



**Emergency Communications (EMTEL);
Accessibility and interoperability of emergency communications
and for the answering of emergency communications by the public
safety answering point (PSAPs) (including to the single European
Emergency number 112)**

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Emergency Communications (EMTEL).

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).

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Executive summary

Specific efforts need to be made to provide equal opportunities for persons with disabilities to be efficiently served in emergency communications. The present document specifies technical, and accessibility means to provide these opportunities. The communications environment is based on packet switched communications technologies, where TS 103 479 specifies the details for emergency communications. The present document emphasizes functions of importance for persons with disabilities, which are to have access to other media than voice, namely real time text and video, and to some degree also text messaging.

When voice, video and real time text are provided together, the communication is called total conversation and is regarded to make communication more accessible than voice communication.

Video is commonly used for sign language communication. The provision of video in emergency communications enables rapid and fluent emergency communications for sign language users, when competence in the sign language favoured by the user in emergency can be provided. In many cases, interpreters need to be invoked in the communication in a three-party fashion. The present document tells how that can be done.

Technical details are provided for a low number of communication technologies. Since the intention is that users shall be able to reach efficient emergency communications anywhere in Europe, it is essential that communication interoperability is established for travelling users. That requires few and well specified interfaces for the communication.

The present document is a preparation for creating a harmonized standard on the same topic.

More general accessibility aspects are presented in EN 301 549.

Introduction

When communication is made accessible for persons with disabilities, they are provided with accessible alternatives in communications. This may be in the communication media, where real time text and video are good alternatives and complements for voice in various situations, and by enlargement or a spoken user interface as a replacement for regular visual user interfaces. The present document deals with emergency communications specific aspects of such alternatives, while EN 301 549 specifies the more general aspects of accessibility to communications products and services.

Draft

1 Scope

The present document specifies interoperable and accessible emergency communications which incorporates, besides audio, features such as video and real-time text. This combination creates an inclusive and accessible emergency communication framework that caters to the diverse needs of most individuals, including those with disabilities, during critical situations. The present document specifies involvement of originating devices, originating service provider, packet switched emergency communications infrastructure PSAPs to ensure that sources and sinks of multimedia emergency communications are properly interconnected.

Protocols and technologies that support advanced features such as real-time text and video to be used in emergency communications by Mobile network operators or VoIP service providers are specified in the present document. These features are of importance for the accessibility aspects of emergency communication, specified in the present document. This entails ensuring that packet switched networks can transmit real-time text alongside with voice and video, enabling persons with speech or hearing disabilities to communicate effectively in emergency communications. Furthermore, the present document addresses technical aspects of interoperability between communication services and emergency communication networks as well as between different communication modes, ensuring seamless transition between real-time text, video, and voice communication as needed during emergency situations.

For conversion of modality between sign language and voice, the possibility to invoke sign language interpreters in the communication is often essential. Arrangements and procedures for such and similar situations are also specified.

This interoperability facilitates efficient communication between individuals with diverse communication needs and emergency responders, enhancing the effectiveness of emergency response efforts. The emergency communications related requirements on emergency communications are specified in the present document, while the general accessibility requirements on emergency communications are specified in EN 301 549.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] ETSI/CEN/CENELEC EN 301 549 (V3.2.1): "Accessibility requirements for ICT products and services".
- [2] ETSI TS 103 478 (V 1.2.1): "Emergency Communications (EMTEL); Pan-European Mobile Emergency Application".
- [3] ETSI TS 103 479 (V 1.2.1): "Emergency Communications (EMTEL); Core elements for network independent access to emergency services".
- [4] ETSI TS 103 755 (V1.1.1): "Emergency Communications (EMTEL); PEMEA ESInet Shared Services"
- [5] ETSI TS 103 871 (V 1.1.1): "Emergency Communications (EMTEL); PEMEA Real-Time Text Extension".
- [6] ETSI TS 103 945 [V 1.1.1): "Emergency Communications (EMTEL); PEMEA Audio Video Extension".
- [7] ETSI TS 122 101 (V 18.6.0): "Universal Mobile Telecommunications System (UMTS); LTE; Service aspects; Service principles (3GPP TS 22.101) ".

- [8] ETSI TS 122 173 (V 18.0.1): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Core Network Subsystem (IMS) Multimedia Telephony Service and supplementary services; Stage 1 (3GPP TS 22.173)".
- [9] ETSI TS 123 167 (V 17.2.0): "Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS) emergency sessions (3GPP TS 23.167)".
- [10] ETSI TS 124 229 (V 17.4.0): "Universal Mobile Telecommunications System (UMTS); LTE; 5G; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229)".
- [11] ETSI TS 126 114 (V 18.6.0): "Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS); Multimedia telephony; Media handling and interaction (3GPP TS 26.114)".
- [12] IETF RFC 3261 (2002) "Session Initiation Protocol (SIP)".
- [13] IETF RFC 3550 (2003): "RTP: A Transport Protocol for Real-Time Applications", H. Schulzrinne et.al., 2003.
- [14] IETF RFC 3840 "Indicating User Agent Capabilities in the Session Initiation Protocol (SIP)", Rosenberg J., et al.
- [15] IETF RFC 3841 (2004): "Caller Preferences for the Session Initiation Protocol (SIP)", Rosenberg J., et.al.
- [16] IETF RFC 4579 (2006): "Session Initiation Protocol (SIP) Call Control - Conferencing for User Agents", A. Johnston, Levin O.
- [17] IETF RFC 7852 (2016): "Additional Data Related to an Emergency Call", Gellens R., Tschofenig H., Rosen B., Marschall R., Winterbottom J.
- [18] IETF RFC 8373 (2018): "Negotiating Human Language in Real-Time Communications", Gellens R.
- [19] IETF RFC 8866 (2021): "SDP Session Description Protocol", A. Began et al.

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI TS 101 470 (V1.1.1) Emergency Communications (EMTEL); Total Conversation Access to Emergency Services
- [i.2] ETSI TS 122 228 (V 18.0.1): "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Service requirements for the Internet Protocol (IP) multimedia core network subsystem (IMS); Stage 1 (3GPP TS 22.228)"
- [i.3] IETF RFC 4596 (2006) "Guidelines for Usage of the Session Initiation Protocol (SIP) Caller Preferences Extension", Rosenberg J., Kyzivat P.

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the [following] terms [given in ... and the following] apply:

accessibility: extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of user needs, characteristics and capabilities, to achieve identified goals in identified contexts of use (from ISO 9241-11:2018 [tbd])

NOTE 1: Context of use includes direct use or use supported by assistive technologies.

NOTE 2: The context in which the ICT is used may affect its overall accessibility. This context could include other products and services with which the ICT may interact.

assistive technology any item, piece of equipment, service or product system including software that is used to increase, maintain, substitute, or improve functional capabilities of persons with disabilities or for, alleviation and compensation of impairments, activity limitations or participation restrictions.

real time text a form of text conversation in point-to-point situations or in multipoint conferencing where the text being entered is sent in such a way that the communication is perceived by the user as being continuous on a character-by-character basis.

total conversation service multimedia real time conversation service that provides bidirectional symmetric real time transfer of motion video, real time text and voice between users in two or more locations.

3.2 Symbols

For the purposes of the present document, the [following] symbols [given in ... and the following] apply:

3.3 Abbreviations

For the purposes of the present document, the [following] abbreviations [given in ... and the following] apply:

ASR automatic speech recognition

EAA European accessibility act

GTT global text telephony = RTT

GTT-IP global text telephony – internet protocols = RTT

ICT Information and Communications Technology

IMS IP-multimedia subsystem

LoST Location to Service Translation

MTSI Multimedia Telephony Service for IMS

PSAP public safety answering point

RTT real time text

SIP session initiation protocol

UE user equipment

4. Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment and services, which shall be in accordance with its intended use, but as a minimum, shall be that specified in the test conditions contained in the present document. The equipment and services shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the operational environmental profile defined by its intended use.

5. Accessible Emergency Communication

Editors note: consider if clause 5 should be divided in sections for different parts of the chain. (RH comment)

5.1 General

Making sure that emergency communications is accessible to persons with a range of capabilities implies considerations on many levels. The continuation of this chapter covers specific accessibility aspects and requirements on the complete chain of emergency communications including accessible interpersonal communications and emergency communications as well as relay services and other supporting services. All requirements are clearly labelled to refer to them in the present document. Many aspects of accessible emergency communication are described in TS 101 470 [i.1].

5.2 Modality and Language

Proper support for the modalities and languages in communication managed by the user in emergency is a prerequisite for efficient emergency communication. The means for providing of such support is by the user or user equipment providing information about the preferences and capabilities and the emergency services to collect this information and assessing how to best provide the support needed, by routing and possible invocation of supporting services. Modality competence has two directions and therefore, can be different for the two directions of expression and perception.

To support modalities other than voice, accessible emergency communications shall

AEC-ML-01: enable users to set their modality and language preferences in their equipment or service,

NOTE: The modalities include signed, written and spoken language use.

AEC-ML-02: enable the users to set their modality and language preferences separately for expression and perception,

AEC-ML-03: use the language selected for the user equipment as default language preference, if not set by the user,

AEC-ML-04: provide a means of transmitting information on modality and language unchanged to the PSAP at initiation of emergency communication,

AEC-ML-05: extract the language and modality preference information and include it in the routing decision,

AEC-ML-06: upon answering emergency communication, send a greeting and a brief standardised question expressed in the preferred modality and language.

AEC-ML-07: upon answering an emergency communications test session, send a text response containing the received location, modality and language preferences and other additional data provided by the user.

AEC-ML-08: provide a means of transmitting information on support services desired in the communications unchanged to the PSAP at initiation of emergency communication,

AEC-ML-09: extract the preferred support service for modality or language translation to be used and include it in the emergency communication, if necessary.

5.3 User Interface

Emergency communications users are best provided with emergency communications when such communications are supported by the end user equipment and electronic communications used in everyday communication.

The user interface used for accessible emergency communications shall:

AEC-UI-01: comply with the requirements of EN 301 549 [1] clauses 5,6,8,9,11,13

AEC-UI-02: provide a means to initiate a general emergency communication recognized as 112.

AEC-UI-03: support the input and output of voice, real time text and text messaging

AEC-UI-04: support the input and output of video in emergency communications if video is supported in other bidirectional communications. **Ed note: different for PSAP and user. Required for PSAP, only when supported for user service**

The user interface used for accessible emergency communications may:

AEC-UI-05: provide other means to address emergency services or specific parts thereof specialized in different types of emergencies or motivated by accessibility reasons.

NOTE: An emergency call button can be more accessible than a number keyboard.

5.4 Communication Features

5.4.1 General

The present clause specifies general communications operations used in the processing of emergency communications.

5.4.2 Session Control

Session setup in accessible emergency communications shall:

AEC-SC-01: include information describing the desired media,

AEC-SC-02: include accurate location information,

AEC-SC-03: include an identity to be used for emergency call back,

AEC-SC-04: support handling the media, modality and language preferred by the user,

AEC-SC-05: offer the same media capabilities, modality, and language in a call back as in the received communication.

Session setup in accessible emergency communications may:

AEC-SC-06: include other information about the user and the emergency available to enable the communication to be routed to the most appropriate PSAP, considering both geographical and accessibility factors,

AEC-SC-07: while in a waiting state, provide information via all activated media indicating that the user is already connected but in a queue.

5.4.3 Routing

The general requirement on routing is usually expressed in terms of that the communication is to be routed to the most appropriate PSAP regarding responsibility over the location of the emergency and the load of the PSAP. In relation to accessibility additional factors are of concern in decision of which is the most appropriate PSAP. The additional factors are capability of handling the media that the device of the user in emergency manages (video, real time text, voice), the preferred modality (sign, real time text or spoken), competence of the call taker in handling the preferred sign language, experience of the call taker to assess the needs of persons with disabilities and invoke appropriate support in the communication.

The procedures for routing to the most appropriate PSAP in accessible emergency communications shall use

AEC-RO-01: location information and corresponding service regions of emergency communications organizations.

AEC-RO-02: the emergency service or subtype of emergency service being requested,

NOTE: emergency service subtype e.g. Mountain rescue, coast guard etc. Which may be coded into the initiation of the emergency communications.

AEC-RO-03: preferred modalities and language preferences,

NOTE: Within the concept of modalities are sign language use, real time text use and speech use, with possibility to express different preferences in different directions

AEC-RO-04: knowledge of the region of the emergency and how to request actions of first responders,

NOTE: This requirement reflects the national organization and if there is a preference for routing to a regional PSAP close to the location of the emergency, or if no geographical preference is assigned within the country.

AEC-RO-05: knowledge of call takers of how to communicate with a specific need for communication,

AEC-RO-06: immediately available location information so as not to delay the communication setup,

AEC-RO-07: mechanisms to support users traveling to other countries than home country (e.g., roaming).

NOTE: For some cases combinations of PSAPs or PSAP and supporting service may best correspond to the term "most appropriate PSAP"

AEC-RO-08: media information provided in the connection setup to select the PSAP with the highest match.

AEC-RO-09: an international packet-switching infrastructure to connect regional PSAPs in combination with a mapping hierarchy to determine access to PSAPs in remote service areas.

5.4.4 Communication Transfer

Transfer in accessible emergency communications shall:

AEC-CT-01: have means to make assisted transfer of the communication to other parties within the emergency service organisation, where the:

- a) original party may stay as long as suitable in the transferred communication
- b) transfer shall affect all media in the communication.

AEC-CT-02: have the means to make assisted transfer to enable international cooperation if coordination between emergency services in different countries is required to resolve an emergency, where the:

- a) original party may stay as long as suitable in the transferred communication
- b) transfer shall affect all media in the communication

NOTE: Examples related to accessibility is when a person with a disability visiting a country gets into an emergency and only relies on their fluent communication with a relative in the home country, who gets asked to initiate an emergency communications about the emergency case. That communication will end up in the home country and a need for cooperation appears.

5.4.5 Conferencing

Conferencing in accessible emergency communications shall:

AEC-CO-01: have means to invoke and support multiparty communications in an emergency communication (e.g. in case of a communication transfer or when including relay services), where the multiparty communication shall be able to support all media,

AEC-CO-02: support a common media type for each combination of parties, if there is a difference in media support by different parties,

AEC-CO-03: have the means to invoke multiparty communications to enable international cooperation if coordination between emergency services in different countries is required to resolve an emergency.

NOTE: Examples related to accessibility is when a person with a disability visiting a country gets into an emergency and only relies on their fluent communication with a relative in the home country, who gets asked to initiate an emergency communications about the emergency case. That communication will end up in the home country and a need for cooperation appears.

5.4.5 Call back

Call back in accessible emergency communications shall:

AEC-CB-01: be enabled to call back to the user in emergency.

The call back feature shall have the following characteristics:

AEC-CB-02: By default, enabling the same media as used in the incoming communication.

AEC-CB-03: Having the option to vary the media composition compared the incoming communication.

AEC-CB-04: By default, including the same supporting service in the communication as in the incoming communication.

AEC-CB-05: Having the option to vary the inclusion of a supporting service.

AEC-CB-06: Use globally routable addressing achieved from the incoming communication.

5.5 Communication Media

5.5.1 General

Many of the accessibility considerations are related to the availability of media for the communication suitable for the capabilities of the user in emergency. The electronic communications service used by the user in emergency shall support the use of multiple parties for all media appearing in the emergency communication.

5.5.2 Audio

Audio in emergency communications is useful for spoken communication, and for providing sounds from the emergency scene for assessing the emergency.

Accessible emergency communications shall:

AEC-CM-01: include bidirectional audio media in the communication from the beginning of the communication,

AEC-CM-02: fulfil the requirements on audio as in EN 301 549 [1].

5.5.3 Video

Video in emergency communications is useful for sign language communication, for enhancing understanding of spoken language, for conveying calming influence and for providing views from the scene of the emergency for efficient assessment of the emergency.

Accessible emergency communications shall:

AEC-CM-03: provide the user to include bidirectional video media in the communication from the beginning of the communication as well as by addition during the communication,

AEC-CM-04: provide the possibility to exclude video once used in the communication.

AEC-CM-05: fulfil the requirements on video as in EN 301 549 [1].

5.5.4 Real time text

Accessible emergency communications shall:

AEC-CM-06: provide the user to include real time text media in the communication from the beginning of the communication as well as by addition during the communication,

AEC-CM-07: fulfil the requirements on real time text as in EN 301 549 [1].

5.5.5 Text Messaging

Accessible emergency communications may:

AEC-CM-08: provide the user to include the text messaging in the communication as well as by addition during the communication,

AEC-CM-09: support emergency communications that started with messaging to be upgraded to a communication with real time media by adding audio and any other real time media.

NOTE: Users who are used to use sentence-wise text messaging can prefer to use text messaging also in an emergency because of their familiarity with the user interface even if it is slower than real time text. When the electronic communications service used by the user in emergency offers messaging for regular user-to-user communication, the service can be used also during and outside of an emergency communication.

5.5.6 Total Conversation

Accessible emergency communications shall:

AEC-CM-09: provide total conversation, which is audio, video and real time text enabled and synchronized in a single emergency communication.

5.6 Relay-Service Invocation by the user in emergency

Although it is preferable to directly contact emergency services, some users reach emergency services by first initiating communication with a relay service and then ask the relay service to initiate an emergency communication. The location of the user is then interrogated by manual means from the user in emergency by the relay service.

Accessible emergency communications shall:

AEC-RS-01: enable a relay service to insert the location of the user in the emergency communications and get it properly routed,

AEC-RS-02: support to provide the location of the user to the PSAP once connected as a fallback option

NOTE: The latter case though can easily cause contact with a PSAP less appropriate to handle the emergency communication leaving to the PSAP to set up a connection with a more appropriate PSAP to handle the situation.

Note: Emergency communications initiated by third party (e.g., relay service)

5.7 Supporting Services

5.7.1 General

Some situations require support from other organisations or services. ...

Accessible emergency communications shall:

AEC-SS-01: have means to invoke supporting services in a multiparty fashion in the emergency communication. Supporting services may be relay services, language support services and expert support services.

AEC-SS-02: have means to automatically and manually extract and use addresses to such supporting services provided in user data related to the emergency communication.

AEC-SS-03: have means to find addresses to such supporting services for manual invocation.

AEC-SS-04: support a preference for invoking these services in a multiparty fashion, so that the user in emergency can perceive the communication with any party involved.

AEC-SS-05: have means to establish chains of supporting services for situations where a modality translating service needs to be combined with a spoken language translation service.

NOTE: This situation can e.g., appear when a sign language user causes invocation of a sign language interpreter, but there is no interpreter available for translating any language supported by the emergency service in the country of the emergency. Then also a spoken language interpreter needs to be invoked in the communication.

5.7.2 Relay services

Relay services convert between different real time communication modalities.

Accessible emergency communications shall:

AEC-SS-06: invoke a relay service in the emergency communications by a single multimedia connection

NOTE: Relay services often operate between one incoming and one outgoing connection. For ease of setting up the communication, the connection in this case will be a single one, and the relay service acting on the media in this single connection.

Accessible emergency communications may be:

AEC-SS-07: video relay services between sign language and speech providing means for occasional interaction in real time text,

AEC-SS-08: text relay services between real time text and speech,

AEC-SS-09: speech-to-speech relay services between speech that is hard to understand because of a disability and clear speech,

AEC-SS-10: relay services supporting a person's memory or other cognitive capabilities,

AEC-SS-11: captioned relay services adding real time text captions to speech in one direction of a communication.

NOTE: Relay services are often asked to operate only in one direction of the communication. That is e.g., when a person is hard-of-hearing, but talks well. Then modality conversion is only needed from speech to real time text.

5.7.3 Translation service

Translation services translate mainly between two spoken languages.

Accessible emergency communications shall:

AEC-SS-12: when needed, invoke a translation service in the emergency communications by a multimedia connection supporting the media used in the communication.

5.7.4 Expert service

An expert service gives advice to the user or the PSAP during an emergency communication.

NOTE: This may be internal or external to the emergency service organization and handle poison expertise, medical advice, expert in specific disabilities, or any other similar advice function found needed.

Accessible emergency communications shall:

AEC-SS-13: when needed, invoke an expert service in the emergency communications by a multimedia connection supporting the media used in the communication.

6. Technical requirements

The following clauses contain technical requirements divided in separate clauses for each component of the chain of functional entities taking part in the emergency communication.

The labels assigned to functional requirements in the previous clauses of the present document are repeated here in parenthesis to indicate which technical requirement resolve the functional requirement.

For the user equipment and the originating communication services, there is a further division in three ranges of technologies:

- SIP based, meaning equipment and services using the session initiation protocol SIP in a general way, commonly in the Internet.
- IMS SIP based, meaning using packet switched technologies in mobile networks.
- Other, meaning any other technology for communication establishment and media communication.

7. User equipment requirements

7.1 General

The user equipment (UE) handles the emergency communications with the user in emergency together with the electronic communications service it resides in. The result is that the emergency communications in the interface between the service and the emergency service network is aligned with the conventions in that interface as specified in TS 103 479 [3]. The part of the User Equipment for these procedures are specified in this clause for two closely related technologies; SIP and IMS SIP. In general, other technologies may distribute the procedures in other ways to accomplish the same result in the emergency service network interface.

This clause has focus on factors related to accessibility. For general aspects, see TS 103 479 [3].

For accessible functionality, see clause 5 of the present document.

7.2 SIP Based User Equipment

7.2.1 General

User equipment called "SIP based" in the present document is user equipment using RFC 3261 [12] and RFC 8866 [19] for session and media control, and not included within the IP multimedia subsystem concept (IMS) TS 122 228 [i.2].

Audio and real time text (RTT) shall be supported as specified in TS 103 479 [3] clause 6.6.2.4.(AEC-CM-01),(AEC-CM-02)(AEC-CM-06)

Wide band audio shall be supported as specified in the wide band parts of TS 103 479 [3] clause 6.6.2.2 (AEC-CM-02)

When video is supported, it shall be supported as specified in TS 103 479 [3] clause 6.6.2.3.(AEC-CM-03),(AEC-CM-05)

Multiparty handling shall be supported as specified in in RFC 4579 [16] and the specific procedures required for multiparty handling of each supported media.(AEC-CT-01)

7.2.2 Settings

The user equipment shall enable the user to set accessibility related preferences of importance for emergency communications. The settings may be stored in the user equipment or in the service as decided by the service provider.

These settings comply but are not limited to the following:

- Preference for always including RTT initially in both outgoing and incoming communications. (AEC-CM-07)

Data about Subscriber/Owner including data of interest from accessibility point of view to be provided in the Additional information in emergency communications according to RFC 7852 [17].

Preferred modality and language. See clause 9.3 of the present document.

Address to preferred support service.

7.2.3 Initiation of emergency communications

The emergency communications shall be initiated according to the procedures specified in TS 103 479 [3] clause 6 except 6.2 and 6.8. (AEC-SC-01)

Location information shall be included as specified in TS 103 479 [3].

The media preferences indicated by the user shall influence the initiation by including the preferred media in the initiation and include indications of preferred modalities and language. (AEC-SC-01), (AEC-SC-04)

A routable address to the user equipment shall be included by the user equipment if the user equipment has access to that information. (AEC-SC-03)

Additional data including the settings for the user shall be included according to RFC 7852 [17]. (AEC-SC-06)

Preferred modality and language shall be indicated in the initiation. If the user has not made any settings about preferred modality and language, then the language of the user equipment platform shall be included as the language preference. (AEC-SC-04)

Preferred support service address shall be included if specified by the user.

7.2.4 Call back

Any call back from the emergency service shall be handled by the user equipment and indicated to the user. (AEC-SC-05)

The media shall be handled as in any incoming communication. If the user has preference for including RTT, and RTT is not included in the call back, then the user equipment shall modify the SIP dialog to add RTT as specified in TS 103 479 [3]. (AEC-SC-05)

If the user responds with an indication to add video to the call, and video is not included initially in the call back, then the user equipment shall modify the SIP dialog to add video as specified in TS 103 479 [3].

7.2.5 Invocation of support services by the user

Users in emergency may be in a mode where they do not remember or trust the information that their accessibility requirements will be efficiently handled when initiating emergency calling the recommended way by using the emergency service addressing (e.g. "112") directly. This may be especially true for cases when they are used to invoke support services in their everyday communications. Therefore, a fallback method shall be supported, where the user initiates communication with the favourite support service and asks the support service personnel to initiate the emergency communication. (AEC-RS-01)

For this fallback case, there is no requirement to be equally efficient as for direct communication with emergency services.

All media present in the path between the user and the relay service shall be present in the path between the relay service and the emergency communications network. (AEC-SS-04)

The actions by the support service for this case shall be as specified in clause 7.2.3 of the present document with information about the support service replacing that of the user device where appropriate. (AEC-SC-06)

7.3 IMS SIP Based User Equipment

7.3.1 General

The user equipment (UE) handles the emergency communications with the user in emergency together with the IMS service it resides in. The result is that the emergency communications in the interface between the IMS service and the emergency service network is aligned with the conventions in that interface as specified in TS 103 479 [3] clause 6 except 6.2 and 6.8. The part of the User Equipment for these procedures are specified in the present clause.

The present clause has focus on factors related to accessibility. For general aspects, see TS 103 479 [3].

For accessible functionality, see clause 5 of the present document.

IMS SIP based user equipment is user equipment using the IP multimedia subsystem concept (IMS) TS 122 228 [i.2].

Audio and real time text (RTT) shall be supported as specified in TS 126 114 [11], in the clauses about real time text and text. (AEC-CM-06)

NOTE: Real time text is varyingly called text, real time text, GTT, GTT-IP and RTT in the ETSI IMS documents.

Wide band audio shall be supported as specified in TS 126 114 [11]. (AEC-CM-01), (AEC-CM-02)

When video is supported, it shall be supported as specified in TS 126 114 [11] with quality as required by TS 103 479 [3] clause 6.6.2.3. (AEC-CM-03) (AEC-CM-05)

Multiparty handling shall be supported as specified in RFC 4579 [16] and the specific procedures required for multiparty handling of each supported media. (AEC-CT-01)

7.3.2 Settings

The user equipment shall enable the user to set accessibility related preferences of importance for emergency communications. The settings are stored in the communications service.

These settings contain but are not limited to the following:

Preference for always including RTT initially in both outgoing and incoming communications. (AEC-CM-07)

Data about Subscriber/Owner including data of interest from accessibility point of view to be provided in the Additional information in emergency communications according to RFC 7852 [17].

Preferred modality and language. See clause 9.3 of the present document.

Address to preferred support service.

7.3.3 Initiation of emergency communications

The emergency communications shall be initiated according to the procedures specified in TS 126 114 [11], TS 122 101[7] clause 10 except clauses 10.2 and 10.3, and TS 124 229 [10] clause 4.7 and 5.1.6 for emergency communications in IMS. (AEC-SC-01), (AEC-SC-02)

Location information shall be included as specified in TS 103 479 [3].

The media preferences indicated by the user shall influence the initiation by including the preferred media in the initiation and include indications of preferred modalities and language. (AEC-SC-01), (AEC-SC-04)

A routable address to the user equipment shall be included by the user equipment if the user equipment has access to that information. (AEC-SC-03)

Additional data including its settings for the user shall be included in the Call-Info header according to RFC 7852 [17]. (AEC-SC-06) Any preferred modality or language shall be indicated in the initiation. If the user has not made any

settings about preferred modality and language, then the language of the user equipment platform shall be included as the language preference. (AEC-SC-04), (AEC-ML-03)

Preferred support service address shall be included if specified by the user.

7.3.4 Call back

Any call back from the emergency service shall be handled by the user equipment and indicated to the user. (AEC-SC-05)

The media shall be handled as in any incoming communication. If the user has preference for including RTT, and RTT is not included in the call back, then the user equipment shall modify the SIP dialog to add RTT as specified in TS 103 479 [3]. (AEC-SC-05)

If video is available in the service and the user responds with an indication to add video to the call, and video is not included initially in the call back, then the user equipment shall modify the SIP dialog to add video as specified in TS 103 479 [3]. (AEC-SC-05)

7.3.5 Roaming considerations

The IMS system includes roaming functionality, which means that user equipment in a visited network performs emergency communications through the functional entities in the visited network. That causes specific considerations in roaming conditions, specified in TS 123 167[9] and TS 124 229 [10] clause 4.7 and 5.1.6 which user equipment in roaming conditions shall follow. (AEC-RO-06)

7.3.6 Invocation of support services by the user

Users in emergency may be in a mode where they do not remember or trust the information that their accessibility requirements will be efficiently handled when initiating emergency calling the recommended way by using the emergency service addressing (e.g. "112") directly. This may be especially true for cases when they are used to invoke support services in their everyday communications. Therefore a fallback method shall be supported, where the user initiates communication with the favourite support service and asks the support service personnel to initiate the emergency communication.

For this fallback case, there is no requirement to be equally efficient as for direct communication with emergency services.

When the user equipment is in a roaming situation, it is of extra importance that the support service is able to use the location information of the user for the emergency communication, because that will enable the communication to reach the emergency service in the region where the user in emergency is. (AEC-RS-01)

The actions by the support service for this case shall be as specified in clause 7.3.3 of the present document with information about the support service replacing that of the user device where appropriate. (AEC-SC-03)

7.4 Non-SIP communication service

When other technologies than SIP and IMS SIP are used for session and media control by the user equipment, the interpersonal communications service is responsible to perform the emergency communications using procedures specified in clause 8.4. In that case, the service involves the user equipment in the emergency communications procedures as specified for the interpersonal communications service as specified in clause 8.4. The same accessibility functional considerations as for the SIP and IMS SIP technologies shall be fulfilled. (AEC-CM-01), (AEC-CM-02), (AEC-CM-03), (AEC-CM-05), (AEC-CM-06), (AEC-CT-01), (AEC-SC-01), (AEC-SC-02), (AEC-SC-03), (AEC-SC-04) (AEC-SC-05), (AEC-SC-06), (AEC-ML-03).

8. Originating Service Requirements

8.1 General

The originating service handles the emergency communications with the emergency service as requested by the user equipment. The result is that the emergency communications in the interface between the service and the emergency service network is aligned with the conventions in that interface as specified in TS 103 479 [3]. The part of the originating service for these procedures are specified in the present clause for two closely related technologies; SIP and IMS SIP. In general, other technologies may distribute the procedures in other ways to accomplish the same result in the emergency service network interface.

The present clause has focus on factors related to accessibility. For general aspects, see TS 103 479 [3].

For accessible functionality, see clause 5 of the present document.

8.2 SIP Based Originating Service

8.2.1 General

Originating services here called “SIP based” use RFC 3261 [12] and RFC 8866 [19] for session and media control, and are not included within the IP multimedia subsystem concept (IMS) TS 122 228 [i.2].

Audio and real time text (RTT) shall be supported as specified in TS 103 479 [3], clause 6.6.2.4. (AEC-CM01), (AEC-CM-02)

Wide band audio shall be supported as specified in the wide band parts of TS 103 479 [3] clause 6.6.2.2. (AEC-CM-02)

When video is supported, it shall be supported as specified in TS 103 479 [3] clause 6.6.2.3. (AEC-CM-03)

Multiparty handling shall be supported as specified in in RFC 4579 [16] and the specific procedures required for multiparty handling of each supported media. (AEC-CT-01)

8.2.2 Settings

The originating service shall enable the user to set accessibility related preferences of importance for emergency communications. The settings may be stored in the user equipment or in the service as decided by the service provider.

These settings comply but are not limited to the following:

Preference for always including RTT initially in both outgoing and incoming communications. (AEC-CM-06)

Data about Subscriber/Owner including data of interest from accessibility point of view to be provided in the Additional information in emergency communications according to RFC 7852 [17].

Preferred modality and language. See clause 9.3 of the present document.

Address to preferred support service.

8.2.3 Initiation of emergency communications

The emergency communications shall be initiated according to the procedures specified in TS 103 479 [3] clause 6 except 6.2 and 6.8. (AEC-SC-01), (AEC-SC-02),

Location information shall be included as specified in TS 103 479 [3].

The media preferences indicated by the user shall be conveyed to the emergency service and influence the initiation so that the communication is routed to the most appropriate call taker to handle the communication. (AEC-SC-01), (AEC-SC-04)

A routable address to the user equipment shall be included by the originating service. (AEC-SC-03)

Additional data for the service and the settings for the user shall be included according to RFC 7852 [17].

Preferred modality and language shall be conveyed in the initiation. (AEC-SC-01), (AEC-SC-04)

Preferred support service address shall be conveyed if specified by the user.

8.2.4 Call back

Any call back from the emergency service shall be handled by the SIP service and conveyed to the user equipment. (AEC-SC-05)

8.3 IMS SIP Based Originating Service

8.3.1 General

The IMS multimedia telephony service where the user equipment (UE) is when the emergency communications is established handles the emergency communications between the user in emergency and the emergency service. The result shall be that the emergency communications in the interface between the IMS service and the emergency service network is aligned with the conventions in that interface as specified in TS 103 479 [3]. The part of the originating service for these procedures are specified in the present clause.

The present clause has focus on factors related to accessibility. For general aspects, see TS 103 479 [3].

For accessible functionality, see clause 5 of the present document.

IMS SIP based multimedia telephony services implement the IP multimedia subsystem concept (IMS) TS 122 228 [i.2] and the IMS Multimedia Telephony services as specified in TS 122 173 [8].

Audio and real time text (RTT) shall be supported as specified in TS 126 114 [11] clauses about real time text and text. (AEC-CM-01), (AEC-CM-06)

NOTE: Real time text is varyingly called text, real time text, GTT, GTT-IP and RTT in the ETSI IMS documents.

Wide band audio shall be supported as specified in TS 126 114 [11]. (AEC-CM-02)

When video is supported, it shall be supported as specified in TS 126 114 [11] with quality as required by TS 103 479 [3]. (AEC-CM-03), (AEC-CM-05)

Multiparty handling shall be supported as specified in in RFC 4579 [16] and the specific procedures required for multiparty handling of each supported media.

8.3.2 Settings

The IMS service shall enable the user to set accessibility related preferences of importance for emergency communications. The settings are stored in the service.

These settings comply but are not limited to the following:

Preference for always including RTT initially in both outgoing and incoming communications. (AEC-CM-06)

Data about Subscriber/Owner including data of interest from accessibility point of view to be provided in the Additional information in emergency communications according to RFC 7852 [17].

Preferred modality and language. See clause 9.3 of the present document.

Address to preferred support service.

8.3.3 Initiation of emergency communications

The emergency communications shall be initiated according to the procedures specified in TS 126 114 [11], TS 122 101 [7] clause 10 except clauses 10.2 and 10.3, and TS 124 229 [10] clause 4.7 and 5.1.6 for emergency communications in IMS. The exchange with the emergency service shall be performed as specified in TS 123 167 [9]. (AEC-SC-01), (AEC-SC-02),

Location information shall be included as specified in TS 123 167 [9] (?).

The media preferences indicated by the user shall be conveyed in the initiation. (AEC-SC-01)

A routable address to the user equipment shall be included in the initiation. (AEC-SC-03), (AEC-SC-05)

Additional data including service information and settings for the user shall be included according to RFC 7852 [17]. (AEC-SC-06)

Preferred modality and language shall be conveyed in the initiation. (AEC-SC-01), (AEC-SC-06)

Preferred support service address shall be included if specified by the user.

8.3.4 Call back

Any call back from the emergency service shall be handled by the IMS service and conveyed to the user equipment. (AEC-SC-05)

8.3.5 Roaming considerations

Support for roaming user equipment to have emergency communications shall be provided by the visited service. (AEC-RO-07)

That cause specific considerations in roaming conditions, specified in TS 123 167[9] and TS 124 229 [10] clause 4.7 and 5.1.6 which services and user equipment in roaming conditions shall follow. (AEC-RO-07)

8.4 Non-SIP communication services

8.4.1 General

When other technologies than SIP and IMS SIP are used for session and media control within the communications service, the service is responsible to perform the emergency communications as required in the interface to the emergency service network. Regardless of how these services are implemented, it is important to provide an accurate location, make routing decisions that are consistent with the principles of the present document, and provide an identity that is usable for emergency callback.

All functional requirements specified in clause 5 and possible to apply to user communication devices and interpersonal communications services shall be fulfilled by non-sip services when used for emergency communications. (AEC-**-**)

NOTE: Mobile applications can offer full accessibility but are subject to limitations such as no possibility of prioritisation in the network, no use via lock screen, no permission to use another network if network coverage is poor, or the need of additional registration. In the interests of equivalent access, necessary additions are therefore defined as prerequisites for the regional use of applications.

8.4.2 TS 103 479 as direct interface

When the non-SIP communication service provides no other interface with full accessibility functions than TS 103 479 [3], then the communication between the communication service provider and the emergency service network in the region of the emergency shall be as specified in TS 103 479 [3] clause 6 except 6.1 and 6.8. In that case, any conversions needed to adapt to the procedures in the emergency service network interface shall be done by the service.

The procedure shall use the location information of the user in emergency to assess the proper interface and route the communication to the appropriate emergency communications network. (AEC-SC-02)

The media preferences indicated by the user shall be conveyed in the initiation. (AEC-SC-02)

A routable address to the user equipment shall be included in the initiation. (AEC-SC-03)

Additional data including service information and settings for the user shall be included according to RFC 7852 [17]. (AEC-SC-06)

Preferred modality and language shall be conveyed in the initiation. (AEC-SC-04)

Preferred support service address shall be included if specified by the user.

8.4.3 TS 103 479 to selectively share information

8.4.3.1 General

When the non-SIP communication service provides another interface with full accessibility functions than TS 103 479 [3], then the communication between the communication service provider and the emergency service network in the region of the emergency may use that interface for the emergency communications under conditions described in the following.

8.4.3.2 PEMEA based Applications

An additional method for reaching emergency services from other than SIP or IMS SIP based communication services is by using the PEMEA standards according to TS 103 478 [20]. The PEMEA standards provide standardised interfaces for multimedia emergency communications and can provide full accessibility. Refer to TS 103 478 [21] for the general aspects, TS 103 871 [5] for RTT, TS 103 945[6] for video and audio and TS 103 755 [22] for TS 103 479 [3] integration.

When a user of the PEMEA services initiates emergency communications from a user equipment (UE), the application shall establish a parallel emergency communication according to the procedures specified in TS 126 114 [11], TS 122 101 [7] clause 10 except clauses 10.2 and 10.3, and TS 124 229 [10] clause 4.7 and 5.1.6 for emergency communications in IMS. The exchange with the emergency service shall be performed as specified in TS 123 167 [9]. (AEC-SC-01), (AEC-SC-02).

To ensure seamless integration of PEMEA services and to prevent emergency communications from being routed differently, guidelines on interoperability, re-use, and enhancement of PEMEA shall be followed as described in TS 103 755 [22] (AEC_RO_01), (AEC_RO_06).

The *emergencyDataSend* information as defined in TS 103 478 [20] shall include an identity to be used for emergency call back (AEC-SC-03).

To utilise the multimedia capabilities of PEMEA or to enrich emergency communications with additional media capabilities, the media and modality preferences if indicated by the user shall be conveyed in the initiation by the means specified in TS 103 478 [20] in the Additional Data element in clause 13.6.2.4 SubscriberData :- language for both ways. If both ways are not specified, a general language and modality preference can be specified in the Additional Data element in clause 13.6.2.1 SubscriberData :- vcard profile, the language field. (AEC-SC-01), (AEC-SC-04)

The procedures for regaining communication in case of failure shall be used as specified in the audio /video specification TS 103 945 [6] clause 8.7 “Re-invocation procedures” and for RTT in TS 103 871 [5], the procedure in clause 7.4 “Disconnects and reconnects”, using the UniqueID. (AEC-CB-01)

Preferred support service address shall be included if specified by the user. (AEC-SS-01)

8.4.3.2 Other Applications

Other technologies for access to emergency communications with full support for accessibility may be developed and recognised. Users of such emergency communication technologies shall be provided with emergency communications according to procedures of the present document when the emergency communications is initiated from a region where that other technology is not supported.

All functional requirements specified in clause 5 and possible to apply to user communication devices and interpersonal communications services shall be fulfilled by non-sip services when used for emergency communications. (AEC-**-**)

9. Emergency service network including PSAP

9.1 General

The emergency service network including PSAPs shall comply with TS 103 479 [3] clause 6 except 6.2 and 6.8 to fulfil the accessibility requirements, which implies using SIP [12] and SDP [19] for session and media control, and RTP [13] for media transport.

9.2 Media

The media: video, audio and real time text (RTT) shall be supported as specified in TS 103 479 [3], clauses 6.6.2.4, 6.6.2.2, and 6.6.2.3.

Audio and RTT shall be supported in all media handling elements.

Multiparty handling according to RFC 4579 [16] shall be supported by media handling elements and in the external interfaces.

9.3 Modality and Language indication

The following modality and language indication methods are available for use in SIP based systems. They shall be supported by emergency services and support efficient connection of users with disabilities involving specific modality and language needs with call takers. (AEC-ML-01,02,03,04,05,06,07,08,09)

Editor’s note: One or a few of these methods should be selected

RFC 8373 [18], a=hlang-send and a=hlang-recv sdp media attributes including negotiation of modality and language support.

RFC 8866 [19] a=lang sdp attribute on session and media level

RFC 3841[15] and RFC 3840[14] Languages attribute used in Contact header and Language attribute in Accept-Contact header in SIP according to examples in RFC 4596[i.3] .

RFC 7852[17] Additional data in an emergency call.

RFC 7852[17] lang element in xCard for Subscriber’s data in additional data in an emergency call.

RFC 7852[17] Data provider element can be from a Relay Provider or an Emergency Modality Translation or a Relay Provider including lang elements indicating languages used in the communication (?).

9.4 Routing

The emergency communications enters the emergency service network in an entry where the communication can be routed to a PSAP responsible for handling the communication.

Then routing to the most appropriate PSAP shall be performed using location information (AEC-RO-01), and the following accessibility related characteristics shall influence the routing logic:

Is video offered in the communication? (AEC-RO-08)

Is preference for a specific sign language indicated? (AEC-RO-03)

Is preference for a specific spoken or written language indicated? (AEC-RO-03)

Is preference for RTT indicated?

Is preference for RTT in a specific language indicated?

Is a favourite specific support service indicated?

Is competence for the preferred modality and language available in a PSAP in the region?

Is a support service for the preferred modality and language known and available?

Is a call taker available with competence in the same spoken language as the support service?

Then route the communication to a suitable call taker and include if needed a support service and if needed a spoken language interpreter.

Else route to a call taker being the best match regarding media capability and language capability and have the call taker sort out best communications support in communication with the user in emergency. (AEC-RO-01, 02, 03, 04, 05, 06, 07, 08).

Mapping procedures that are performed to route emergency communications are described in TS 103 479 [3]. To ensure international routing of emergency communications, a packet-switched infrastructure shall be operated to connect regions with each other. (AEC-RO-09)

Regional mapping functions shall be deployed in a hierarchical structure (tree-like) with a Forest Guide as the element to navigate between those trees. Regional Forest Guides shall maintain a LoST interface, as described in in TS 103 479 [3] Section 5.3. (AEC-RO-09)

9.5 Bridging

The PSAP shall have access to multiparty bridging for audio, video and RTT. It shall be used when needed for assisted call transfer, for call taker training and monitoring, for including experts, for including first responders, support services and interpreters. (AEC-CT-01), (AEC-CT-02), (AEC-CO-01), (AEC-CO-02), (AEC-CO-03)

The bridge shall use RFC 4579 [16] procedures.

9.6 Call back

A PSAP shall have the possibility to call back to the equipment of the user in emergency, using the routable uri provided in the original emergency communications and the call control and media control procedures specified in TS 103 479 [3]. (AEC-SC-03), (AEC-SC05), (AEC-CB-01), (AEC-CB-06)

The default action shall be to include the same media as in the original communication. (AEC-CB-02)

If a support service was included in the original communication, the default action shall be to include the same support service in the call back. (AEC-CB-04)

The call taker shall be provided with means to select other media in the call back than in the original communication. (AEC-CB-03)

The call taker shall be provided with means to exclude a support service which was included in the original communication and also to include other support services in the call back. (AEC-CB-05)

9.7 Communications handling

TS 103 479 [3] specifies a communications handling for letting incoming emergency communications wait for handling by appropriate call takers. The functional accessibility requirements on the communications handling systems are specified in clause 5 of the present document.

The communications handling system shall allow call takers to be assigned emergency communications with matching language preferences and capabilities. (AEC-RO-01, 02, 03, 04, 05, 06, 07, 08, 09)

The communications handling system shall allow call takers to be assigned emergency communications with matching modality preferences and capabilities. (AEC-RO-01, 02, 03, 04, 05, 06, 07, 08, 09)

The communications handling system shall allow call takers to identify when support services are needed in the communication and invoke such services. (AEC-CT-01), (AEC-CT-02)

Information about the wait state shall be sent in all media enabled in the communication. (AEC-SC-07)

10 Supporting Services

10.1 General

The main method to invoke support services in the communication is to include it by automatic or manual means by the PSAP through one multimedia communication in a multiparty bridge. (AEC-SS-01), (AEC-SS-04), (AEC-SS-06), (AEC-SS-07), (AEC-SS-08), (AEC-SS-09), (AEC-SS-10), (AEC-SS-11), (AEC-SS-12), (AEC-SS-13), (AEC-CO-01)

Any supporting service should include RFC 7852[17] Data provider element which can be coded as from a Relay Provider or an Emergency Modality Translation service including language elements indicating languages and modalities used in the communication. (AEC-SS-05)

The methods to invoke supporting services shall be by bridge operations as specified in TS 103 479 [3] clause 5.6. (AEC-SS-01), (AEC-SS-06)

Annex A (informative): User Level Use Cases

A.1 Introduction

The present informative annex contains a set of use case descriptions for emergency communication situations involving users with disabilities in emergency situations. The use cases can be used as examples and clarifications for situations which may appear in emergency cases and be handled through emergency communications.

The collection of use cases has no ambition to cover all possible cases.

A.2 Users with mobile phones with voice and RTT

A.2.1 General

The following use cases are examples of use of mobile phones with only voice or with voice and real time text.

A.2.2 User with low vision calling emergency with voice in home country

A.2.3 Blind user calling in emergency calling with voice in foreign country

A.2.4 Hard-of-hearing user in emergency calling with RTT and voice in home country

A.2.5 Call back to hard of hearing user with voice and RTT

A.2.6 Deaf user in emergency calling with RTT and being transferred to mountain guard using RTT, alternatively needing support for modality conversion between RTT and speech.

A.2.7 Deaf user in emergency in foreign country calling with RTT and getting language support in RTT.

A.2.8 Call back to deaf user in foreign country with voice and RTT and including same language support as in original call

A.2.9 Deaf user in emergency not trusting the emergency service to be able to use text, calling text relay service and requesting emergency communication

A.2.10 Hard-of-hearing user in emergency visiting other country, not believing she will be able to communicate with the local emergency centre, therefore calling relative in home country asking the relative to make emergency call.

A.2.11 Deaf-blind user in emergency having mobile phone with built-in assistive technology providing Braille display and QWERTY keyboard, making emergency call and being served with RTT.

A.2.12 Hard-of-hearing user in emergency calling with RTT and voice in home country. Being able to talk, but not hear. The answering call taker attaches automatic speech-to-text to the call in a way that displays the call takers transmitted text also to the call taker for catching any mistakes. The call handling continues mainly by speech, vs speech-to-text occasionally complemented by RTT or ASR corrections.

A.2.13 User with mental disability in emergency calling emergency call with mobile phone including assistive technology software enabling the user to communicate by sending pictograms translated to text and voice by the assistive technology. The call taker transfers the call by attended transfer to a call taker with competence in communicating with persons with disabilities. The caller understands speech, so the call taker can answer by speech. Alternatively the user sends Blisscode, and the call taker answers in rtt which the caller's assistive technology software converts to Blissymbols.

A.2.14 User with mental disability in emergency calling emergency call with mobile phone including assistive technology software enabling the user to communicate by sending Blissymbols translated to text and voice by the assistive technology. The call taker transfers the call by attended transfer to a call taker with competence in communicating with persons with disabilities .The call taker answers in rtt which the caller's assistive technology software converts to Blissymbols.

A.2.15 A user in medical emergency calls emergency service with a mobile phone with voice. The call taker includes a medical expert in a three-party fashion. They discuss pharmaceuticals which the user has. A medicine name "phlyxophentine" is hard to pronounce so that the medical expert understands, so the user adds RTT to the call and types the name. The medical expert reads the name and the call can continue to solve the issue.

A.2.16 A deaf user in emergency calls for emergency communication. There is a catastrophic situation, so all call takers are busy for a moment. The calling user gets calming queue messages in both voice and RTT until a call taker is free and can take the call.

A.3 Users with mobile phones with total conversation

A.3.1 General

The following use cases are examples of use of mobile phones with users who have use of total conversation.

A.3.2 Hard-of-hearing user in emergency calling with total conversation in mobile phone, wanting to use voice and support understanding by seeing the call taker and having RTT as fallback when something gets hard to understand, reaching call taker using voice and having corresponding features.

A.3.3 Deaf sign language user in emergency making emergency call with total conversation in mobile phone, including preferred language indication in the call, reaching call taker with sign language competence. Using RTT for fallback for phrases requiring exact spelling.

A.3.4 Call-back to deaf sign language user in emergency with total conversation in mobile phone, using video for sign language and RTT for fallback for phrases requiring exact spelling..

A.3.5 Deaf sign language user in emergency making emergency call with total conversation in mobile phone, including preferred language indication in the call, reaching call taker without sign language competence. The call taker seeing the language preference invokes sign language interpreter as third party in the call. Using RTT to begin handling the case before the interpreter is included, then continuing in translated sign language with RTT fallback when needed.

A.3.6 Deaf sign language user in emergency making emergency call with total conversation in mobile phone, not including any preferred language indication in the call, reaching call taker without sign language competence, communicating in RTT and gestures about language preferences and invoking sign language interpreter as third party in the call. But the call taker and the interpreter have no common competence in spoken languages, so the call taker transfers the call via attended call transfer to a call taker with competence in the same spoken language as the interpreter. Then continuing in translated sign language with RTT fallback when needed.

A.3.7 Deaf sign language user in emergency not trusting that the emergency centre has competence in the user's sign language, therefore calling his usual video relay service from his total conversation in a mobile device, and asks for emergency communication. The relay service redirects the call to emergency services in a way that makes the user terminal make a proper emergency call, and causing the relay service to be connected in tree-party mode in the call. Reaching call taker without sign language competence, communicating in translated sign language with RTT fallback when needed.

A.4 Users with app or web based Total Conversation

A.4.1 General

The following use cases are examples of use of app or web-based communication with users who have use of total conversation

A.4.2 Hard-of-hearing user in emergency calling with app or web based total conversation, wanting to use voice and support understanding by seeing the call taker and having RTT as fallback when something gets hard to understand, reaching call taker using voice and having corresponding features.

A.4.3 Deaf sign language user in emergency making emergency call with app or web based total conversation, including preferred language indication in the call, reaching call taker with sign language competence. Using RTT for fallback for phrases requiring exact spelling.

A.4.4 Call-back to deaf sign language user in emergency with app or web based total conversation, using video for sign language and RTT for fallback for phrases requiring exact spelling.

A.4.5 Deaf sign language user in emergency making emergency call with app or web based total conversation, including preferred language indication in the call, reaching call taker without sign language competence. The call taker seeing the language preference invokes sign language interpreter as third party in the call. Using RTT to begin handling the case before the interpreter is included, then continuing in translated sign language with RTT fallback when needed.

A.4.6 Deaf sign language user in emergency making emergency call with app or web based total conversation, not including any preferred language indication in the call, reaching call taker without sign language

competence, communicating in RTT and gestures about language preferences and invoking sign language interpreter as third party in the call. But the call taker and the interpreter have no common competence in spoken languages, so the call taker transfers the call via attended call transfer to a call taker with competence in the same spoken language as the interpreter. Then continuing in translated sign language with RTT fallback when needed.

A.4.7 Deaf sign language user in emergency not trusting that the emergency centre has competence in the user's sign language, therefore calling their usual video relay service from his app or web based total conversation account, and asks for emergency communication. The relay service redirects the call to emergency services in a way that makes the user terminal make a proper emergency call, and causing the relay service to be connected in tree-party mode in the call. Reaching call taker without sign language competence, communicating in translated sign language with RTT fallback when needed.

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Annex B (normative): Testing for compliance with technical requirements

B.1 Introduction

This annex contains text cases corresponding to the requirement clauses in the main body of the present document.

For ease of reference, the clause numbering is in line with the clause numbering for the corresponding requirements. Therefore there are empty clauses in this annex corresponding to clauses where no requirements are expressed.

B.2 Conditions for testing

B.2.1 General conditions for testing

Tests defined in the present document shall be carried out at representative points within the boundary limits of the operational environmental profile defined by its intended use, which, as a minimum, shall be that specified in the test conditions contained in the present document.

Where technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions as specified in the present document to give confidence of compliance for the affected technical requirements.

B.2.2 Video communication

Since video communications capabilities in user devices and communications services is only required for emergency communications when video is provided in general, tests are specified with video included, but shall be performed without considering video, for case when the communication service does not provide video in general.

B.3 Testing with and without technical interface observations

Where appropriate, the tests are divided in two sections, one with pure human actions and observations in user interfaces, called „interoperability section“ and another adding observations in technical interfaces in the systems called conformance section“ The intention with this division is that it shall be possible to vary the ambition level of the tests and thereby the complexity to perform them.

The additional test in the conformance sections can be omitted during testing when so found suitable.

To ease handling a test protocol, the numbering of the preconditions and the procedure steps continue from the interoperability sections into the conformance sections.

The tests are intended to be possible to perform both in test environments and in implemented services.

B.4 Specific concerns when testing with emergency services

When testing emergency communications and emergency services, it is of importance that the tests are done in a way that they do not cause excessive load on the service. Whenever possible, the test method described in TS 103 479 [3] clause 6.1.2.10 should be used. When test communications which engage personnel in an operational emergency service are planned, this should be in agreement with the target emergency service.

B.5 Void

Void

B.6 Void

Void

B.7. User equipment

B.7.1 General

B.7.2 SIP Based User Equipment

B.7.2.1 General

B.7.2.2 Settings

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is user equipment for electronic communication including SIP for call control and RTP for voice, video and RTT media 2. A communication service is available where the equipment under test resides.
Procedure	<ol style="list-style-type: none"> 1. Check the user interface for a setting of preference to include RTT in all calls or not. 2. Set this setting on. 3. Check the user interface for a setting of preferred language in emergency calls. 4. Check that a list of sign languages and spoken/written languages are available for selection. 5. Select one sign language 6. Initiate a test emergency communications with a PSAP 7. Check that the emergency communications is received and answered and a communication is set up and that RTT is included from the beginning. 8. Check that basic communication is possible in all three media. 9. Check with the PSAP that the language preference is visible in the PSAP user interface.
Result	<p>Pass: Checks 1,3,4,7,8,9 are true</p> <p>Fail: Check 1 or 3 or 4 or 7 or 8 or 9 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Precondition	<ol style="list-style-type: none"> 3. The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ol style="list-style-type: none"> 10. Check the communication trace and analyze the SIP and RTP parts to verify the following: <ol style="list-style-type: none"> a) That the INVITE is formed according to TS 103 479 requirements, and specifically that RFC 7852 additional data with subscriber info language indication is included and matches the setting. b) That video is offered with at least one codec according to TS 103 479 requirements. c) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> indicating multiparty support and use of two-fold redundancy. d) Text is included as a Media tag in the Accept-contact SIP field . e) That audio is offered with at least one wide-band codec supported according to TS 103 479 11. Check that the OK from the emergency service confirms these codecs.
Conformance result	<p>Pass: Checks 10,11 are true</p> <p>Fail: Check 10 or 11 is false</p> <p>Not applicable: Precondition 3 was not done.</p>

B.7.2.3 Initiation of emergency communications

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is user equipment for electronic communication including SIP for call control and voice and RTT and video media 2. A communication service is available where the equipment under test resides.
Procedure	<ol style="list-style-type: none"> 1. Initiate an emergency communications with video RTT and voice. 2. Check that the electronic communications service initiates communication with a PSAP 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in all three media.
Result	<p>Pass: Checks 2, 3 and 4 are true</p> <p>Fail: Check 2 or 3 or 4 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Precondition	3. The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ol style="list-style-type: none"> 5. Check the communication trace and analyze the SIP and RTP parts to verify the following: <ol style="list-style-type: none"> a) That the INVITE is formed according to TS 103 479 requirements, and specifically that the SIP URI is on the form urn:service:sos b) That video is offered with at least one codec according to TS 103 479 requirements. c) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> indicating multiparty support and use of two-fold redundancy. d) That audio is offered with at least one wide-band codec supported according to TS 103 479 6. Check that the OK from the emergency service confirms these codecs. 7. Check that RTT text packets contain original and two redundant transmissions of text.
Result	<p>Pass: 5 and 6 and 7 are true</p> <p>Fail 5 or 6 or 7 is false</p>

B.7.2.4 Call back

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is user equipment for electronic communication including SIP for call control and voice and RTT and video media 2. A communication service is available where the equipment under test resides.
Procedure	<ol style="list-style-type: none"> 1. Initiate an emergency communications with video RTT and voice. 2. Check that the electronic communications service initiates communication with a PSAP 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in all three media. 5. Ask the call taker to disconnect and call back. 6. Check that the call back is received and can be answered 7. Check that media can be used.
Result	<p>Pass: Checks 1-7 are true</p> <p>Fail: Check 2 or 3 or 4 or 5 or 6 or 7 is false</p>

	Not applicable: Pre-condition 1 or 2 is not met.
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Conformance section	
Preconditions	3. The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	<p>8. Check the communication trace and analyze the SIP and RTP parts to verify the following:</p> <ul style="list-style-type: none"> a) That the INVITE of the call back is formed according to TS 103 479 requirements, and specifically that the mark "psap-callback" for emergency call back is set in the priority SIP header. b) That video is offered with at least one codec according to TS 103 479 requirements. c) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> <p>indicating multiparty support and use of two-fold redundancy.</p> <ul style="list-style-type: none"> c) That audio is offered with at least one wide-band codec supported according to TS 103 479 <p>9. Check that the OK from the device under test confirms these codecs.</p> <p>10. Check that RTT text packets contain original and two redundant transmissions of text.</p>
Result	<p>Pass: Checks 8,9,10 are true</p> <p>Fail: Check 8 or 9 or 10 is false</p>

B.7.2.5 Invocation of support services by the user

This is the non-preferred method to initiate emergency communications via a relay service. The preferred way is that the user initiates communication with the emergency service and the emergency service invokes a relay service if needed.

Interoperability section	
Precondition	<ul style="list-style-type: none"> 1. The ICT under test is user equipment for electronic communication including SIP for call control and voice, RTT and video media 2. A communication service is available where the equipment under test resides.
Procedure	<ul style="list-style-type: none"> 1. Initiate an emergency communications with video RTT and voice to a video relay service. 2. Ask the relay service to initiate emergency communication. 3. Check that the relay service asks the user for location. 4. Check that the relay service initiates communication with a PSAP 5. Check that the emergency communications is answered and a communication is set up. 6. Check that basic communication is possible in all three media 7. Check by asking, that the call taker has got location information.
Result	<p>Pass: Checks 1-7 are true</p> <p>Fail: Check 2 or 3 or 4 or 5 or 6 or 7 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Preconditions	3. The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ul style="list-style-type: none"> 8. Check the communication trace and analyze the SIP and RTP parts to verify the following in the user- to -relay service communication. b) That video is offered with at least one codec according to TS 103 479 requirements. c) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary)

	<p>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</p> <p>indicating multiparty support and use of two-fold redundancy. c) That audio is offered with at least one wide-band codec supported according to TS 103 479 9. Check that the OK from the relay service confirms these codecs. 10. Check that RTT text packets contain original and two redundant transmissions of text.</p>
Result	<p>Pass: Checks 8,9,10 are true Complete test fail: Check 8 or 9 or 10 is false</p>

B.7.3 IMS SIP Based User Equipment

B.7.3.1 General

Empty

B.7.3.2 Settings

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is user equipment for IMS MTSI electronic communication including SIP for call control and RTP for voice, RTT and video media 2. An IMS communication service is available where the equipment under test resides.
Procedure	<ol style="list-style-type: none"> 1. Check the user interface for a setting of preference to include RTT in all calls or not. 2. Set this setting on. 3. Check the user interface for a setting of preferred language in emergency calls. 4. Check that a list of spoken/written languages are available for selection. 5. Select a language 6. Initiate a test emergency communications with a PSAP 7. Check that the emergency communications is received and answered and a communication is set up and that RTT and video is included from the beginning. 8. Check that basic communication is possible in all three media. 9. Check with the PSAP that the language preference is visible in the PSAP user interface.
Result	<p>Pass: Checks 1,3,4,7,8,9 are true Fail: Check 1 or 3 or 4 or 7 or 8 or 9 is false Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Preconditions	<ol style="list-style-type: none"> 3. The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ol style="list-style-type: none"> 10. Check the communication trace and analyze the SIP and RTP parts to verify the following: <ol style="list-style-type: none"> a) That the INVITE is formed according to TS 126 114 requirements, and specifically that RFC 7852 additional data with subscriber info language indication is included and matches the setting. b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> indicating multiparty support and use of two-fold redundancy. c) Video is offered d) Text is included as a SIP level Media tag.

	e) That audio is offered with at least one wide-band codec supported according to TS 103 479 11. Check that the OK from the emergency service confirms these codecs.
Result	Pass: Checks 10,11 are true Fail: Check 10 or 11 is false

B.7.3.3 Initiation of emergency communications

Interoperability section	
Precondition	1. The ICT under test is user equipment for electronic communication in the IMS mobile environment SIP for call control and voice, RTT and video media 2. An IMS MTSI communication service is available where the equipment under test resides.
Procedure	1. Initiate an emergency communications with RTT voice and video. 2. Check that the IMS MTSI electronic communications service initiates communication with a PSAP 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in all media.
Result	Pass: Checks 2, 3 and 4 are true Fail: Check 2 or 3 or 4 is false Not applicable: Pre-condition 1 or 2 is not met.

Conformance section	
Preconditions	3. The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	5. Check the communication trace and analyze the SIP and RTP parts to verify the following: a) That the INVITE is formed according to TS 126 114 requirements, and specifically that the SIP URI is on the form urn:service:sos . b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer indicating multiparty support and use of two-fold redundancy. c) That video is offered d) That audio is offered with at least one wide-band codec supported. 6. Check that the OK from the emergency service confirms these codecs. 7. Check that RTT text packets contain original and two redundant transmissions of text.
Result	Pass: Checks,5,6,7 are true Fail: Check 5 or 6 or 7 is false

B.7.3.4 Call back

Interoperability section	
Precondition	1. The ICT under test is user equipment for electronic communication in IMS MTSI service including SIP for call control and voice, RTT and video media 2. An IMS MTSI communication service is available where the equipment under test resides.
Procedure	1. Initiate an emergency communications with RTT and voice and video. 2. Check that the IMS electronic communications service initiates communication with a PSAP 3. Check that the emergency communications is received and answered and a communication is set up.

	<p>4. Check that basic communication is possible in all three media.</p> <p>5. Ask the call taker to disconnect and call back.</p> <p>6. Check that the call back is received and can be answered</p> <p>7. Check that media can be used.</p>
Result	<p>Pass: Checks 2-4,6, 7 are true</p> <p>Fail: Check 2 or 3 or 4 or 6 or 7 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Preconditions	3. The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	<p>8. Check the communication trace and analyze the SIP and RTP parts to verify the following:</p> <p>a) That the INVITE of the call back is formed according to TS 126 114 requirements, and specifically that the mark "psap call back" for emergency call back is set in the priority SIP header.</p> <p>b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary)</p> <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> <p>indicating multiparty support and use of two-fold redundancy.</p> <p>c) That audio is offered with at least one wide-band codec supported according to TS 103 479</p> <p>d) that video is offered with at least one video codec supported according to TS 103 479-</p> <p>9. Check that the OK from the device under test confirms these codecs.</p> <p>10. Check that RTT text packets contain original and two redundant transmissions of text.</p>
Result	<p>Pass: Checks 8,9,10 are true</p> <p>Fail: Check 8 or 9 or 10 is false</p>

B.7.3.5 Roaming considerations

Interoperability section	
Precondition	<p>1. The ICT under test is user equipment for electronic communication in the IMS mobile environment SIP for call control and voice RTT and video media</p> <p>2. An IMS MTSI communication service is available where the equipment under test resides.</p> <p>3. The equipment under test is located where it is roaming in another IMS service.</p>
Procedure	<p>1. Initiate an emergency communications with RTT and voice and video</p> <p>2. Check that the emergency communications is conveyed by the visited IMS MTSI electronic communications service and initiates communication with a PSAP</p> <p>3. Check that the emergency communications is received and answered and a communication is set up.</p> <p>4. Check that basic communication is possible in all media.</p>
Result	<p>Pass: Checks 2, 3 and 4 are true</p> <p>Fail: Check 2 or 3 or 4 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Preconditions	4. The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	5. Check the communication trace and analyze the SIP and RTP parts to verify the following: <p>a) That the INVITE is formed according to TS 126 114 and TS 124 229 clauses 4.7 and 5.1.6 requirements, and specifically that the SIP URI is on the form urn:service:sos .</p>

	<p>b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary)</p> <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> <p>indicating multiparty support and use of two-fold redundancy.</p> <p>c) That audio is offered with at least one wide-band codec supported.</p> <p>D) that video is offered with at least one of the codecs supported by TS 103 479.</p> <p>6. Check that the OK from the emergency service confirms these codecs.</p> <p>7. Check that RTT text packets contain original and two redundant transmissions of text.</p>
Result	<p>Pass: Checks 5,6,7 are true</p> <p>Fail: Check 5 or 6 or 7 is false</p>

B.7.3.6 Invocation of support services by the user

Interoperability section	
Precondition	<ol style="list-style-type: none"> The ICT under test is user equipment in IMS for electronic communication including SIP for call control and voice and RTT media An IMS communication service is available where the equipment under test resides.
Procedure	<ol style="list-style-type: none"> Initiate an emergency communications with video RTT and voice to a text relay service. Ask the relay service to initiate emergency communication. Check that the relay service asks the user for location. Check that the relay service initiates communication with a PSAP Check that the emergency communications is answered and a communication is set up. Check that basic communication is possible in all three media Check by asking, that the call taker has got location information.
Result	<p>Pass: Checks 1-7 are true</p> <p>Fail: Check 2 or 3 or 4 or 5 or 6 or 7 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Preconditions	<ol style="list-style-type: none"> The equipment under test or the communication service is set in a mode where it records traces of the communication in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ol style="list-style-type: none"> Check the communication trace and analyze the SIP and RTP parts to verify the following in the user- to -relay service communication. <ol style="list-style-type: none"> That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> <p>indicating multiparty support and use of two-fold redundancy.</p> That audio is offered with at least one wide-band codec supported according to TS 103 479 <p>9. Check that the OK from the relay service confirms these codecs.</p> <p>10. Check that RTT text packets contain original and two redundant transmissions of text.</p>
Result	<p>Pass: Checks 8,9,10 are true</p> <p>Fail: Check 8 or 9 or 10 is false</p>

B.7.4 Other technologies

If other technologies than IMS SIP or SIP are used within the electronic communication services, the communication shall be converted to TS 103 479 [3] format for the interface to the emergency service network. Technical test procedures for the end-user equipment are out of scope for the present document.

B.8. Originating Service

B.8.1 General

B.8.2 SIP Based Originating Service

B.8.2.1 General

Empty

B.8.2.2 Settings

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is an electronic communication service using SIP for call control and voice and RTT media 2. An end user equipment for test is available registered in the service.
Procedure	<ol style="list-style-type: none"> 1. Find the setting in the end user equipment for a preference to include RTT in all calls. 2. Set this setting on. 3. Find in the user interface of the end user equipment a setting of preferred language in emergency calls. 4. Find a list of sign languages and spoken/written languages available for selection. 5. Select one sign language 6. Initiate a test emergency communications with a PSAP 7. Check that the emergency communications is received and answered and a communication is set up and that RTT is included from the beginning. 8. Check that basic communication is possible in all three media. 9. Check with the PSAP that the language preference is visible in the PSAP user interface.
Result	<p>Pass: Checks 1,3,4,7,8,9 are true Fail: Check 1 or 3 or 4 or 7 or 8 or 9 is false Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Preconditions	<ol style="list-style-type: none"> 3. The communication service is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ol style="list-style-type: none"> 10. Check the communication trace of the interface to the emergency service and analyze the SIP and RTP parts to verify the following: <ol style="list-style-type: none"> a) That the INVITE is formed according to TS 103 479 requirements, and specifically that RFC 7852 additional data with subscriber info language indication is included and matches the setting. b) That video is offered with at least one codec according to TS 103 479 requirements. c) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> indicating multiparty support and use of two-fold redundancy. d) Text is included as a SIP level Media tag. e) That audio is offered with at least one wide-band codec supported according to TS 103 479 11. Check that the OK from the emergency service confirms these codecs.

Result	Pass: Checks 10,11 are true Fail: Check 10 or 11 is false
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B.8.2.3 Initiation of emergency communications

Interoperability section	
Precondition	1. The ICT under test is an electronic communication service using SIP for call control and voice and RTT media 2. An end user equipment for test is available registered in the service.
Procedure	1. Initiate an emergency communications with RTT and voice from the test equipment 2. Check that the SIP electronic communications service initiates communication with a PSAP 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in both media.
Result	Pass: Checks 2, 3 and 4 are true Fail: Check 2 or 3 or 4 is false Not applicable: Pre-condition 1 or 2 is not met.

Conformance section	
Preconditions	3. The communication service is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	5. Check the communication trace and analyze the SIP and RTP parts to verify the following: a) That the INVITE is formed according to TS 103 479 requirements, and specifically that the SIP URI is on the form urn:service:sos . b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer indicating multiparty support and use of two-fold redundancy. c) That audio is offered with at least one wide-band codec supported. 6. Check that the OK from the emergency service confirms these codecs. 7. Check that RTT text packets contain original and two redundant transmissions of text.
Result	Pass: Checks 5,6,7 are true Fail: Check 5 or 6 or 7 is false

B.8.2.4 Call back

Interoperability section	
Precondition	1. The ICT under test is an electronic communication service using SIP for call control and RTP for voice and RTT and video media 2. End user equipment is available registered in the service.
Procedure	1. Initiate an emergency communications with video RTT and voice. 2. Check that the electronic communications service initiates communication with a PSAP 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in all three media. 5. Ask the call taker to disconnect and call back. 6. Check that the call back is received and can be answered 7. Check that media can be used.

Result	Pass: Checks 1-7 are true Fail: Check 2 or 3 or 4 or 5 or 6 or 7 is false Not applicable: Pre-condition 1 or 2 is not met.

Conformance section	
Preconditions	3. The communication service is set in a mode where it records traces of the communication in SIP session control and RTP media in the interface with emergency services and so that it can be analyzed.
Procedure	8. Check the communication trace and analyze the SIP and RTP parts to verify the following: a) That the INVITE of the call back is formed according to TS 103 479 requirements, and specifically that the mark "psap-callback" for emergency call back is set in the priority SIP header. b) That video is offered with at least one codec according to TS 103 479 requirements. c) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer indicating multiparty support and use of two-fold redundancy. c) That audio is offered with at least one wide-band codec supported according to TS 103 479 9. Check that the OK from the device under test confirms these codecs. 10. Check that RTT text packets contain original and two redundant transmissions of text.
Result	Pass: Checks 8,9,10 are true Fail: Check 8 or 9 or 10 is false

B.8.3 IMS SIP Based Originating Service

B.8.3.1 General

Empty

B.8.3.2 Settings

Interoperability section	
Precondition	1. The ICT under test is an IMS electronic communication service using SIP for call control and voice and RTT media 2. An IMS MTSI equipment for test is available registered in the service.
Procedure	1. Find the setting in the end user equipment for a preference to include RTT in all calls. 2. Set this setting on. 3. Find in the user interface of the end user equipment a setting of preferred language in emergency calls. 4. Find a list of spoken/written languages available for selection. 5. Select one language 6. Initiate a test emergency communications with a PSAP 7. Check that the emergency communications is received and answered and a communication is set up and that RTT is included from the beginning. 8. Check that basic communication is possible in RTT and voice media. 9. Check with the PSAP that the language preference is visible in the PSAP user interface.
Result	Pass: Checks 1,3,4,7,8,9 are true Fail: Check 1 or 3 or 4 or 7 or 8 or 9 is false Not applicable: Pre-condition 1 or 2 is not met.

Conformance	
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section	
Preconditions	3. The communication service is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	<p>10. Check the communication trace of the interface to the emergency service and analyze the SIP and RTP parts to verify the following:</p> <p>a) That the INVITE is formed according to TS 103 479 requirements, and specifically that RFC 7852 additional data with subscriber info language indication is included and matches the setting.</p> <p>b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary)</p> <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> <p>indicating multiparty support and use of two-fold redundancy.</p> <p>d) Text is included as a SIP level Media tag.</p> <p>e) That audio is offered with at least one wide-band codec supported according to TS 103 479</p> <p>11. Check that the OK from the emergency service confirms these codecs.</p>
Result	<p>Pass: Checks 10,11 are true</p> <p>Fail: Check 10 or 11 is false</p>

B.8.3.3 Initiation of emergency communications

Interoperability section	
Precondition	<p>1. The ICT under test is an IMS electronic communication service using SIP for call control and voice and RTT and video media</p> <p>2. An IMS MTSI equipment for test is available registered in the service.</p>
Procedure	<p>1. Initiate an emergency communications with RTT and voice from the test equipment</p> <p>2. Check that the IMS MTSI electronic communications service initiates communication with a PSAP</p> <p>3. Check that the emergency communications is received and answered and a communication is set up.</p> <p>4. Check that basic communication is possible in all three media.</p>
Result	<p>Pass: Checks 2, 3 and 4 are true</p> <p>Fail: Check 2 or 3 or 4 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Preconditions	3. The communication service is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	<p>5. Check the communication trace and analyze the SIP and RTP parts to verify the following:</p> <p>a) That the INVITE is formed according to TS 103 479 requirements (by conversion as specified in TS 124 167), and specifically that the SIP URI is on the form urn:service:sos .</p> <p>b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary)</p> <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> <p>indicating multiparty support and use of two-fold redundancy.</p> <p>c) That audio is offered with at least one wide-band codec supported</p>

	d) That video is offered with at least one codec supported. 6. Check that the OK from the emergency service confirms these codecs. 7. Check that RTT text packets contain original and two redundant transmissions of text.
Result	Pass: Checks 5,6,7 are true Fail: Check 5 or 6 or 7 is false

B.8.3.4 Call back

Interoperability section	
Precondition	1. The ICT under test is an IMS electronic communication service using SIP for call control and voice and RTT and video media 2. An IMS MTSI equipment for test is available registered in the service.
Procedure	1. Initiate an emergency communications with RTT and voice and video from the IMS test user equipment. 2. Check that the IMS electronic communications service initiates communication with the expected PSAP 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in voice, video and RTT media. 5. Ask the call taker to disconnect and call back. 6. Check that the call back is received and can be answered 7. Check that the same media as in the initial communication can be used.
Result	Pass: Checks 2,3,4,6,7 are true Fail: Check 2 or 3 or 4 or 5 or 6 or 7 is false Not applicable: Pre-condition 1 or 2 is not met.

Conformance section	
Preconditions	3. The communication service is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed
Procedure	8. Check the communication trace and analyze the SIP and RTP parts to verify the following: a) That the INVITE of the call back is formed according to TS 103 479 requirements, and specifically that the mark "psapcallback" for emergency call back is set in the priority SIP header. b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer indicating multiparty support and use of two-fold redundancy. c) That audio is offered with at least one wide-band codec supported according to TS 103 479 d) That video is offered with at least one video codec supported according to TS 103 479. 9. Check that the OK from the device under test confirms these codecs. 10. Check that RTT text packets contain original and two redundant transmissions of text.
Result	Pass: Checks 8,9,10 are true Fail: Check 8 or 9 or 10 is false

B.8.3.5 Roaming considerations

Interoperability section	
Precondition	1. The ICT under test is an IMS electronic communication service using SIP for call control and voice and RTT and video media

	2. An IMS MTSI equipment for test from another IMS service is available roaming in the service.
Procedure	<ol style="list-style-type: none"> 1. Initiate an emergency communications with RTT and voice and video. 2. Check that the emergency communications is conveyed by the visited IMS electronic communications service and initiates communication with the expected PSAP 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in the three media.
Result	<p>Pass: Checks 2, 3 and 4 are true</p> <p>Fail: Check 2 or 3 or 4 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
Preconditions	3. The IMS communication service is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ol style="list-style-type: none"> 5. Check the communication trace and analyze the SIP and RTP parts to verify the following: <ol style="list-style-type: none"> a) That the INVITE is formed according to TS 103 479 (by conversion from TS 126 114 and TS 124 229 clauses 4.7 and 5.1.6 requirements converted as specified in TS 124 167), and specifically that the SIP URI is on the form urn:service:sos . b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> indicating multiparty support and use of two-fold redundancy. c) That audio is offered with at least one wide-band codec supported. d) That video is offered with at least one video codec supported 6. Check that the OK from the emergency service confirms these codecs. 7. Check that RTT text packets contain original and two redundant transmissions of text.
Result	<p>Pass: Checks 5,6,7 are true</p> <p>Fail: Check 5 or 6 or 7 is false</p>

B.8.4 Non-SIP communication services

B.8.4.1 General

void

B.8.4.2 TS 103 479 as direct interface

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is an electronic communication service other technologies than SIP or IMS SIP for call control and voice and RTT and video media 2. An end user equipment for test is available registered in the service.
Procedure	<ol style="list-style-type: none"> 1. Initiate an emergency communications with RTT and voice from the test equipment 2. Check that the electronic communications service initiates communication with a PSAP 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in all media.
Result	Pass: Checks 2, 3 and 4 are true

	Fail: Check 2 or 3 or 4 is false Not applicable: Pre-condition 1 or 2 is not met.
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Conformance section	
Preconditions	3. The communication service is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	5. Check the communication trace and analyze the SIP and RTP parts to verify the following: a) That the INVITE is formed according to TS 103 479 requirements, and specifically that the SIP URI is on the form urn:service:sos . b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer indicating multiparty support and use of two-fold redundancy. c) That audio is offered with at least one wide-band codec supported. 6. Check that the OK from the emergency service confirms these codecs. 7. Check that RTT text packets contain original and two redundant transmissions of text.
Result	Pass: Checks 5,6,7 are true Fail: Check 5 or 6 or 7 is false

Result	Pass: Checks 5,6,7 are true Fail: Check 5 or 6 or 7 is false
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B.9. Emergency service network including PSAP

B.9.1 General

Empty

B.9.2 Media

Interoperability section	
Precondition	1. The ICT under test is an emergency service network and PSAP using TS 103 479 with SIP for call control and RTP for video, voice and RTT media 2. A SIP based communication service with end user equipment for test is available capable of handling RTT, video and voice.
Procedure	1. Initiate an emergency communications with RTT and voice from the test equipment 2. Check that the expected PSAP receives the initiation. 3. Check that the emergency communications is answered and a communication is set up. 4. Check that basic communication is possible in all three media.
Result	Pass: Checks 2, 3 and 4 are true Fail: Check 2 or 3 or 4 is false Not applicable: Pre-condition 1 or 2 is not met.

Conformance section	
Preconditions	3. The emergency service network interface is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	<p>5. Check the communication trace and analyze the SIP and RTP parts to verify the following:</p> <p>a) That the INVITE is formed according to TS 103 479 requirements, and specifically that the SIP URI is on the form urn:service:sos .</p> <p>b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary)</p> <pre>m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer</pre> <p>indicating multiparty support and use of two-fold redundancy.</p> <p>c) That audio is offered with at least one wide-band codec supported.</p> <p>d) That video is supported</p> <p>6. Check that the OK from the emergency service confirms these codecs.</p> <p>7. Check that RTT text packets contain original and two redundant transmissions of text.</p>
Result	<p>Pass: Checks 5,6,7 are true</p> <p>Fail: Check 5 or 6 or 7 is false</p>

B.9.3 Modality and Language indication

Interoperability section	
Precondition	<p>1. The ICT under test is an emergency service network and PSAP using TS 103 479 with SIP for call control and RTP for video, voice and RTT media</p> <p>2. A SIP based communication service with end user equipment for test is available capable of handling RTT, and voice.</p> <p>3. The end user test equipment is provided with a setting of language preference to be set into the base for subscriber additional data according to RFC 7852[rfc7852] and the language is set to English.</p> <p>4. The ICT under test is set in a mode where only some PSAP workstations are set to handle English spoken and written language.</p>
Procedure	<p>1. Initiate an emergency communications with RTT, video and voice from the test equipment</p> <p>2. Check that a PSAP with setting to handle English spoken or written language receives the emergency communications and that it is answered and a communication is set up.</p> <p>3. Check that the PSAP can begin communication in RTT and voice.</p>
Result	<p>Pass: Checks 2, 3 are true</p> <p>Fail: Check 2 or 3 is false</p> <p>Not applicable: Pre-condition 1 or 2 or 3 or 4 is not met.</p>

Conformance section	
Preconditions	5. The emergency service network interface is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	<p>4. Check the communication trace and analyze the SIP and RTP parts to verify the following:</p> <p>a) That the initiation is formed according to TS 103 479 requirements and that RFC 7852 additional data is provided and contains English subscriber language indication.</p> <p>b) That the media availability is properly provided in the initiation and answered</p>
Result	<p>Pass: Check 4 is true</p> <p>Fail: Check 4 is false</p>

B.9.4 Routing

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is an emergency service network and PSAP using TS 103 479 with SIP for call control and RTP for video, voice and RTT media 2. A SIP based communication service with end user equipment for test is available capable of handling RTT, video and voice. 3. The ICT under test is set in a mode where only some PSAP workstations have video capability
Procedure	<ol style="list-style-type: none"> 1. Initiate an emergency communications with RTT, video and voice from the test equipment 2. Check that the expected regional emergency service network receives the initiation. 3. Check that a video capable PSAP receives the emergency communications and that it is answered and a communication is set up. 4. Check that the PSAP can begin communication in all media.
Result	<p>Pass: Checks 2, 3, 4 are true</p> <p>Fail: Check 2 or 3 or 4 is false</p> <p>Not applicable: Pre-condition 1 or 2 or 3 is not met.</p>

Conformance section	
Preconditions	4. The emergency service network interface is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ol style="list-style-type: none"> 5. Check the communication trace and analyze the SIP and RTP parts to verify the following: <ol style="list-style-type: none"> a) That the initiation is formed according to TS 103 479 requirements and that proper location information is provided with the initiation. b) That the media availability is properly provided in the initiation and answered
Result	<p>Pass: Check 5 is true</p> <p>Fail: Check 5 is false</p>

B.9.5 Bridging

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is an emergency service network and PSAP using TS 103 479 with SIP for call control and RTP for video, voice and RTT media, having at least two call takers and a multiparty bridge for RTT, video and voice. 2. An IMS MTSI based communication service with end user equipment for test is available capable of handling RTT, and voice and optionally video.
Procedure	<ol style="list-style-type: none"> Initiate a RTT + voice emergency communications optionally also with video 1. Check that the communication is answered by the emergency service 2. Check that RTT and voice is enabled and functional and optionally video 3. Let the call taker include another call taker in the call to create a three-party call. 4. Let the call takers send rtt text simultaneously 5. Check that RTT is presented in real time in a readable way on the user equipment indicating an approximate time order of the received text. 6. Check that voice is mixed 7. Check that if the optional video was included in the communication, it is presented to all three participants.
Result	<p>Pass: Checks 1,2, 5, 6, 7 are true</p> <p>Fail: Check 1 or 2 or 5 or 6 or 7 is false</p> <p>Not applicable: Pre-condition 1 or 2 is not met.</p>

Conformance section	
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Preconditions	3. The emergency service network interface is set in a mode where it records traces of the communication in the interface with the communication service in SIP session control and RTP media and so that it can be analyzed.
Procedure	8. Check the communication trace and analyze the SIP and RTP parts to verify the following: a) That the transfer to the bridge and invocation of the second call taker is visible in the trace and formed according to TS 103 479 requirements. b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer indicating multiparty support and use of two-fold redundancy.
Result	Pass: Check 8 is true Fail: Check 8 is false

B.9.6 Call back

Interoperability section	
Precondition	1. The ICT under test is an emergency service network and PSAP using TS 103 479 with SIP for call control and RTP for video, voice and RTT media 2. A SIP based communication service with end user equipment for test is available capable of handling RTT, video and voice.
Procedure	1. Initiate an emergency communications with video, RTT and voice from the equipment for test. 2. Check that the emergency service network electronic communications service initiates communication with the emergency service network 3. Check that the emergency communications is received and answered and a communication is set up. 4. Check that basic communication is possible in all three media. 5. Ask the call taker to disconnect and call back. 6. Check that the call back is sent and answered 7. Check that media can be used.
Result	Pass: Checks 2,3,4,6,7 are true Fail: Check 2 or 3 or 4 or 6 or 7 is false Not applicable: Pre-condition 1 or 2 is not met.

Conformance section	
Preconditions	3. The emergency service network interface is set in a mode where it records traces of the communication in the interface with the communications service in SIP session control and RTP media and so that it can be analyzed.
Procedure	8. Check the communication trace and analyze the SIP and RTP parts to verify the following: a) That the INVITE of the call back is formed according to TS 103 479 requirements, and specifically that the mark "psap-callback" for emergency call back is set in the priority SIP header. b) That video is offered with at least one codec according to TS 103 479 requirements. c) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer indicating multiparty support and use of two-fold redundancy. c) That audio is offered with at least one wide-band codec supported according to TS 103 479 9. Check that the OK from the device under test confirms these codecs. 10. Check that RTT text packets contain original and two redundant transmissions of text.

Result	Complete test pass: Checks 8,9,10 are true Complete test fail: Check 8 or 9 or 10 is false
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B.9.7 Communications handling

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is an emergency service network and PSAP using TS 103 479 with SIP for call control and RTP for video, voice and RTT media 2. A SIP based communication service with end user equipment for test is available capable of handling RTT, video and voice. 3. The ICT under test is set in a mode where an incoming communication for test is placed in queue. 4. The ICT under test is set in a mode where only some PSAP workstations have video capability
Procedure	<ol style="list-style-type: none"> 1. Initiate an emergency communications with RTT, video and voice from the test equipment 2. Check that the expected emergency service network receives the initiation. 3. Check that the emergency communications is answered and a communication is set up. 4. Check that queue information is sent in all three media and received by the test equipment. 5. Enable the PSAP workstations to take communications from the queue. 6. Check that a PSAP with video capability is offered the test communication and can begin communication in all media.
Result	Pass: Checks 2, 3, 4, 5, 6 are true Fail: Check 2 or 3 or 4 or 5 or 6 is false Not applicable: Pre-condition 1 or 2 or 3 or 4 is not met.

Conformance section	
Preconditions	5. The emergency service network interface is set in a mode where it records traces of the communication in the interface with emergency services in SIP session control and RTP media and so that it can be analyzed.
Procedure	<ol style="list-style-type: none"> 7. Check the communication trace and analyze the SIP and RTP parts to verify the following: <ol style="list-style-type: none"> a) That the initiation is formed according to TS 103 479 requirements and that waiting information in all media is sent. b) That the move to an active PSAP is done as a reINVITE with proper media enabled.
Result	Complete test pass: Check 7 is true Complete test fail: Check 7 is false

B.10 Supporting Services

B.10.1 General

Interoperability section	
Precondition	<ol style="list-style-type: none"> 1. The ICT under test is a supporting service to emergency services, (e.g. a relay service or an expert advice service) 2. An IMS MTSI based communication service with end user equipment for test is available capable of handling RTT, and voice. 3. An emergency service network and PSAP for test is available.
Procedure	Initiate a RTT + voice emergency communications from the IMS user equipment <ol style="list-style-type: none"> 1. Check that the communication is answered by the emergency service 2. Check that RTT and voice is enabled and functional 3. Assume that the call taker finds a need to invoke a relay service or expert advice or other supporting service. 4. Let the call taker include the supporting service in the call to create a three-party call in both media. 5. Check that the inclusion of the supporting service is successful 6. Check that RTT is presented in real time in a readable way on the user equipment indicating an approximate time order of the received text. 7. Check that voice is mixed

Result	Pass: Checks 1,2, 5, 6 and 7 are true Fail: Check 1 or 2 or 5 or 6 or 7 is false Not applicable: Pre-condition 1 or 2 or 3 is not met.

Conformance section	
Preconditions	4. The supporting service interface with emergency services is set in a mode where it records traces of the communication in the interface with the emergency service in SIP session control and RTP media and so that it can be analyzed.
Procedure	8. Check the communication trace and analyze the SIP and RTP parts to verify the following: a) That the inclusion of the supporting service is formed according to TS 103 479 requirements. b) That RTT is offered with a media specification similar to this example (but ports and payload type numbers may vary) m=text 11000 RTP/AVP 100 98 a=rtpmap:98 t140/1000 a=fmtp:98 cps=90 a=rtpmap:100 red/1000 a=fmtp:100 98/98/98 a=rtt-mixer indicating multiparty support and use of two-fold redundancy. c) That voice is included with a wide-band codec d) Check that RTT text packets contain original and two redundant transmissions of text.
Result	Pass: Check 8 is true Fail: Check 8 is false

Draft

Annex C (informative): Change history

Version	Information about changes
0.0.2	Initial version as TS
0.0.3	STF internal version
0.0.4	First Draft
0.0.8	Proposed Stable Draft

Draft

Annex Z (informative): Relationship between the present document and the essential requirements of Directive (EU) 2019/882

Editors note: The introduction below to this annex is not valid until provided in a draft EN. Until then it is marked light grey.

The present document has been prepared under the Commission's standardisation request C(2022) 6456 final [i.x] to provide one voluntary means of conforming to the essential requirements of Directive (EU) 2019/882 on the accessibility requirements of products and services [i.EAA].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table [...] confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table Z.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

Table Z.1: Relationship between the present document and the essential requirements of Directive (EU) 2019/882

Harmonised Standard ETSI EN 303 919					
Requirement				Requirement Conditionality	
No	Description	Essential requirements of Directive	Clause(s) of the present document	U/C	Condition
1	Accessibility of user interface and functionality design of products in general used for providing emergency communications	Annex I; Section III; (a) for services of Article 2(2)(a) Referring to Annex I; Section I; (2) a-n	5.3	U	
2	Accessibility of user interface and functionality of terminals used for electronic communications services for emergency communication	Annex I; Section III; (a) for services of Article 2(2)(a) Referring to Annex I; Section I; (2) o (iii)	5.3, 5.4, 7	U	
3	Electronic communications services including emergency communications shall provide real time text in addition to voice	Annex I; Section iV (a)(i)	5.5, 8	U	
4	Electronic communications services including emergency communications shall provide total conversation where video is provided in addition to voice	Annex I; Section iV (a)(ii)	5.5, 8	U	
5	Electronic communications services including emergency communications shall synchronize media.	Annex I; Section iV (a)(iii)	5.5	U	

Harmonised Standard ETSI EN 303 919					
Requirement				Requirement Conditionality	
No	Description	Essential requirements of Directive	Clause(s) of the present document	U/C	Condition
6	Electronic communications services including emergency communications shall provide the emergency communications to the most appropriate PSAP.	Annex I; Section IV (a)(iii)	5.4.3, 8	U	
7	Electronic communications services including emergency communications shall ensure interoperability with assistive technologies.	Annex I, Section IV (a)	5.6, 5.7	U	
8	The emergency communications enables two-way interactive communication between the end-user with disabilities and the PSAP.	Annex I, Section IV (a) referring to Article 109 of Directive (EU) 2018/1972, amended by the Commission delegated regulation (EU) 2023/444 Article 4 (a)	5.4.2, 9.2, 9.5	U	
9	The emergency communications is available in a seamless way , without pre-registration, to end-users with disabilities travelling in another Member State.	Annex I, Section IV (a) referring to Article 109 of Directive (EU) 2018/1972, amended by the Commission delegated regulation (EU) 2023/444 Article 4 (b)	5.4.2, 5.4.3, 7.3.5, 8.3.5, 8.2.3, 9	U	
10	The emergency communications is provided to end-users with disabilities free of charge.	Annex I, Section IV (a) referring to Article 109 of Directive (EU) 2018/1972, amended by the Commission delegated regulation (EU) 2023/444 Article 4 (c)		U	
11	The emergency communications is routed without delay to the most appropriate PSAP that is qualified and equipped to appropriately answer and process the emergency communications from end-users with disabilities	Annex I, Section IV (a) referring to Article 109 of Directive (EU) 2018/1972, amended by the Commission delegated regulation (EU) 2023/444 Article 4 (d)	5.4.2, 5.4.3, 5.4.2, 5.4.9, 9	U	
12	Equivalent levels of accuracy and reliability of caller location information are ensured for the emergency communications for end-users with disabilities as for emergency calls by other end-users.	Annex I, Section IV (a) referring to Article 109 of Directive (EU) 2018/1972, amended by the Commission delegated regulation (EU) 2023/444 Article 4 (e)	5.4.2, 5.4.3	U	
13	Member states shall ensure that emergency communications and caller location information are routed without delay to the most appropriate PSAP	Annex I, Section IV (a) referring to Article 109 of Directive (EU) 2018/1972, amended by the Commission delegated regulation (EU) 2023/444 Article 5	5.4.3, 9.4	U	

Harmonised Standard ETSI EN 303 919					
Requirement				Requirement Conditionality	
No	Description	Essential requirements of Directive	Clause(s) of the present document	U/C	Condition
14	Answering emergency communications shall include functions and procedures for persons with disabilities	Annex I; Section V, first paragraph	9.3, 9.4, 10	U	
15	Answering emergency communications shall use the same means as in the received communications.	Annex I; Section V, second paragraph	5.4.2, 9.2	U	

Key to columns:

Requirement:

No A unique identifier for one row of the table which may be used to identify a requirement.

Description A textual reference to the requirement.

Essential requirements of Directive

Identification of article(s) defining the requirement in the Directive.

Clause(s) of the present document

Identification of clause(s) defining the requirement in the present document unless another document is referenced explicitly.

Requirement Conditionality:

U/C Indicates whether the requirement is unconditionally applicable (U) or is conditional upon the manufacturer's claimed functionality of the equipment (C).

Condition Explains the conditions when the requirement is or is not applicable for a requirement which is classified "conditional".

Presumption of conformity stays valid only as long as a reference to the present document is maintained in the list published in the Official Journal of the European Union. Users of the present document should consult frequently the latest list published in the Official Journal of the European Union.

Other Union legislation may be applicable to the product(s) falling within the scope of the present document.

History

Document history		
0.0.5	2024-04-19	Both Peter Sanders and PTS comments acted on.
0.0.6	2024-04-28	For rapporteur review meeting
0.0.7	2024-05-05	Working doc towards mature draft
0.0.8	2024-05-28	Proposed stable draft

Latest changes made on 2024-05-28

Draft