 86
}

```

END

***** End of document *****