ETSI TS 124 080 V19.3.0 (2026-03)

TECHNICAL SPECIFICATION

Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
LTE;
5G;
Mobile radio interface layer 3 supplementary services specification;
Formats and coding
(3GPP TS 24.080 version 19.3.0 Release 19)

Reference
RTS/TSGC-0424080vj30

Keywords
5G,GSM,LTE,UMTS

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI IPR online database.

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™**, **LTE™** and **5G™** logo are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found at 3GPP to ETSI numbering cross-referencing.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

should not indicates a recommendation not to do something

may indicates permission to do something

need not indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document contains the coding of information necessary for support of supplementary service operation on the mobile radio interface layer 3.

Clause 2 gives the functional definitions and contents of messages for call independent supplementary service operations. Messages necessary for support of call related supplementary service operations are defined in TS 24.008.

Clause 3 gives the general format and coding for messages used for call independent supplementary service and the format and coding of information elements used for both call related and call independent supplementary service operations.

Clause 4 gives the specification of the call related and call independent supplementary service operations.

1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "3G Vocabulary".

[2] 3GPP TS 22.024: "Description of Charge Advice Information (CAI)".

[3] 3GPP TS 44.006: "Mobile Station - Base Station System (MS - BSS) interface Data Link (DL) layer specification".

[4] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General aspects".

[5] 3GPP TS 24.008: "Mobile radio interface layer 3 specification".

[6] 3GPP TS 24.010: "Mobile radio interface layer 3; Supplementary services specification; General aspects".

[7] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification; Formats and coding".

[8] 3GPP TS 24.090: "Unstructured supplementary services operation - Stage 3".

[9] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[10] 3GPPTS 29.011: "Signalling interworking for supplementary services".

[11] ITU-T Recommendation X.680: "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[11b] ITU-T Recommendation X.681: "Information technology – Abstract Syntax Notation One (ASN.1): Information object specification".

[12] ITU-T Recommendation X.690: "Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)".

[13] ITU-T Recommendation X.880: "Data networks and open system communication - Open System Interconnection - Service definitions - Remote operations: Concepts, model and notation".

[14] 3GPP TS 49.031: "Location Services (LCS); Base Station Application Part LCS Extension (BSSAP-LE)".

[15] 3GPP TS 24.171: "NAS Signalling for Control Plane LCS in Evolved Packet System".

[16] 3GPP TS 24.301: "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS)".

[17] 3GPP TS 37.355: "LTE Positioning Protocol (LPP)".

[18] RFC 3339: "Date and Time on the Internet: Timestamps ".

[19] 3GPP TS 24.571: "Control plane Location Services (LCS) procedures; Stage 3".

[20] 3GPP TS 38.355: "Sidelink Positioning Protocol (SLPP)".

1.2 Abbreviations

Abbreviations used in the present document are listed in TR 21.905 [1] and below. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

GAD Geographical Area Description
LDR Location Deferred Request

2 Message functional definitions and contents

2.1 General

This clause defines the structure of the messages of the layer 3 protocol defined in TS 24.080. These messages are standard L3 messages as defined in TS 24.007.

Each definition includes:

a) a brief description of the message;

b) a table listing the information elements in the order of their appearance in the message. In a sequence of consecutive IEs with half octet length, the first IE occupies bits 1 to 4 of octet N, the second bits 5 to 8 of octet N, the third bits 1 to 4 of octet N+1 etc..

   For each IE the table indicates:

   1) the information element identifier, in hexadecimal notation, if the IE has format T, TV or TLV. If the IEI has half octet length, it is specified by a notation representing the IEI as a hexadecimal digit followed by a "-" (example: B-);

   2) the name of the IE (which gives an idea of the semantics of the element), which is used in this and other specifications as a reference to the IE within the message;

   3) the name of the type of the IE (which indicates the coding of the value part of the IE), and a reference to a description of the value part of the IE;

   4) the presence requirement indication (M, C or O) for the IE, as defined in TS 24.007;

   5) the format of the IE (T, V, TV, LV, TLV) as defined in TS 24.007;

   6) the length of the IE (or permissible range of lengths), in octets, in the message, where "?" means that the maximum length of the IE is only constrained by the link layer protocol, and in the case of the facility IE by possible further considerations specified in TS 24.010. This indication is non-normative.

c) Clauses specifying conditions for IEs with presence requirement C or O in the relevant message. Together with other conditions specified in TS 24.080, TS 24.010 or TS 24.08x and 24.09x-series this defines when the IE shall

be included or not, what non-presence of such IEs means, and (for IEs with presence requirement C) the static conditions for presence and/or non-presence of the IEs (see TS 24.007).

2.2 Messages for supplementary services control

Table 2.1 summarizes the messages for call independent supplementary services control (see TS 24.010 for a detailed description of call independent supplementary service messages).

Table 2.1: Messages for call independent supplementary service control

Messages for supplementary service control	Reference
FACILITY	2.3
REGISTER	2.4
RELEASE COMPLETE	2.5

2.3 Facility

This message is sent by the mobile station or the network to request or acknowledge a supplementary service. It is used when information is to be conveyed and the transaction already exists, but is not to be released. The supplementary service to be invoked, and its associated parameters, are specified in the Facility information element and ExtendedFacility information element (see table 2.2). When the MS and network support the ExtendedFacility IE for 5G LCS (as specified in 3GPP TS 24.571 [19]) and the length of the component cannot be fitted into the Facility IE, i.e. exceeds 255 octets, the ExtendedFacility IE shall be used. The Facility IE shall be empty and ignored when ExtendedFacility IE is present.

Table 2.2: FACILITY message content

IEI	Information element	Type / Reference	Presence	Format	Length
	Supplementary service protocol discriminator	Protocol discriminator 3.2	M	V	1/2
	Transaction identifier	Transaction identifier 3.3	M	V	1/2
	Facility message type	Message type 3.4	M	V	1
	Facility	Facility 3.6	M	LV	2-?
F1	ExtendedFacility	ExtendedFacility 3.8	O	TLV	3-?

2.4 Register

2.4.1 Register (network to MS direction)

This message is sent by the network to the mobile station to assign a new transaction identifier for call independent supplementary service control and to request or acknowledge a supplementary service (see table 2.3). When the MS and network support the ExtendedFacility IE for 5G LCS (as specified in 3GPP TS 24.571 [19]) and the length of the component cannot be fitted into the Facility IE, i.e. exceeds 255 octets, the ExtendedFacility IE shall be used. The Facility IE shall be empty and ignored when ExtendedFacility IE is present.

Table 2.3: REGISTER message content (network to MS direction)

IEI	Information element	Type / Reference	Presence	Format	Length
	Supplementary service protocol discriminator	Protocol discriminator 3.2	M	V	1/2
	Transaction identifier	Transaction identifier 3.3	M	V	1/2
	Register message type	Message type 3.4	M	V	1
1C	Facility	Facility 3.6	M	TLV	2-?
F1	ExtendedFacility	ExtendedFacility 3.8	O	TLV	3-?

2.4.2 Register (MS to network direction)

This message is sent by the mobile station to the network to assign a new transaction identifier for call independent supplementary service control and to request or acknowledge a supplementary service (see table 2.4). When the MS and network support the ExtendedFacility IE for 5G LCS (as specified in 3GPP TS 24.571 [19]) and the length of the component cannot be fitted into the Facility IE, i.e. exceeds 255 octets, the ExtendedFacility IE shall be used. The Facility IE shall be empty and ignored when ExtendedFacility IE is present.

Table 2.4: REGISTER message content (MS to network direction)

IEI	Information element	Type / Reference	Presence	Format	Length
	Supplementary service protocol discriminator	Protocol discriminator 3.2	M	V	1/2
	Transaction identifier	Transaction identifier 3.3	M	V	1/2
	Register message type	Message type 3.4	M	V	1
1C	Facility	Facility 3.6	M	TLV	2-?
7F	SS version	SS version indicator 3.7.2	O	TLV	3
F1	ExtendedFacility	ExtendedFacility 3.8	O	TLV	3-?

2.4.2.1 SS version

This information element shall be included if the supplementary service operation being invoked is implemented according to the phase 2 or higher protocol version.

2.5 Release complete

This message is sent by the mobile station or the network to release a transaction used for call independent supplementary service control. It may also request or acknowledge a supplementary service (see table 2.5).

Table 2.5: RELEASE COMPLETE message content

IEI	Information element	Type / Reference	Presence	Format	Length
	Supplementary service protocol discriminator	Protocol discriminator 3.2	M	V	1/2
	Transaction identifier	Transaction identifier 3.3	M	V	1/2
	Release Complete message type	Message type 3.4	M	V	1
08	Cause	Cause TS 24.008	O	TLV	4-32
1C	Facility	Facility 3.6	O	TLV	2-?
F1	ExtendedFacility	ExtendedFacility 3.8	O	TLV	3-?

2.5.1 Cause

This information element shall be included when the functional handling of the Cause IE is specified in the service description or TS 29.011. If the functional handling of the Cause IE is not specified, the receiving entity may ignore the IE.

2.5.2 Facility

This information element shall be included as required by the service description and the procedures defined in TS 24.010. When the MS and network support the ExtendedFacility IE for 5G LCS (as specified in 3GPP TS 24.571 [19]) and the length of the component cannot be fitted into the Facility IE, i.e. exceeds 255 octets, the ExtendedFacility IE shall be used. The Facility IE shall be empty and ignored when ExtendedFacility IE is present.

3 General message format and information elements coding

The figures and text in this clause describe message contents. Within each octet, the bit designated "bit 1" is transmitted first, followed by bits 2, 3, 4, etc. Similarly, the octet shown at the top of each figure is sent first.

3.1 Overview

Within the layer 3 protocol defined in TS 24.080, every message is a standard L3 message as defined in TS 24.007. This means that the message consists of the following parts:

a) protocol discriminator;

b) transaction identifier;

c) message type;

d) other information elements, as required.

Unless specified otherwise, a particular information element may be present only once in a given message.

When a field extends over more than one octet, the order of bit values progressively decreases as the octet number increases. The least significant bit of the field is represented by the lowest numbered bit of the highest numbered octet of the field.