ETSI TR 103 393 V1.1.1 (2016-03)

Emergency Communications (EMTEL);
Advanced Mobile Location for emergency calls

Reference
DTR/EMTEL-00035

Keywords
emergency, location

ETSI

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Sous-Préfecture de Grasse (06) N° 7803/88

Contents

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Foreword

This Technical Report (TR) has been produced by ETSI Special Committee Emergency Communications (EMTEL).

Modal verbs terminology

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Introduction

One of the biggest challenges facing the Emergency Services is determining the location of mobile callers. Cell based location has been available to the Emergency Services for more than 10 years. While cell data can help with verbal establishment of a caller's location, a more precise location will allow an even quicker emergency response.

Ambulance Service measurements show that, on average, 30 seconds per call can be saved if a precise location is automatically provided, and several minutes can be saved where callers are unable to verbally describe their location due to stress, injury, language or simple unfamiliarity with an area. In the UK alone it is estimated that each year there are about 36 000 cases where the Emergency Services have to spend a significant amount of time searching for a caller because a location could not be verbally provided.

Advanced Mobile Location (AML) allows use of native smart phone technology to pass (Assisted) GNSS or WiFi based location data to Emergency Service PSAPs. These technologies can provide a location precision as good as 5 metres outdoors (and averaging to within circular areas of ~25 m radius for indoor locations), a significant improvement on existing cell coverage provided by mobile networks, which average (across the UK) circular areas of about 1,75 km radius.

The present document builds on the Advanced Mobile Location initiative that has been piloted in the UK and shown to improve the precision and accuracy of a caller's location information for emergency calls from mobile handsets.

1 Scope

The scope of the present document is to:

- Consider how AML can be used with different PSAP, and Location Delivery to PSAP, arrangements that exist in Europe.
- Consider how AML can be extended to cover the case of handsets that roam.
- Optimize the content of a location message to be of most use to the emergency services.
- Provide a reference on AML for administrations, mobile networks and handset manufacturers.

The present document focusses on circuit switched emergency voice calls and location transport via SMS, but provides an outlook to other technologies suitable the future.

A review of how AML has been implemented in the UK is contained in Annex C.

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 reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

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

Not applicable.

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 reference 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] IETF RFC 6881: "Best Current Practice for Communications Services in Support of Emergency Calling".

[i.2] ETSI TS 123 167: "Universal Mobile Telecommunications System (UMTS); LTE; IP Multimedia Subsystem (IMS) emergency sessions (3GPP TS 23.167)".

[i.3] ETSI TS 124 229: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3 (3GPP TS 24.229)".

3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

AML	Advanced Mobile Location
BT	British Telecommunications
GMLC	Gateway Mobile Location Centre
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HTTPS	Hypertext Transfer Protocol Secure
IMEI	International Mobile Equipment Identifier
IMS	Internet protocol Multimedia Subsystem
IMSI	International Mobile Station Identity
LSS	Limited Service State
MAC	Media Access Control
MCC	Mobile Country Code
ML	Message Length
MNC	Mobile Network Code
MSISDN	Mobile Station International Subscriber Directory Number
NTP	Network Time Protocol
PSAP	Public Safety Answering Point
SIM	Subscriber Identity Module
SIP	Session Initiation Protocol
SMPP	Short Message Peer to Peer
SMSC	Short Message Service Centre
SSID	Service Set Identification
TS12	Teleservice 12
UTC	Coordinated Universal Time (literally Universel Temps Coordonné)
WGS84	World Geodetic System 1984
XML	Extensible Markup Language

4 General Description

4.1 Overview

AML functionality is triggered by a TS12 emergency call (which is unaffected), and is designed to supplement the basic network location feed wherever possible, i.e. with some acknowledgement of limitations in GNSS or WiFi availability for the handset and the time required to acquire location using GNSS.

Location information established by the handset, using its built-in GNSS and WiFi connectivity, together with user plane assistance data from a handset-selected service where available, is transported (e.g. through use of SMS) to the emergency service PSAPs.

Handset locations obtained through the AML functionality are compared to the location provided by mobile network GMLCs (currently using basic cell coverage information), using an algorithm that analyses factors such as time of positioning and the separation of the two locations. This is to validate any handset location information provided, to ensure it is consistent with the network location.

It is important that AML does not interfere with the voice call so both the handset and mobile network should be configured to be able to simultaneously support a standard 3GPP™ mobile emergency voice call, location determination using GNSS/WiFi capabilities and SMS transmission of the location over the 3GPP mobile network.

5 Location transport

5.1 Use of SMS in a single country where a PSAP obtains mobile location from a centralized location server

When the location is determined by the device it can be sent using a simple SMS message.

SMS offers the widest possible geographic coverage, especially in remote areas, is reliable to a fixed destination and is robust - if a voice emergency call can be made an SMS is also possible. SMS is a store and forward service and therefore instantaneous delivery is not guaranteed. However, in a current AML implementation, SMS from a mobile to a fixed location offers reliable performance.

SMS emergency location messages should not be charged to end users.

NOTE: Zero rate billing is already applied by mobile networks to SMSs to 112 in some countries.

An SMS message is initially routed to the home network's SMSC. SMSCs should be programmed to send an emergency location SMS (identified by an SMS number such as 112, or a dedicated full length MSISDN of the PSAP) via an SMS gateway to a server operated by, or on behalf of, the PSAP that is running an AML location processing application (the AML Server). The AML Server compares the information from the handset with location information from the mobile network for the MSISDN of the emergency caller, before making it available to the PSAP's existing location server. An example of this currently used in the UK is shown in clause C.1.

Resilience of the servers and the interconnecting links should meet national targets.

5.2 Use of SMS when roaming

If an end user from country A roams to another European country (country B), and makes a 112 call, then the 112 voice call is routed to a local PSAP in visited country B, but the SMS is returned to the SMSC in country A for routing.

If 112 was used as destination for the emergency location SMS, the SMSC in country A would simply direct it to the AML Server in country A where it cannot currently be used (no path to AML Server in visited country B).

The visited country in which the mobile handset is operating can be determined by the handset using the Mobile Country Code (MCC) component of the current serving cell ID. The mobile handset also has information about the Mobile Network being used (e.g. for charging information) and the cell information.

One option is for the mobile handset to then look-up an SMS number (in a regularly updated handset database) to which to route the emergency location SMS specific to the visited country - as long as this is a full length MSISDN the home country SMSC should then be able to route it to the visited country's location processing server (i.e. the AML Server in country B). Charging arrangements between mobile networks should be agreed to zero rate such SMS messages for end users.

Which server can be selected to be the visited country's location processing server will be dependent on the current infrastructure within that country - in some cases it could be a server within the PSAP that already receives the GMLC network location information from mobile networks, which will need to be upgraded to receive the content of the AML SMS.

A second option is that if it is not possible to use a full length MSISDN for each country, then where the AML Server in country A does have links to other countries across Europe, the Mobile Country Code and Mobile Network Code should be used to forward the AML information from the AML Server in the home country (country A) to the PSAP's AML Server/location processing server in the visited country.

5.3 Using a data push across the mobile network

Data push across a mobile network is an alternative option to using SMS transport that may also be adopted if the data connectivity is considered to be sufficiently widespread and reliable to use instead. It relies on end users having a data subscription and for data to be enabled in the handset. There is also a limitation in that roaming users are likely to disable use of data to avoid roaming charges. This method currently has the disadvantage that data cannot be zero rated.

The visited country in which the mobile handset is currently operating can be determined using the Mobile Country Code (MCC) component of the current serving cell ID. This is sufficient for the handset [in a regularly updated handset database] to identify the URL for a national location processing server to which data may be pushed using an HTTPS message, using the same data elements as in the SMS message, probably using XML within the HTTPS message.

In some countries a national server approach is sufficient, as PSAPs operate at the national level (as in Stage 1 PSAP in the UK), or there are national location processing servers which regional PSAPs can all access. In other countries with regional PSAPs it poses additional challenges.

There are differing approaches to solving this challenge depending on whether the data is pushed to the PSAP or pulled by the PSAP, and what are the existing emergency location server arrangements (regional or national servers). Options are that:

- All PSAPs, regional or otherwise, *pull* from a national emergency location server.
- Establish a hierarchy of proxy-servers that reside inside each PSAP region. If the location data should be maintained within the regional jurisdiction of the PSAP, then the national server should be able to identify the correct regional proxy server to push the data to, and then subsequently push it. Requests can then made by the regional PSAP (probably using the originating device's telephone number/MSISDN as a key) to pull location from the regional proxy-server. (If the regional proxy-server has not had location pushed to it from the national server it may subsequently request information from a national server.)

6 Handset Considerations

6.1 Overview

This clause focusses on using SMS as transport for the emergency location information due to current limitations of other methods discussed in clause 5.

6.2 Process Automation

The software should be integrated with all existing emergency call mechanisms available on the handset including manual selection of 112 digits (or any national emergency numbers such as 999 in the UK), or use of an Emergency Call button.

The use of AML software should be dependent on the Mobile Country Code and Mobile Network Code identified by the handset, to help allow a managed rollout of AML.

In an emergency, callers are often stressed or panicking so it is important that the AML functionality and transmission of the SMS message is automatically triggered without any manual intervention by the user.

The use of AML software should be invisible to the user so as not to confuse them when they are trying to get help.

No record of the SMS message should be available to the user either during or after the emergency call.

The SMS message should be sent to the destination number [which may be a Country specific number] irrespective of the method used to initiate the emergency call.

If a country supports SMS emergency contact to PSAPs (for example for deaf users), then an emergency SMS should also be supported with AML functionality and generate an emergency location SMS.

6.3 Battery Life

The trigger for an emergency response will still be the voice call received by the PSAP, so it is important to check there is sufficient battery life for a short (5 minute) voice call before switching on any location devices likely to consume appreciable battery life. Equally should any location devices already be switched on when an emergency call is made, and likely to jeopardize a short voice call, they should be switched off.

Handset developers need to use two pieces of information to protect the voice emergency call:

- The minimum battery capacity required to support a short (5 minute) voice call.
- The battery consumption used by location devices as part of the AML process.

These values will vary between handset models and, over time, will change as technology evolves and improves. There are therefore no recommended values in the present document: handset, battery and chipset manufacturers will be best placed to know accurate values.

If current battery charge is a barrier to using some location methods then a cell based method, which does not involve high drain devices, should be used. PSAPs will normally already receive a cell based location directly from the Mobile Networks, however cell data from handsets can sometimes return a smaller area so should still be provided as explained in clause 6.4.

6.4 Positioning Methods

GNSS offers the most accurate location information in most cases but is slower than other methods. At the other end of the spectrum cell based location is quick but typically returns a large location area.

The general rule is that PSAPs need the best data as long as it does not take too long to determine. To do this it is recommended to use a configurable, 'send what is available now' timeout (T_1). T_1 should be changeable with an 'over air' update. At this time it is recommended to use a T_1 timeout period of 20 seconds.

As soon as the emergency call is initiated the handset, subject to battery check, should switch the following on (if not already switched on):

- GNSS.
- WiFi.

When an emergency call is made, the handset should immediately attempt to determine location via all methods in parallel so as not to delay transmission of location. If it is possible to distinguish them, cached (stale) or existing locations should not be used.

NOTE: WiFi location is obtained by the handset interrogating a server (e.g. based on SSIDs or MAC address).

If a new GNSS location becomes available before T_1 seconds then that data should be sent to the PSAP without waiting for the timeout.

If after T_1 seconds no GNSS data is available but a WiFi based location is available then that data should be sent to the PSAP.

If no WiFi based location is available then cell ID based location data should be sent to the PSAP.

If GNSS or WiFi were switched on by the AML functionality when the emergency call was initiated then they should be switched off as soon as they are no longer needed.

If it has not been possible to get a location from any method then an SMS should be sent to the PSAP indicating that all positioning methods have failed.

The following timeline shows the process.

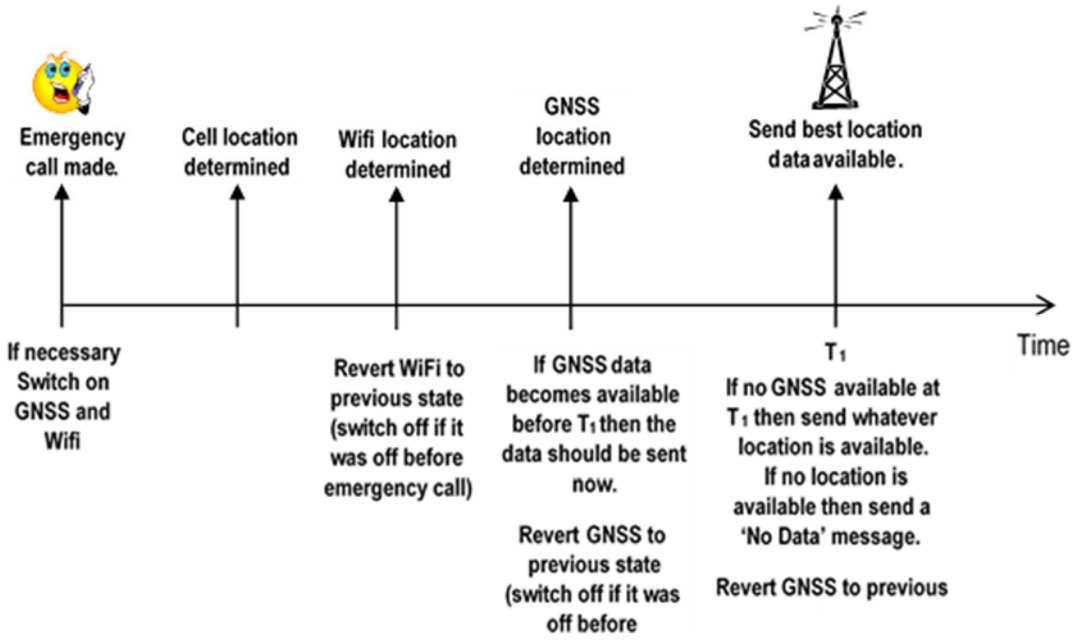


Figure 1: Timeline

After the emergency call

On completion of the emergency call (voice and AML location search) the state of all devices should be returned to their original state as prior to the emergency call being initiated.

It is noted that some 'WiFi to location' services require that multiple WiFi MAC addresses be supplied. This is helpful as it can help to eliminate situations where an incorrect location is given because a WiFi router has been moved and its location has not been updated on the service's location server. Similarly multiple cell identifiers can be used by the handset to interrogate a server to generate a smaller location circle by identifying the overlap area for various coloured cells (see red circle formed from overlap below).

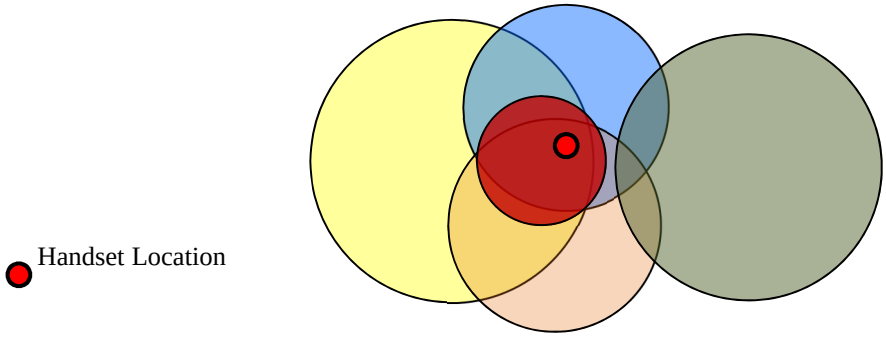


Figure 2: Handset location with multiple location sources

6.5 Limited Service State

If an emergency call is made when a handset cannot successfully register to an available network (Limited Service State (LSS)) then the voice call is routed to a PSAP.

In such cases the AML location process should still function and an SMS message be created. If it is not possible to send the SMS due to the LSS state (SMS does not work in LSS) then the message should be stored on the handset and transmission retried every 30 seconds. If after 30 minutes the handset has not been able to transmit the SMS message (which would only be possible after the LSS emergency call ended and caller had re-registered on home network) then no further attempt should be made and the SMS should be discarded.

6.6 Repeat 112 Voice Calls

AML location processing applications and PSAP systems should be able to handle multiple emergency SMS location messages from the same handset.

If the caller makes a repeat 112 voice call within the T_1 period (perhaps after losing voice connection) and the handset is still trying to determine location then the handset should continue based on the original call trigger. If the repeat call is made after location has been determined and the SMS sent or queued, then the handset should restart the location determination process.

7 Mobile Network considerations

Mobile networks should ensure that their network configuration allows SMS and data transmission while a TS12 emergency call is in progress.

8 Specification for location message content

AML is designed to communicate a single location in the form of a circle. Some additional information is also sent with the location.

The location and size of the circle determined by the handset is communicated using a WGS84 latitude/longitude measured in decimal degrees and a radius measurement in metres.

The handset should always communicate location using WGS84 decimal degrees. To save space in the SMS message an accuracy of no more than 5 decimal places is required which will equate to 1.1 metre accuracy on the ground.

A Time of Positioning (TOP) should also be sent with the location data. The TOP should use UTC Time. The accuracy of this date and time is important as it will be used to filter out any messages that appear to be too old or have a time in the future. In the first instance the handset should attempt to use the time established by an NTP server, this should be possible if a network connection is available. If NTP is not available then GNSS can be used to give time. Only if these two methods fail then, as a last resort, the handset time and date can be used.

Data is sent from the handset using an SMS message, this gives a maximum 160 characters of data in a single SMS.

The AML interface protocol consists of a series of message attributes separated by a semi colon (;) character without spaces.

Each attribute consists of a name/value pair where names and values are separated by an equals (=) character, again without any spaces. A header record should always appear at the start of the SMS, this is important as it will be used to route the SMS to the AML system. A message length attribute should always be the last attribute in the SMS message.

Figure 3 gives an example of an SMS message.

More important attributes (latitude, longitude, radius) should appear at the beginning of the SMS with less important attributes towards the end. Table A.1 gives a detailed description of each attribute.

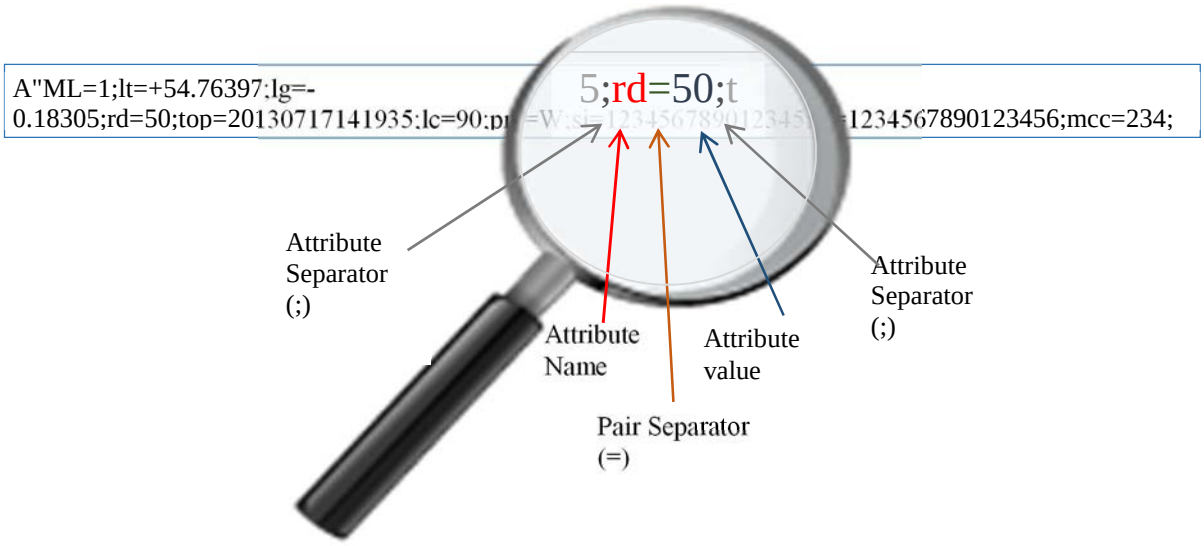


Figure 3: Example SMS message syntax

Unless explicitly stated in the description data values should not include white space or zero padded values. Data should be passed using the GSM standard character set only.

To assist with compatibility, servers should be able to process the attributes in any order in which they are received, and recognize and process at least the previous AML header.

9 Conclusions and Recommendations and Future Outlook

AML delivers the following benefits:

- Increased location precision: a shorter time to locate person in need.
- Faster response to patients with life-threatening conditions.
- Emergency Services: less questioning, less searching.

AML uses existing, widely available 3GPP network standards and needs only limited changes to handset operating systems and mobile network configuration.

AML may only need minor changes to mobile infrastructure: no changes to existing technical standards, quick to implement.

AML is not an App - it is sustainable as part of handset operating system maintenance releases, does not depend on the end user to download or update anything, and supplements TS12 voice call wherever possible.

Appropriate options should be selected in each country for location transport to PSAPs (dependant on existing infrastructure) using SMS, or data transport methods.

AML can be extended to support roaming scenarios with appropriate use of country specific SMS destinations for emergency location messages, or by PSAPs establishing links to exchange location information with each other for roamers.

If a country supports SMS emergency contact, then an emergency SMS message should also generate an emergency location SMS.

In the long term, as PSAPs become IP based and networks become IMS using SIP, then a SIP header could also start to be used to carry handset location information. This approach is covered in IETF RFC 6881 [i.1] and the references within the present document document, as well as in 3GPP publications ETSI TS 123 167 [i.2] and ETSI TS 124 229 [i.3].

It is recommended that further work is done to:

- determine a migration path to SIP for transport of handset determined location;
- support the co-existence of various transport methods - SMS, data and SIP header;
- more closely specify AML use in roaming scenarios;
- provide further guidelines for AML use in countries where there is not a centralized location service for PSAPs;
- work towards a Technical Specification to specify the data format and recommended method for managing roaming.

Annex A:
Location message - SMS format

Table A.1: SMS Format

Attribute	Attribute Name	Attribute Size (chars)			Attribute Description
		Name	Value (Max)	Total incl '='	
Header	A"ML	4	3	8	The header should appear at the beginning of the SMS message as it is used to differentiate AML messages from other 112 related SMS messages The header should be in upper case and have a double quotes character (") in the character 2 position. The attribute value will indicate the interface version number. **This is version 2 of the interface and servers should be able to recognize at least the current and previous version numbers**. No left padding with zeros is required. An example of the Header would be: **A"ML=2;**lt=…
Latitude	lt	2	9	12	The WGS84 latitude and longitude of the centre of the location area given in decimal degrees up to 5 decimal places giving resolution to 1.1 metres. The format of the attribute value will be <sign><decimal degrees>where: **<sign>** This can either be a + or -. For latitude values in the UK the sign will always be positive. For longitude a '-' indicates a location to the west of the meridian and a '+' indicates a position to the east of the meridian. If no sign is present then a '+' will be assumed as default. **<degrees>** This is a numeric value representing the latitude or longitude in terms of decimal degrees relative to the equator or meridian. This field consists of numeric and a single decimal point character (.) Latitude values fall in the range of ±90 degrees (2 digits before the decimal point). Character, whereas Longitudes fall in the range ±180 degrees (3 digits), therefore Latitude is one character less than Longitude. NOTE: Some standard location API's will return co-ordinates formatted to the European Standard for floating point numbers (a comma is used instead of a decimal point) if the handset language is not set to UK English. AML has been adapted to cater for this format but as a principle Software Developers should check the format and convert the co-ordinates to the format specified in the present document if required. Examples of the latitude and longitude are given below: AML=2**;lt=+55.74317;lg=-4.26881;**rd=… If it is not possible to determine a location the SMS should still be sent without the positioning method attribute set to N (pm=N) and latitude and longitude attributes should not be included.
Longitude	lg	2	10	13	

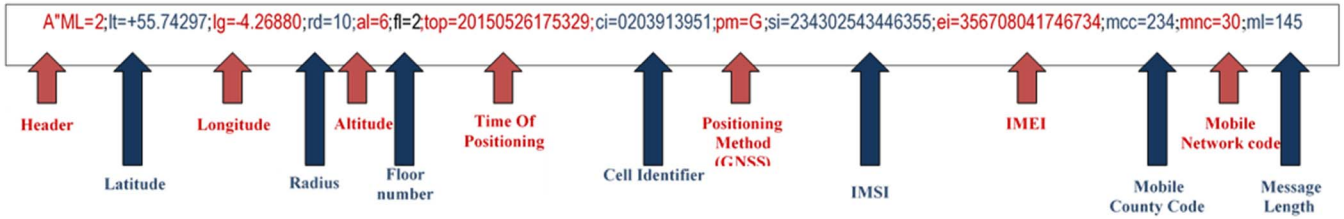
Attribute	Attribute Name	Attribute Size (chars)			Attribute Description
		Name	Value (Max)	Total incl '='	
Radius	rd	2	5	8	The radius of the location area in metres. This field is all numeric. An example of a radius attribute is given below: …881**;rd=50;**al=… If it is not possible to determine a location the SMS should still be sent with the positioning method set to N (pm=N) and the radius attribute should not be included. In the unlikely event that the radius value length exceeds 5 characters (>99999 metres) then positioning method set to N (pm=N) but the latitude, longitude and radius attribute should not be included.
Altitude	al	2	4	7	The altitude in metres of the handset relative to mean sea level. An example of an altitude attribute is shown below: …=50**;al=22;**fl=… If altitude cannot be determined or if the position method attribute is set to N (pm=N) then the altitude attribute should not be present in the AML message.
Floor Number	fl	2	3	6	The floor number within the building. Floor numbering differs between countries so for the avoidance of doubt floor number should be that which appears on the lift button in the building: …220**;fl=3;**top=… If floor number cannot be determined or if the position method attribute is set to N (pm=N) then the floor number attribute should not be included.
Time of Positioning (TOP)	top	3	14	18	The date and time that the handset determined its location. The Time of Positioning is specified in GMT (UTC). This should be the time that location was determined (i.e. at this time the phone was at this location), no other time/date should be used. The field format is YYYYMMDDhhmmss. Where: • **YYYY** is the year. • **MM** is the month in the range 01 to 12 • **DD** is the month in the range 01 to 31 • **hh** is the hour in the range 00 to 23 • **mm** is the minute in the range 00 to 59 • **ss** is the second in the range 00 to 59 An example of a Time of Position attribute is shown below: …al=220**;top=20130717175329;**ci=… When the handset is unable to determine its location the TOP should be the date and time that the location process was deemed to have failed.
Cell ID	ci	2	10	13	Cell identifier, this should be the cell ID that the phone used to make the emergency call. A cell ID should be represented in decimal and would look like: …5329**;ci=0203913951;**pm=… When it is not possible to determine the cell ID then the attribute should be excluded in its entirety from the message.
Positioning Method	pm	2	1	4	The method used to determine the location area. A single upper case character that can be one of: **G** - GNSS (GPS, Galileo, etc.) **W** - WiFi signal **C** - Cell **N** - It has not been possible to determine the location. An example of a Positioning Method attribute is shown below: …..3951**;pm=G;**si=…..

Attribute	Attribute Name	Attribute Size (chars)			Attribute Description
		Name	Value (Max)	Total incl '='	
International mobile subscriber identity (IMSI)	si	2	15	18	The SIM card identifier of the handset that has made the emergency call. =G**;si=234302543446355;**ei=
International mobile equipment identity (IMEI)	ei	2	16	19	The identifier of the handset that made the emergency call. …55**;ei=356708041746734;**ml…
MCC	mcc	3	3	7	Mobile Country Code, used to determine the network country that the emergency call was made on. If it is not possible to determine the country code this attribute should not appear in the AML message …..34**;mcc=234;**mnc…..
MNC	mnc	3	2	6	Mobile Network Code, of the mobile network used to make the emergency call. …234**;mnc=30;**ml=…..
Message Length	ml	2	3	6	The length of the entire SMS message including the header and the length attribute. The message length value should be all numeric. An example of the message length message would be: ……;ml=124

NOTE: A future attribute for source of the AML message may be included. This would be useful because it would give an indication of how the information has been determined.

Annex B:
Example AML Messages

GNSS based location SMS message.



Unable to Determine Location AML Message.

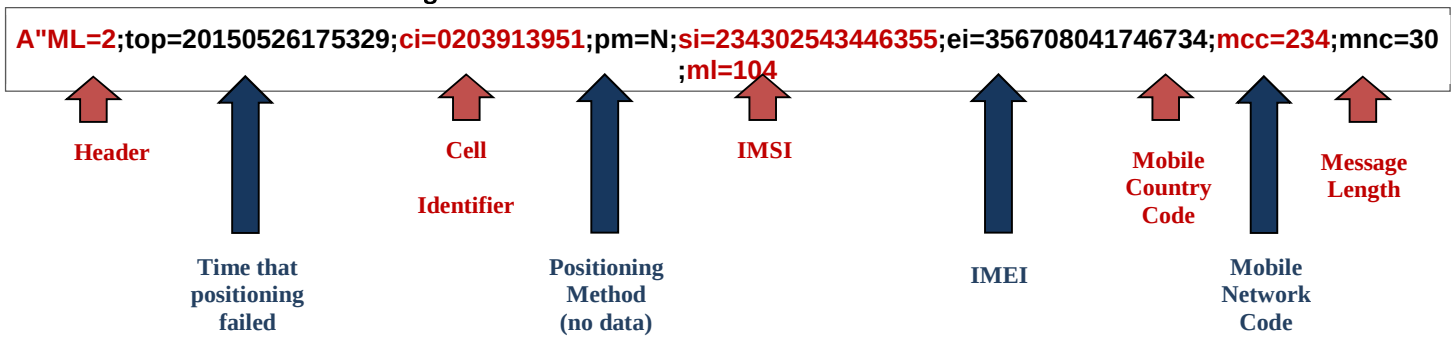


Figure B.1: Example AML messages

Annex C:
Overview of AML Implementation in the UK

C.1 General

AML has been achieved in the UK by handset providers modifying the operating system for handsets produced for UK market but has not yet tackled roaming scenarios (non-UK handset in UK, or UK handset in rest of Europe).

Location information established by the handset, using its built-in GNSS and WiFi connectivity together with user plane assistance data from a service selected by the handset supplier, is transported using an emergency location SMS to 999/112 and delivered to the national Stage 1 PSAP in the UK operated by BT. emergency services' PSAPs.

Handset locations obtained through the AML functionality are compared to the location provided by mobile networks (using cell coverage information), using an algorithm that analyses factors such as time of positioning and the separation of the two locations. This is to validate any handset location information provided, to ensure it is consistent with the network location. Validated AML locations are then made available for the Stage 2 PSAPs to pull from Stage 1 PSAP using the existing interface used for all emergency locations in the UK.

It is important that AML does not interfere with the voice call, so both the handset and mobile network have been configured to be able to simultaneously support a standard TS12 mobile emergency voice call, location determination using GNSS/WiFi capabilities and SMS transmission of the location over the mobile network.

C.2 Use of SMS in the UK for handsets produced for the UK - current AML implementation

When the location information is determined by the device it can be sent to BT using a simple SMS message to 999.

SMS offers the widest possible geographic coverage, especially in remote areas, is reliable to a fixed destination, robust, and additionally SMS messages sent to 999 or 112 are not charged due to zero rate billing by mobile networks.

SMSCs in the UK are already programmed to send an emergency SMS for 999 destination via an SMS Gateway to the BT PSAP in order to support a low volume service for the hearing impaired. The SMS Gateway in the UK is provided by an SMS Aggregator which takes SMPP output from the SMSCs of all mobile networks and sends an HTTPS message containing the SMS content to the AML Server shown in Figure C.1, and then on to the PSAP's existing location server. The resilience of these servers and the interconnecting links are being provided at an appropriate level as volumes using the service increase, with servers being duplicated.

If a UK device with AML is being used in another European country, although the voice 112 voice call is routed to a local PSAP in visited country, the SMS is returned to the UK SMSC for routing, and the location SMS (using 999) arrives at the BT Location Server where it cannot currently be used (no path to PSAP in visited country).

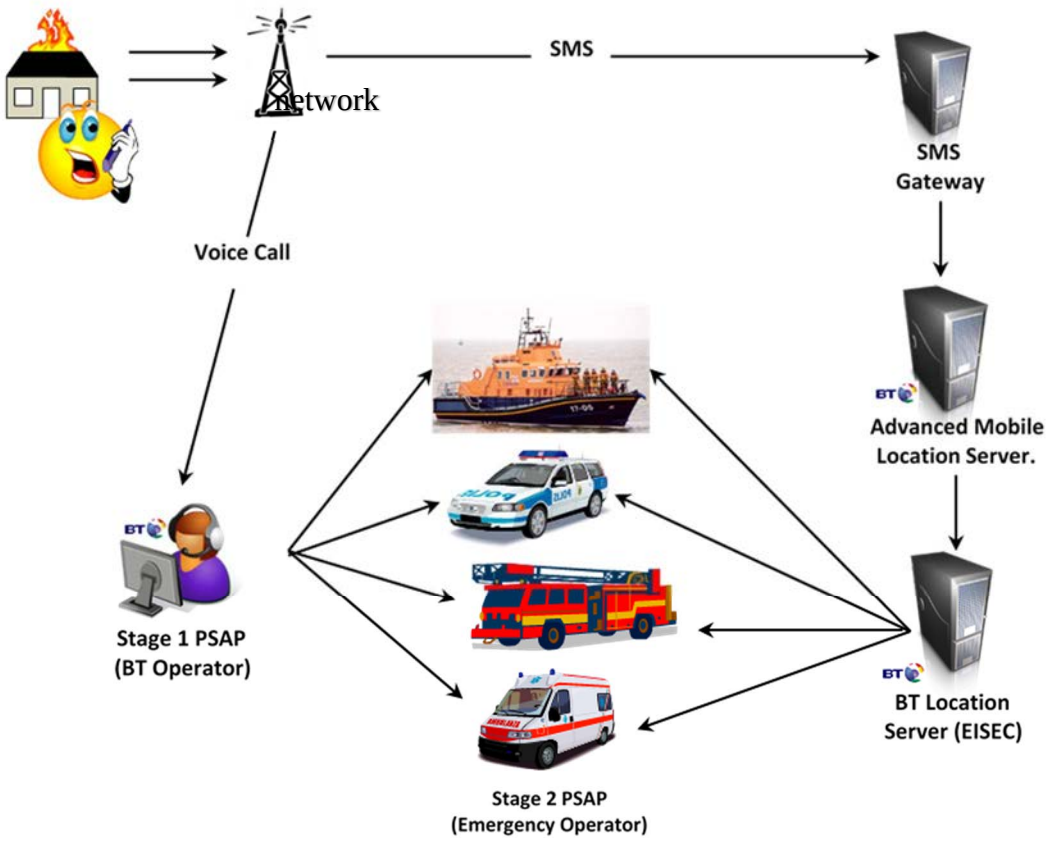


Figure C.1: UK Overview

History

Document history		
V1.1.1	March 2016	Publication