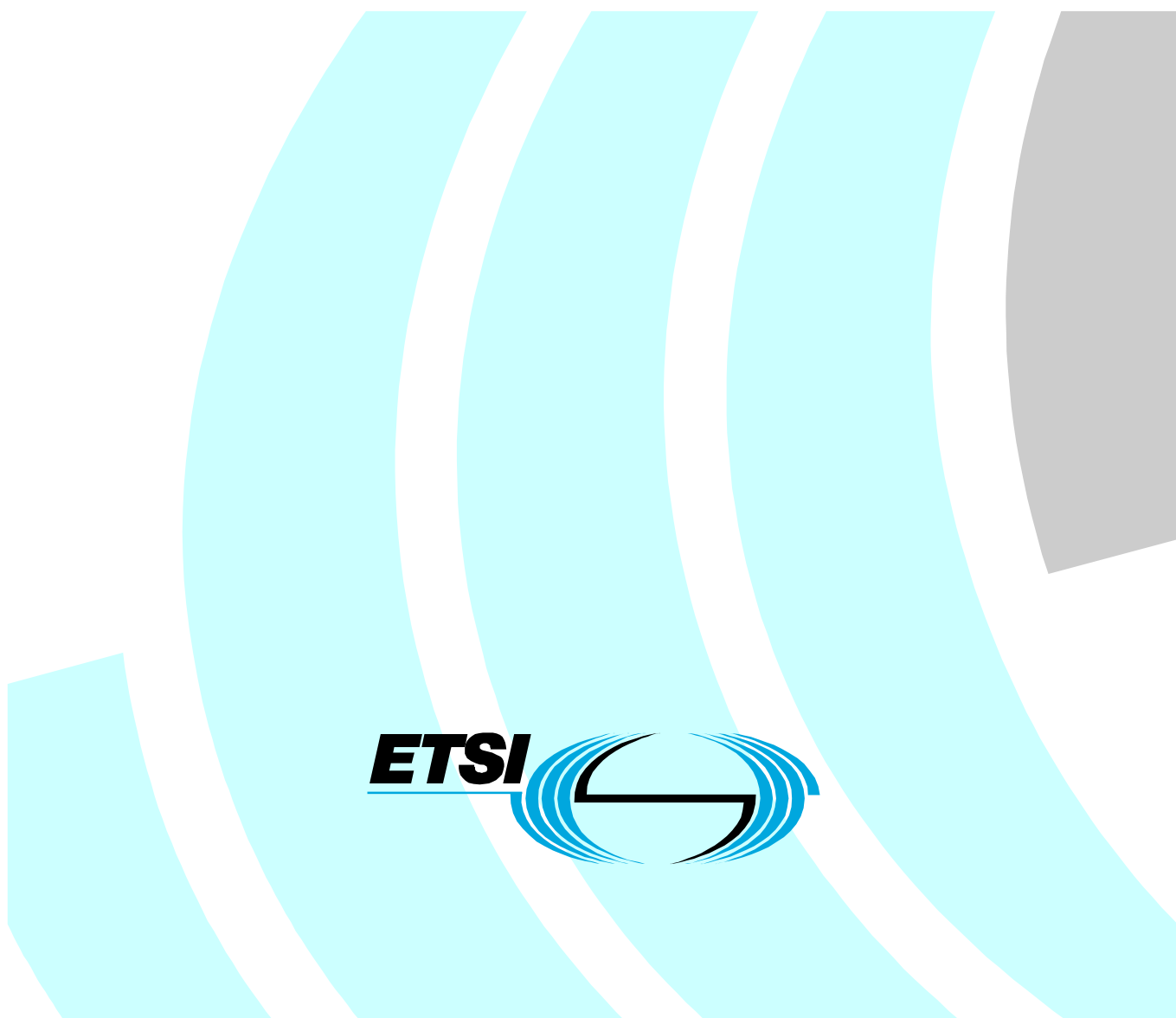# Final draft ETSI EN 300 392-12-21 V1.2.0 (2004-06)

European Standard (Telecommunications series)

Terrestrial Trunked Radio (TETRA);
Voice plus Data (V+D);
Part 12: Supplementary services stage 3;
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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Terrestrial Trunked Radio (TETRA), and is now submitted for the ETSI standards One-step Approval Procedure.

The present document is part 12, sub-part 21 of a multi-part deliverable covering Voice plus Data (V+D), as identified below:

EN 300 392-1:   "General network design";

EN 300 392-2:   "Air Interface (AI)";

EN 300 392-3:   "Interworking at the Inter-System Interface (ISI)";

ETS 300 392-4:   "Gateways basic operation";

EN 300 392-5:   "Peripheral Equipment Interface (PEI)";

EN 300 392-7:   "Security";

EN 300 392-9:   "General requirements for supplementary services";

EN 300 392-10:   "Supplementary services stage 1";

EN 300 392-11:   "Supplementary services stage 2";

EN 300 392-12: "Supplementary services stage 3";

       ETS 300 392-12-1:   "Call Identification (CI)";

       ETS 300 392-12-2:   "Call Report (CR)";

       ETS 300 392-12-3:   "Talking Party Identification (TPI)";

       ETS 300 392-12-4:   "Call Forwarding (CF)";

       ETS 300 392-12-5:   "List Search Call (LSC)";

       ETS 300 392-12-6:   "Call Authorized by Dispatcher (CAD)";

       ETS 300 392-12-7:   "Short Number Addressing (SNA)";

       EN 300 392-12-8:   "Area Selection (AS)";

       ETS 300 392-12-9:   "Access Priority (AP)";

       EN 300 392-12-10:   "Priority Call (PC)";

       ETS 300 392-12-11:   "Call Waiting (CW)";

       EN 300 392-12-12:   "Call Hold (CH)";

ETS 300 392-12-13: "Call Completion to Busy Subscriber (CCBS)";

EN 300 392-12-14: "Late Entry (LE)";

EN 300 392-12-16: "Pre-emptive Priority Call (PPC)";

EN 300 392-12-17: "Include Call (IC)";

EN 300 392-12-18: "Barring of Outgoing Calls (BOC)";

EN 300 392-12-19: "Barring of Incoming Calls (BIC)";

ETS 300 392-12-20: "Discreet Listening (DL)";

EN 300 392-12-21: **"Ambience Listening (AL)";**

EN 300 392-12-22: "Dynamic Group Number Assignment (DGNA)";

ETS 300 392-12-23: "Call Completion on No Reply (CCNR)";

ETS 300 392-12-24: "Call Retention (CRT)";

TS 100 392-15: "TETRA frequency bands, duplex spacing and channel numbering";

TS 100 392-16: "Network Performance Metrics";

TS 100 392-17: "TETRA V+D and DMO Release 1.1 specifications".

NOTE: Part 13 (SDL) and part 14 (PICS) of this multipart deliverable are of status "historical" and will not be updated according this version of the standard.

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

1   Scope

The present document defines the stage 3 specification of the Supplementary Service Ambience Listening (SS-AL) for the Terrestrial Trunked Radio (TETRA). Stage 3 defines the signalling system protocols and switching functions needed to implement the service described in stage 1 and stage 2.

Charging principles and Man-Machine Interface (MMI) are outside the scope of the present document.

The SS-AL enables the served user to place a TETRA Mobile Station (MS) into a special type of voice call whereby the called MS transmits without any action from, or indication to, the affected user. The SS-AL call can include a second listening party. The affected user can ask other user to set an SS-AL call on him.

2   References

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

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies.

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

[1]   ETSI EN 300 392-11-21: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
            Part 11: Supplementary services stage 2; Sub-part 21: Ambience Listening (AL)".

[2]   ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
            Part 2: Air Interface (AI)".

[3]   ETSI EN 300 392-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
            Part 1: General network design".

[4]   ETSI EN 300 392-9: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
            Part 9: General requirements for supplementary services".

[5]   ETSI EN 300 392-3-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
            Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 2: Additional Network Feature
            Individual Call (ANF-ISIIC)".

[6]   ETSI EN 300 392-3-3: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
            Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 3: Additional Network Feature
            Group Call (ANF-ISIGC)".

[7]   ETSI EN 300 392-10-21: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);
            Part 10: Supplementary services stage 1; Sub-part 21: Ambience Listening (AL)".

3   Definitions and abbreviations

3.1   Definitions

For the purposes of the present document, the following terms and definitions apply:

Ambience Listening (AL call): call in which ambience listening functionality is requested

> NOTE: During an AL call, the affected user's MS transmits without any action from, or indication to, the affected user.

affected user: user to whom the served user is listening

served user: user who invokes this supplementary service and listens the affected user

second listening party: TETRA individual or group which additionally listens into the AL call

3.2   Abbreviations

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

AL	Ambience Listening
CC	Call Control
CFB	Call Forwarding on Busy
CMCE	Circuit Mode Control Entity
FE	Functional Entity
GSSI	Group Short Subscriber Identity
ISI	Inter-System Interface
ISSI	Individual Short Subscriber Identity
ITSI	Individual TETRA Subscriber Identity
LS	Line Station
MMI	Man-Machine Interface
MS	Mobile Station
PDU	Protocol Data Unit
SAP	Service Access Point
SDL	(Functional) Specification and Description Language
SNA	Short Number Address
SS	Supplementary Service

> NOTE: The abbreviation SS is only used when referring to a specific supplementary service.

SSI	Short Subscriber Identity
SwMI	Switching and Management Infrastructure
TNSS-SAP	TETRA Network layer Supplementary Service - Service Access Point
TSI	TETRA Subscriber Identity

4   SS-AL service description

4.1   General

The SS-AL enables the served user to place a TETRA Mobile Station (MS) into a special type of voice call teleservice whereby the called MS transmits without any action from, or indication to, the affected user. The affected user shall be an individual user. The SS-AL call may include a second listening party. The second listening party may be either individual user or a group.

Clauses 4.2 and 4.3 describe SS-AL specific services offered by the Circuit Mode Control Entity (CMCE) at the Supplementary Services service access point (TNSS-SAP) of the TETRA voice plus data layer 3 service boundary. The SS-AL service access point is used in conformance testing as a normative boundary in TETRA Mobile Stations (MSs).

NOTE 1: As the present document only deals with the SS-AL all the service primitives has been shown without a TNSS-AL-prefix e.g. the TNSS-AL-INVOKE request is shorten into an INVOKE request.

The service offered to users of SS-AL are defined as service primitives containing service parameters. The service primitives are defined in clauses 4.2 and 4.3 and the service parameters are defined in clause 4.4.

In addition to the defined service primitives a SwMI may respond by a service not supported or a process not supported primitives as appropriate, refer EN 300 392-9 [4].

NOTE 2: As the present document does not describe a man-machine interface nor user applications the service primitives are used to define information exchange to and from the standardized part of the MS/LS. Those primitives may not be accessible directly nor indirectly.

Examples of information flows are presented in EN 300 392-11-21 [1].

4.2 SS-AL services offered over the TNSS-SAP

4.2.1 SS-AL service primitives to served user

The SS-AL service primitives at the served user MS/LS (FE1) TNSS-SAP are:

a) INTERROGATE request;

b) INTERROGATE indication;

c) INVOKE1 request;

d) INVOKE1 indication;

e) INVOKE2 request;

f) INVOKE2 indication;

g) INVOKE3 request;

h) INVOKE3 indication; and

i) STOP LISTENING request.

4.2.2 SS-AL service primitives to affected user

The SS-AL service primitives at the affected user MS/LS (FE5) TNSS-SAP are:

a) INVOKE indication; and

b) INVOKE ACK request.

4.2.3 SS-AL service primitive to second listening party

The SS-AL service primitive at the second listening party MS/LS (FE6) TNSS-SAP is:

a) INFORMATION indication.

NOTE: In the present document primitives request and indication are used instead of request and confirmation as there may not be a one to one correspondence between those primitives, e.g. there can be multiple responses as indications due to a single request.

The information contained in the following argument description tables correspond to the following key:

- C/O/M: conditional/optional/mandatory;

- Remark: comment.

4.3   Service primitive descriptions

4.3.1   INFORMATION indication

The INFORMATION indication shall be presented to the application from FE6 to indicate to the second listening party that the incoming call is an ambience listening call. The primitive shall contain the SS-AL information parameters listed in table 1.

Table 1: INFORMATION indication primitive contents

Parameter	Indication	Remark
Affected user TETRA identity	M	
Listening party identity	O	See note
NOTE: This parameter is not available, when the Notification indicator is used alone.		

4.3.2   INTERROGATE request

The INTERROGATE request primitive shall be offered from application to FE1 over TNSS-SAP when a served user interrogates whether an affected user is ambience listened to. The primitive shall contain the SS-AL information parameters listed in table 2.

Interrogated TETRA identity parameter is a repeatable parameter that shall define one individual number, a list of individual numbers or a range of individual numbers. There shall be at least one defined TETRA identity in a INTERROGATE request. SNA, if used, should refer to a SNA defined for served user.

The implementation of INTERROGATE request is optional.

Table 2: INTERROGATE request primitive contents

Parameter	Request	Remark
Interrogated TETRA identity	M	Repeatable

4.3.3   INTERROGATE indication

The INTERROGATE indication primitive shall be offered from FE1 to application over TNSS-SAP as a response to a previously sent interrogation request to the served user. The primitive shall contain the SS-AL information parameters listed in table 3.

Interrogated individual TETRA identity parameter is a repeatable parameter that shall define one individual number, a list of individual numbers or a range of individual numbers. There shall be at least one defined group TETRA identity in a INTERROGATE request. SNA, if used, should refer to a SNA defined for served user.

Implementation of INTERROGATE indication is mandatory, if INTERROGATE request is supported.

Table 3: INTERROGATE indication primitive contents

Parameter	Indication	Remark
Interrogated TETRA identity	M	Repeatable
Interrogation result	M	Repeatable

4.3.4   INVOKE1 request

The INVOKE1 request primitive shall be offered from application to FE1 over TNSS-SAP when a served user invokes an ambience listening call request. The primitive shall contain the SS-AL information parameters listed in table 4.

NOTE: The corresponding basic call request contains other relevant parameters such as call priority and encryption in the basic service information.

Support of INVOKE1 request is mandatory for the served user MS.

Table 4: INVOKE1 request primitive contents

Parameter	Request	Remark
Affected user identity	M	

4.3.5   INVOKE2 request

The INVOKE2 request primitive shall be offered from application to FE1 over TNSS-SAP when a served user requests to include a second listening party into an ongoing ambience listening call. The primitive shall contain the SS-AL information parameters listed in table 5.

NOTE: The call and affected user is implied by the service access point number in the MS and the call identifier in the air interface signalling.

The support of INVOKE2 request is optional.

Table 5: INVOKE2 request primitive contents

Parameter	Request	Remark
Second listening party identity	M	

4.3.6   INVOKE indication

The INVOKE indication primitive shall be offered from affected user FE5 to application over TNSS-SAP when an affected user is the recipient of an ambience listening call. The primitive shall contain no SS-AL information parameters.

Support of INVOKE indication is mandatory for the affected user MS.

NOTE: Although the INVOKE indication is provided in the model to the application, the application does not provide any indication to the user through a man machine interface.

4.3.7   INVOKE ACK request

The INVOKE ACK request primitive shall be offered from the application to affected user FE5 over TNSS-SAP when an affected user responds to an ambience listening call or speech item invocation. The primitive shall contain the SS-AL information parameters listed in table 6.

Support of INVOKE ACK is mandatory for the affected user MS.

NOTE: Although the INVOKE ACK request is provided in the model by the application, the application generates the response without any user action via a man machine interface.

Table 6: INVOKE ACK request primitive contents

Parameter	Response	Remark
Invocation acknowledgement	M	

4.3.8   INVOKE1 indication

The INVOKE1 indication primitive shall be offered from served user FE1 to the application over TNSS-SAP to inform the served user of a successful, or otherwise, invocation of an ambience listening call.

 The primitive shall contain the SS-AL information parameters listed in table 7.

Support of INVOKE1 indication is mandatory for served user MS.

Table 7: INVOKE1 indication primitive contents

Parameter	Indication	Remark
Affected user identity	O	See note
Invocation result	M	
NOTE: The affected user may be implicit by the call control service access point number.		

4.3.9   INVOKE2 indication

The INVOKE2 indication primitive shall be offered from FE1 to the application over TNSS-SAP to inform the served user of a successful, or otherwise, inclusion of a second listening party into an ongoing ambience listening call. The primitive shall contain the SS-AL information parameters listed in table 8.

NOTE: The call and affected user is implied by the service access point number and the call identifier in the air interface signalling

The support of INVOKE2 indication is mandatory, if INVOKE2 request is supported.

Table 8: INVOKE2 indication primitive contents

Parameter	Confirm	Remark
Second listening party	M	
Invocation2 result	M	

4.3.10   INVOKE3 request

The INVOKE3 request primitive shall be offered from application to FE1 over TNSS-SAP when a served user invokes an ambience listening during an ongoing call. The primitive shall contain the SS-AL information parameters listed in table 9.

NOTE: The INVOKE3 request contains equivalents of those parameters, which are in the basic call set-up message, refer to INVOKE1 request. If not provided by the application, then call control may use default values.

The support of INVOKE3 request is optional.

Table 9: INVOKE3 request primitive contents

Parameter	Request	Remark
Affected user TETRA identity	M	
TX demand priority	O	
Encryption control	O	

4.3.11   INVOKE3 indication

The INVOKE3 indication primitive shall be offered from served user FE1 to the application over TNSS-SAP to inform the served user of a successful, or otherwise, invocation of an ambience listening speech item.

The INVOKE3 primitive shall contain the SS-AL information parameters as listed in table 10.

Support of INVOKE3 indication is mandatory, if INVOKE3 request is supported.

Table 10: INVOKE3 indication primitive contents

Parameter	Confirm	Remark
Invocation result	M	

4.3.12   STOP LISTENING request

The STOP LISTENING request primitive shall be offered from application to FE1 over TNSS-SAP when a served user stops an ambience listening during an ongoing call. The primitive shall contain no SS-AL information parameters.

The support of STOP LISTENING request is mandatory, if INVOKE3 request is supported.

4.4   Parameter description

Affected user identity =

-      Short Number Address (SNA);

-      Short Subscriber Identity (SSI); or

-      TETRA Subscriber Identity (TSI = SSI + Address Extension).

    NOTE 1: When a Short Number Address is used it refers to SS-SNA definitions for the served user.

Interrogation result =

-      rejected for undefined reason;

-      invoked;

-      service not invoked for TETRA identity;

-      user not authorized;

-      unknown TETRA identity;

-      parameters not valid; or

-      insufficient information.

Interrogated identity =

-      Short Number Address (SNA);

-      Short Subscriber Identity (SSI); or

-      TETRA Subscriber Identity (TSI = SSI + Address Extension).

    NOTE 2: When a Short Number Address is used it refers to SS-SNA definitions for the served user.

Invocation acknowledgement =

-    rejected for undefined reason;

-    user busy; or

-    accepted.

Invocation result =

-    rejected for undefined reason;

-    accepted;

-    service not supported;

-    user not authorized;

-    affected user busy;

-    unknown TETRA identity;

-    parameters not valid; or

-    insufficient information.

Invocation2 result =

-    rejected for undefined reason;

-    accepted;

-    service not supported;

-    user not authorized;

-    second listening party not included;

-    unknown TETRA identity;

-    parameters not valid; or

-    insufficient information.

Listening party identity =

-    Short Subscriber Identity (SSI); or

-    TETRA Subscriber Identity (TSI = SSI + Address Extension).

Second listening party identity =

-    Short Number Address (SNA);

-    Short Subscriber Identity (SSI); or

-    TETRA Subscriber Identity (TSI = SSI + Address Extension).

NOTE 3: When a Short Number Address is used it refers to SS-SNA definitions for the served user.

5   Signalling protocol to support SS-AL

5.1   General

The SS-AL layer 3 requirements and protocol for the SS-AL services is specified in clauses 5.2 to 5.6. The SS-AL protocol comprises of sub-protocols defined for SS and call control within CMCE. These SS-AL sub-protocols complement the call control protocol defined in EN 300 392-2 [2], clause 14. The present document is only normative for the protocol architecture and user application SAPs within the MS/LS, but gives an informative description of the protocol and the SAPs within the SwMI.

> NOTE: The internal communication between processes within CMCE is outside the scope of the present document and will only be mentioned as informative statements.

5.2   SS-AL general operational requirements

5.2.1   Requirements on the affected user MS

The affected user MS/LS supporting FE5 shall comply with the requirements in clause 14 of EN 300 392-2 [2], which apply to the individual speech call service.

> NOTE: In addition, the affected user MS recognizes the Notification indicator value "AL operation", answers the call and will not to give any indication to the user as defined in EN 300 392-9 [4], clause 7.2.2.

5.2.2   Requirements on the affected user current SwMI

That SwMI shall support the affected user MS complying with the requirements for individual calls and if second listening party is supported the requirements for groups calls set in EN 300 392-2 [2], clause 14 and in EN 300 392-9 [4]. If the call is over the ISI, the affected user current SwMI shall comply with the corresponding ISI requirements set in EN 300 392-3-2 [5] for individual calls and if second listening party is supported EN 300 392-3-3 [6] for group calls.

If the affected user current SwMI set-up SS-AL call to the affected user without involvement of the home SwMI of the affected user, it shall generate the Notification indicator value "AL operation" as defined in EN 300 392-9 [4], clause 7.2.2. If the current SwMI knows that the affected user MS does not support SS-AL, then it should not set-up an SS-AL call to the affected user, refer to EN 300 392-9 [4], clause 7.2.2. It is outside the scope of the present document how the SwMI knows whether the affected user supports SS-AL or not.

5.2.3   Requirements on the SS-AL affected user home SwMI

In addition to the requirements set in clause 5.2.2 the affected user home SwMI may recognize whether the affected user MS supports SS-AL. If the home SwMI knows that the affected user MS does not support SS-AL, then it should not set-up an SS-AL call to the affected user, refer to EN 300 392-9 [4], clause 7.2.2. It is outside the scope of the present document how the SwMI knows whether the affected user supports SS-AL or not.

5.2.4   Requirements on the served user MS/LS

The calling user MS/LS shall comply with the call setup and call release requirements of EN 300 392-2 [2], clause 14.

5.2.5   Requirements on the served user SwMI

The server user SwMI shall support the outgoing individual call set-up and release as specified in EN 300 392-2 [2]. If the call is over the ISI, the calling user SwMI shall comply with the corresponding ISI requirements set in EN 300 392-3-2 [5] for individual calls and if second listening party is supported EN 300 392-3-3 [6] for group calls. It shall also comply with the relevant call related and call unrelated requirements in clauses 9 to 11 of EN 300 392-9 [4].

5.2.6   Requirements on the second listening party MS/LS

The second listening party MS/LS shall comply with the call setup and call release requirements of EN 300 392-2 [2], clause 14.

5.2.7   Requirements on the SS-AL second listening party SwMI

The SS-AL SwMI shall support the individual call set-up and release as specified in EN 300 392-2 [2]. If the call is over the ISI, the SS-AL second listening party home SwMI shall comply with the corresponding ISI requirements, set in EN 300 392-3-2 [5] for individual calls and EN 300 392-3-3 [6] for group calls. It shall comply with the relevant call related requirements of EN 300 392-9 [4].

5.3   SS-AL coding requirements

5.3.1   General on SS-AL PDUs

The Facility element, which is used to convey the supplementary service information specified in this clause to and from the MS/LS and over the ISI, shall be transported:

- in specified call control PDUs, if the MS/LS is engaged in the same call set-up or call; or

- in a D-FACILITY or U-FACILITY PDU, if the MS/LS is not engaged in any call.

Notification indicator in those PDUs shall be used to carry the ambience listening information to the affected user.

The element coding shall be in accordance with the general rules specified in EN 300 392-2 [2], annex E and in EN 300 392-9 [4].

The PDU element coding (independently of bearer PDU) for SS-AL is detailed in the following clauses.

The information contained in the following argument description tables correspond to the following key:

- Length: length of the sub-argument in bits;

- Type: element type (1, 2 or 3) described in EN 300 392-2 [2];

- C/O/M: conditional/optional/mandatory;

- Remark: comment.

5.3.2   AL-TX DEMAND PDU

AL-TX DEMAND PDU shall be offered from served user FE1 to SwMI FE2 to request affected party to start AL transmission.

AL-TX DEMAND PDU shall be encoded as defined in table 11.

AL-TX DEMAND PDU shall be sent using U-INFO PDU.

Support of the AL-TX DEMAND PDU is optional.

Table 11: AL-TX DEMAND PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	AL-TX DEMAND
Affected party type identifier	2	1	M	
Affected party short number	8		C	See notes 1 and 2
Affected party SSI	24		C	See note 1
Affected party extension	24		C	See note 1
TX demand priority	2	1	M	
Encryption control	1	1	M	
NOTE 1: This information element shall be present as defined by the value of the affected party type identifier information element: 0 = Affected party short number. 1 = Affected party SSI. 2 = Affected party SSI + Affected party extension. NOTE 2: The short number shall be as defined for the served user by SS-SNA.				

5.3.3   AL-TX GRANTED PDU

AL-TX GRANTED PDU shall be offered from SwMI FE2 to the affected user FE5 to request affected party to start AL transmission.

AL-TX GRANTED PDU shall be encoded as defined in table 12.

The AL-TX GRANTED PDU shall be sent using D-INFO PDU.

NOTE: Refer also EN 300 392-2 [2], clause 14.7.1.15 for the D-TX GRANTED PDU definition.

Support of the AL-TX GRANTED PDU is optional.

Table 12: AL-TX GRANTED PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	AL-TX GRANTED
Transmission grant	2	1	M	Set to value "Transmission granted"
Encryption control	1	1	M	

5.3.4   AL-TX INFORM PDU

AL-TX INFORM PDU shall be offered from SwMI FE2 to the second listening party FE6 to inform that the current speech item is an AL-speech item.

AL-TX INFORM PDU shall be encoded as the INFORMATION PDU defined in table 14.

AL-TX INFORM PDU shall be sent in D-TX GRANTED PDU with transmission information element set to value "transmission granted to another user" and notification indicator information element set to value "AL call or speech item".

Support of the AL-TX INFORM PDU is optional.

5.3.5   AL-TX INTERRUPT PDU

AL-TX INTERRUPT DPU shall be offered from served user FE1 to SwMI FE2 to stop AL transmission for the specified individual during ongoing call.

AL-TX INTERRUPT DPU shall be encoded as defined in table 13.

AL-TX INTERRUPT DPU shall be sent in U-INFO PDU.

Table 13: Content of AL-TX INTERRUPT PDU

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	AL-TX INTERRUPT
Affected party type identifier	2	1	M	
Affected party short number	8		C	See notes 1 and 2
Affected party SSI	24		C	See note 1
Affected party extension	24		C	See note 1
NOTE 1: This information element shall be present as defined by the value of the affected party type identifier information element: 0 = Affected party short number. 1 = Affected party SSI. 2 = Affected party SSI + Affected party extension. NOTE 2: The short number shall be as defined for the served user by SS-SNA.				

5.3.6   AL-TX REJECT PDU

AL-TX REJECT PDU shall be offered from SwMI FE2 to the served user FE1 to give reason why the AL-listening invocation for a specified individual user during ongoing call failed.

The encoding of the AL-TX REJECT PDU shall be the same as defined for INVOKE1 ACK PDU in table 20. Result of invocation value "accepted" shall not be used, when INVOKE1 ACK PDU is used as the AL-TX REJECT PDU.

Support of the AL-TX REJECT PDU is optional.

5.3.7   INFORMATION PDU

Either INFORMATION PDU or Notification information element with value "AL-call or speech item" or both shall be offered from SwMI FE2 to second listening party FE6 to inform ongoing AL-call or speech item. The INFORMATION PDU shall be sent in a D-SETUP, D-INFO or D-TX GRANTED PDU.

NOTE: When the Notification information element value is used without the INFORMATION PDU, then the listening party information (original served user) is not available. The affected user identity may be included into the D-SETUP PDU as the calling party.

The INFORMATION PDU shall be encoded as described in table 14.

Support of either the notification information element or the INFORMATION PDU is mandatory, if second listening party is supported.

Table 14: INFORMATION PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	INFORMATION
Affected party type identifier	2	1	M	See note 1
Affected party SSI	24		C	See note 2
Affected party extension	24		C	See note 2
Listening party type identifier	2	2	O	See note 1
Listening party SSI	24		C	See note 3
Listening party extension	24		C	See note 3
NOTE 1: Neither affected party nor listening party is presented using SS-SNA as the PDU is intended for multiple users and the SS-SNA refers to SS-SNA definition on the recipient.				
NOTE 2: This information element shall be present as defined by the value of the affected party type identifier information element: 1 = Affected party SSI. 2 = Affected party SSI + Affected party extension.				
NOTE 3: This information element shall be present as defined by the value of the listening party type identifier information element: 1 = Listening party SSI. 2 = Listening party SSI + Listening party extension. The listening party may indicate the served user or the second listening party.				

5.3.8   INTERROGATE PDU

INTERROGATE PDU shall be offered from served user FE1 to SwMI FE2.

INTERROGATE PDU shall be encoded and described in table 15.

INTERROGATE PDU shall be sent using U-FACILITY PDU.

Support of the INTERROGATE PDU is optional.

Table 15: INTERROGATE PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	INTERROGATE
Range type of interrogated users	4	1	M	Refer to EN 300 392-9 [4], clause 8.3.1
Interrogated party type identifier	2	1	M	See note 1, repeatable
Interrogated party short number	8		C	See notes 1 and 2, repeatable
Interrogated party SSI	24		C	See notes 1 and 2, repeatable
Interrogated party extension	24		C	See notes 1 and 2, repeatable
NOTE 1: These elements shall be repeated together as defined by the value of the Range type of interrogated users information element. At least one interrogated party shall be given.				
NOTE 2: This information element shall be present as defined by the value of the Interrogated party type information element: 0 = Interrogated party short number. 1 = Interrogated party SSI. 2 = Interrogated party SSI + Interrogated party extension.				

5.3.9   INTERROGATE ACK PDU

INTERROGATE ACK PDU shall be offered from SwMI FE2 to served user FE1.

INTERROGATE ACK PDU shall be encoded as described in table 16.

INTERROGATE ACK PDU shall be sent using D-FACILITY PDU.

Support of the INTERROGATE ACK PDU is mandatory, if INTERRROGATE PDU is supported.

Table 16: INTERROGATE ACK PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	INTERROGATE ACK
Range type of interrogated users	4	1	M	Refer to EN 300 392-9 [4], clause 8.3.1
Interrogated party type identifier	2	1	M	See note 1, repeatable
Interrogated party short number	8		C	See notes 1 and 2, repeatable
Interrogated party SSI	24		C	See notes 1 and 2, repeatable
Interrogated party extension	24		C	See notes 1 and 2, repeatable
Result of interrogation	3	1	M	See note 1, repeatable
Listening party type identifier	2	2	O	See notes 1 and 3, repeatable
Listening party SSI	24		C	See notes 1 and 4, repeatable
Listening party extension	24		C	See notes 1 and 4, repeatable

NOTE 1: These elements shall be repeated together as defined by the value of the Range type of interrogated users information element: At least one interrogated party shall be given.
NOTE 2: This information element shall be present as defined by the value of the Interrogated party type identifier:
  0 = Interrogated party short number.
  1 = Interrogated party SSI.
  2 = Interrogated party SSI + Interrogated party extension.
NOTE 3: This information element may be present only when the value of the Result of interrogation is "SS-AL invoked for TETRA identity". On the PDU encoding point of view it is an independent not a conditional information element.
NOTE 4: This information element shall be present as defined by the value of the Listening party type identifier:
  1 = Listening party SSI.
  2 = Listening party SSI + listening party extension.
  The listening party may indicate the served user or the second listening party.				

5.3.10   INVOKE1 PDU

INVOKE1 PDU shall be offered from the served user FE1 to SwMI FE2.

INVOKE1 PDU shall be encoded as described in table 17.

INVOKE1 PDU shall be sent using U-SETUP PDU.

Support of the INVOKE1 PDU is mandatory.

Table 17: INVOKE1 PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	INVOKE1

5.3.11   INVOKE2 PDU

INVOKE2 PDU shall be offered from the served user FE1 to SwMI FE2.

INVOKE2 PDU shall be encoded as described in table 18.

INVOKE2 PDU shall be sent using U-INFO PDU.

Support of the INVOKE2 PDU is optional.

Table 18: INVOKE2 PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	INVOKE2
Second listening party type identifier	2	1	M	
Second listening party short number	8		C	See notes 1 and 2
Second listening party SSI	24		C	See note 1
Second listening party extension	24		C	See note 1

NOTE 1:   This information element shall be present as defined by the value of the Second listening party type identifier:
            0 = Second listening party short number.
            1 = Second listening party SSI.
            2 = Second listening party SSI + Second listening party extension.
NOTE 2: The short number shall be as defined for the served user by SS-SNA.				

5.3.12   INVOKE PDU

INVOKE PDU shall be offered from SwMI FE2 to the affected user FE5.

INVOKE PDU shall be contained in the notification indicator information element of the D-SETUP or
D-TX GRANTED PDU as the value "AL operation" as defined in EN 300 392-9 [4]. Refer EN 300 392-2 [2],
clause 14.7.1.12 for the D-SETUP PDU definition.

Support of the notification information element is mandatory.

The basic service information element in the D-SETUP PDU shall contain only values applicable to speech services,
refer EN 300 392-2 [2], clause 14.7.

5.3.13   INVOKE ACK PDU

INVOKE ACK PDU shall be offered from the affected user FE5 to SwMI FE2.

INVOKE ACK PDU shall be encoded as described in table 19.

INVOKE ACK PDU shall be sent using U-CONNECT, U-DISCONNECT or U-INFO PDU.

Support of the INVOKE ACK PDU is mandatory.

Table 19: INVOKE ACK PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	INVOKE ACK
Result of invocation by user	4	1	M	

5.3.14   INVOKE1 ACK PDU

INVOKE1 ACK PDU may be offered from SwMI FE2 to the served user FE1.

The INVOKE1 ACK PDU shall be encoded described in table 20.

The INVOKE1 ACK PDU shall be sent using D-CONNECT, D-DISCONNECT PDU, D-TX GRANTED or D-INFO PDU.

Support of the INVOKE1 ACK PDU is optional, refer to clause 5.6.2.2.

Table 20: INVOKE1 ACK PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	INVOKE1 ACK
Affected party type identifier	2	1	M	
Affected party short number	8		C	See notes 1 and 2
Affected party SSI	24		C	See note 1
Affected party extension	24		C	See note 1
Result of invocation	4	1	M	
NOTE 1: This information element shall be present as defined by the value of the affected party type identifier information element: 0 = Affected party short number. 1 = Affected party SSI. 2 = Affected party SSI + Affected party extension. NOTE 2: The short number shall be as defined for the served user by SS-SNA.				

5.3.15   INVOKE2 ACK PDU

INVOKE2 ACK PDU shall be offered from SwMI FE2 to the served user FE1.

The INVOKE2 ACK PDU shall be encoded described in table 21.

The INVOKE2 ACK PDU shall be sent using D-INFO PDU.

Support of the INVOKE2 ACK PDU is optional.

Table 21: INVOKE2 ACK PDU contents

Information element	Length	Type	C/O/M	Remark
SS-Type	6	1	M	Refer to EN 300 392-9 [4]
AL-PDU type	5	1	M	INVOKE2 ACK
Second listening party type identifier	2	1	M	
Second listening party short number	8		C	See notes 1 and 2
Second listening party SSI	24		C	See note 1
Second listening party extension	24		C	See note 1
Result of invocation	4	1	M	
NOTE 1: This information element shall be present as defined by the value of the second listening party type identifier information element: 0 = Second listening party short number. 1 = Second listening party SSI. 2 = Second listening party SSI + Second listening party extension. NOTE 2: The short number shall be as defined for the served user by SS-SNA.				

5.4   Information element coding

5.4.1   AL PDU type

AL PDU type information element shall define the SS-AL PDU type as presented in table 22.

Table 22: AL PDU type information element contents

Information element	Length	Value	Remark
AL PDU type	5	00000_2	Refer to EN 300 392-9 [4], clause 8.2
		etc.	etc.
		00100_2	Refer to EN 300 392-9 [4], clause 8.2
		00101_2	INTERROGATE
		00110_2	INTERROGATE ACK
		00111_2	INVOKE1
		01000_2	INVOKE2
		01001_2	INVOKE
		01010_2	INVOKE ACK
		01011_2	INVOKE1 ACK
		01100_2	INVOKE2 ACK
		01101_2	INFORMATION
		01110_2	AL-TX DEMAND
		01111_2	AL-TX GRANTED
		10000_2	AL-TX INFORM
		10001_2	AL-TX INTERRUPT
		10010_2	AL-TX REJECT
		10011_2	Reserved
		etc.	etc.
		11111_2	Reserved

5.4.2   Affected party extension

The affected party extension information element shall indicate to the SwMI the extended part of the TSI address of the affected user. The information element contents shall be as defined in table 23.

Table 23: Affected party extension information element contents

Information element	Length	Value	Remark
Country Code	10		Refer to EN 300 392-1 [3], clause 7
Network Code	14		Refer to EN 300 392-1 [3], clause 7

5.4.3   Affected party short number

The affected party short number information element shall indicate to the SwMI the short number of the affected user as defined by SS-SNA subscribed by the served user. The contents of the information element shall be as defined in table 24.

Table 24: Affected party short number information element contents

Information element	Length	Value	Remark
Affected party short number	8	$0\text{-}255_{10}$	Refer to EN 300 392-1 [3], clause 7

5.4.4   Affected party SSI

The affected party SSI information element shall indicate to the SwMI the SSI address of the affected user. The contents of the information element shall be as defined in table 25.

Table 25: Affected party SSI information element contents

Information element	Length	Value	Remark
SSI	24		Refer to EN 300 392-1 [3], clause 7

5.4.5   Affected party type identifier

The affected party type identifier information element shall indicate the type of address that follows in the PDU. The contents of the information element shall be as defined in table 26.

Table 26: Affected party type identifier information element contents

Information element	Length	Value	Remark
Affected party type identifier	2	00_2	SNA
		01_2	SSI
		10_2	TSI
		11_2	Reserved

5.4.6   Encryption control

See EN 300 392-2 [2], clause 14.8.21.

5.4.7   Interrogated party extension

See affected party extension information element coding in table 23.

5.4.8   Interrogated party short number

See affected party short number information element coding in table 24.

5.4.9   Interrogated party SSI

See affected party SSI information element coding in table 25.

5.4.10   Interrogated party type identifier

See affected party type identifier information element coding in table 26.

5.4.11   Listening party extension

See affected party extension information element coding in table 23.

5.4.12   Listening party SSI

See affected party SSI information element coding in table 25.

5.4.13   Listening party type identifier

See affected party type identifier information element coding in table 26.

NOTE: The Short number addressing is not applicable type for the referred address.

5.4.14   Range type of interrogated users

The range type of interrogated users information element shall indicate if the following subscriber number, or numbers, shall be one number, range of numbers or a list of these numbers. The encoding and meaning of this information element shall be as defined in EN 300 392-9 [4], clause 8.3.1. Endpoints of ranges shall be indicated using the same address type.

NOTE: The Short number is supported only if the SS-SNA is supported and subscribed to the served user.

5.4.15   Result of interrogation

Result of interrogation information element shall indicate the outcome of the interrogation. The Result of interrogation information element shall be encoded as defined in table 27.

Table 27: Result of interrogation information element contents

Information element	Length	Value	Remark
Result of interrogation	3	000_2	SS-AL invoked for TETRA identity
		001_2	SS-AL not invoked for TETRA identity
		010_2	User not authorized
		011_2	Unknown TETRA identity
		100_2	Parameters not valid
		101_2	Insufficient information
		110_2	Rejected for undefined reason
		111_2	Affected user does not support SS-AL, see note
NOTE: It is outside scope of the present document how SwMI knows the MS capability.			

5.4.16   Result of invocation

Result of invocation information element shall indicate whether the previously made invocation was successful or unsuccessful. If the request was unsuccessful, the reason shall be indicated by the element. The contents of the information element Result of invocation shall be encoded as defined in table 28.

Table 28: Result of invocation information element contents

Information element	Length	Value	Remark
Result of invocation	4	0000_2	Accepted
		0001_2	Service not supported, see note 3
		0010_2	User not authorized
		0011_2	Affected user busy, see note 1
		0100_2	Second listening party not included, see note 2
		0101_2	Unknown TETRA identity
		0110_2	Parameters not valid
		0111_2	Insufficient information
		1000_2	Rejected for undefined reason
		1001_2	Reserved
		etc.	etc.
		1111_2	Reserved
NOTE 1: This reason can be used in a response to the INVOKE1 or AL-TX DEMAND PDU, when the SwMI or affected user wants to indicate that the MS is busy in a non-SS-AL call.			
NOTE 2: This reason can be used in a response to the INVOKE2 PDU, when the SwMI cannot include second listening party although it supports the service.			
NOTE 3: This reason can be used in a response to the INVOKE1 or AL-TX DEMAND PDU, when the SwMI knows that the MS is not capable to support ambience listening. This reason can be used in a response to the INVOKE2 PDU, when the SwMI does not support second listening party.			

5.4.17   Result of invocation by user

Result of invocation by user information element shall indicate whether the previously made invocation was successful or unsuccessful. If the request was unsuccessful, the reason shall be indicated by the element. The contents of the information element Result of invocation by user shall be encoded as defined in table 29.

Table 29: Result of invocation by user information element contents

Information element	Length	Value	Remark
Result of invocation by user	4	0000_2	Accepted
		0001_2	Reserved
		0010_2	Reserved
		0011_2	Affected user busy
		0100_2	Reserved
		0101_2	Reserved
		0110_2	Reserved
		0111_2	Reserved
		1000_2	Rejected for undefined reason
		1001_2	Reserved
		etc.	etc.
		1111_2	Reserved

5.4.18   Second listening party extension

See affected party extension information element coding in table 23.

5.4.19   Second listening party short number

See affected party short number information element coding in table 24.

5.4.20   Second listening party SSI

See affected party SSI information element coding in table 25.

5.4.21   Second listening party type identifier

See affected party type identifier information element coding in table 26.

5.4.22   Transmission grant

See EN 300 392-2 [2], clause 14.8.42. The present document uses only transmission grant value "Transmission granted".

5.5   SS-AL state definitions

5.5.1   Protocol states of served user FE1

IDLE shall be the only state of server user FE1.

5.5.2   Protocol states of SwMI FE2

IDLE is the only state of SwMI FE2.

5.5.3   Protocol states of affected user FE5

IDLE shall be the only state of affected user FE5.

5.5.4   Protocol states of FE2 in visited SwMI

IDLE should be the only state of FE2 in visited SwMI.

5.5.5   Protocol states of second listening party FE6

IDLE shall be the only state of second listening party FE6.

5.6   SS-AL Procedures

5.6.1   Procedures for served user FE1

5.6.1.1   Interrogation

Upon reception of an SS-AL INTERROGATION request from the application the served user FE1 shall construct the INTERROGATE PDU according to the INTERROGATION request and send it to the home SwMI of the affected user.

Upon reception of an acknowledgement to the interrogation, INTERROGATE ACK PDU, from FE2 the served user FE1 shall send the result in an INTERROGATE indication to the application.

5.6.1.2 Invocation

Upon reception of an SS-AL INVOKE1 request from the application the served user FE1 shall construct an INVOKE1 PDU and send it in a U-SETUP PDU to SwMI using the affected user identity as the called user identity.

Upon AL call completion or rejection the basic call PDU may contain INVOKE1 ACK PDU and the FE1 should pass is to the application using INVOKE1 indication.

If the home SwMI, which is seting up the SS-AL call to the affected user, does not support SS-AL it will return "Supplementary service not supported" as defined in EN 300 392-9 [4], clause 8.2. Upon reception of that message the served user FE1 shall disconnect the call attempt using disconnection reason "Cause not defined or unknown" or "User requested disconnect".

NOTE: In the SS-AL call set-up the calling line identification restriction may be activated for the served user. CLIR may be used as a precaution for the case where the affected user MS does not support AL call and hence would show the calling party to the user. It should be noted that the affected user may get normal indication of transmission as the SS-AL is not properly supported.

Support of invocation is mandatory for the served user.

5.6.1.3 Addition of second listening party

Upon reception of an SS-AL INVOKE2 request to add second listening party from the application during either AL call or call set-up initiated by himself the served user FE1 shall construct corresponding INVOKE2 PDU and send it to SwMI in a U-INFO PDU once the AL call set-up is completed.

Upon reception of an INVOKE2 ACK PDU in a D-INFO PDU the FE1 shall pass the information in the result of invocation information element to the application in an INVOKE2 indication.

The addition second listening party or parties to the ambience listening call is optional.

5.6.1.4 Invocation during on-going call

Upon reception of an INVOKE3 request during an ongoing call the FE1 shall construct AL-TX DEMAND PDU and send it in a U-INFO PDU to SwMI FE2. Upon reception of an INVOKE1 ACK or INFORMATION (AL-TX INFORM) PDU in a D-TX GRANTED for positive response or (AL-TX REJECT PDU) in a D-INFO PDU for rejection FE1 shall pass it to the application in an INVOKE3 indication.

Upon reception of STOP LISTENING request the FE1 shall send AL-TX INTERRUPT PDU in a U-INFO PDU to SwMI FE2.

The support of SS-AL during on on-going call is optional.

5.6.2 Procedures for SwMI FE2

5.6.2.1 Interrogation

Upon reception of an INTERROGATE PDU from served user FE1, FE2 should verify that the request is authorized and the parameters are in the correct range.

For each interrogated subscriber number supplied in the INTERROGATE PDU, FE2 should determine if ambience listening has been invoked for that subscriber number. FE2 should construct the INTERROGATE ACK PDU containing the result for interrogation for each interrogated subscriber number supplied in the INTERROGATE PDU.

5.6.2.2 Invocation

Upon reception of an INVOKE1 PDU from the served user FE1, FE2 should verify that the request is authorized and the parameters are in the correct range. If the server user is authorized and the affected user is not busy and there is no other rejection reason, FE2 SS shall set the notification indicator information element to value to "AL operation" for incorporation into the D-SETUP PDU and inform CC to continue the call as direct call set-up.

NOTE: Use of hook signalling is against the principle of ambience listening.

If the affected user is involved into a call the SwMI may pre-empt the affected user from the on-going call and continue AL call set-up as above, refer also to clause 5.6.2.3.

Upon reception of an INVOKE ACK PDU, FE2 should construct the INVOKE1 ACK PDU to report the outcome of the invocation to the served user FE1 with the basic call signalling in D-CALL PROCEEDING, D-CONNECT or D-DISCONNECT PDU as appropriate.

If the FE2 receives a U-CONNECT PDU without an INVOKE ACK PDU from the affected user, then SwMI should reject the AL call and send to the served user INVOKE1 ACK PDU in a D-DISCONNECT PDU with the reason "service not supported".

If the invocation request is rejected due to any other reason FE2 should send INVOKE1 ACK PDU in the D-DISCONNECT PDU to the served user with the rejection reason.

The disconnection of the AL call shall follow rules of the basic call.

5.6.2.3   Addition of second listening party

Upon reception of an INVOKE2 PDU from the served user FE1, FE2 should determine if the requesting user is authorized to add second listening party. If the requesting user is authorized FE2 shall construct either an INFORMATION PDU or set notification indicator information element to "AL-call or speech item" or both for D-SETUP PDU and inform CC that inclusion should be performed. The listening party information element in the INFORMATION PDU may contain the served user or second listening party identity, if any. The mechanism for inclusion of the second listening party into the AL call is outside the scope of the present document.

FE2 should inform the result of the addition of second listening party to the served user FE1 by sending an INVOKE2 ACK PDU in a D-INFO PDU. If the second listening party is busy, not reachable or rejects the AL listening call, then original AL call shall continue.

5.6.2.4   Invocation during on-going call

If the affected user is participating an on-going call and SwMI FE2 receives AL-TX DEMAND PDU in a U-INFO PDU in the same call the SwMI FE2 shall check whether the served user is authorized. If authorized, then the SwMI FE2 shall send AL-TX GRANTED PDU in a D-INFO PDU to the affecter user FE5.

  NOTE: SwMI FE2 could have sent also basic call D-TX GRANTED with notification indicator information
             element set to value "AL operation" to the affected user. The present document uses the D-INFO PDU as
             carrier to prevent MSs not supporting SS-AL to start sending with normal indications to the user.

Upon reception of an INVOKE ACK PDU (in U-INFO PDU) from the affected user the SwMI FE2 shall construct the INVOKE1 ACK PDU to report the outcome of the invocation to the served user FE1 in a D-INFO PDU.

In addition SwMI FE2 may consider that the other participants of the call are now second listening party and may apply procedures in clause 5.6.2.3.

Upon reception of an AL-TX INTERRUPT PDU from the served user FE1 SwMI FE2 shall send basic call D-TX INTERRUPT PDU to the affected user and follow basic call procedures as defined in clause 14.5.2.2.1 of EN 300 392-2 [2].

Support of SS-AL invocation during on-going call is optional.

5.6.3   Procedures for FE2 in visited SwMI

Upon reception of SS-AL PDUs from FE2 the FE2 in the visited SwMI should deliver those to FE1, FE5 and FE6 as requested.

Upon reception of SS-AL PDUs from FE1 and FE5 the FE2 in visited SwMI should deliver those to the SwMI FE2 as requested.

5.6.4   Procedures for affected user FE5

5.6.4.1   Invocation

At the reception of an INVOKE PDU (contained in the notification indicator element of a D-SETUP PDU) from SwMI FE2, affected user FE5 shall pass the invocation to the application, which shall determine whether to continue to carry out the request, or reject it. In case MS is participating in a call or packet data instance it may reject the SS-AL call set-up. If user MS is already involved into a call and cannot support concurrent calls the affected user FE5 should disconnect the existing call using basic call procedures before accepting the AL call.

If the user application accepts the AL call the affected user FE5 shall construct the INVOKE ACK PDU containing the result for the invocation to be sent with the U-CONNECT PDU to the SwMI.

> NOTE: The inclusion of the INVOKE ACK PDU into the U-CONNECT PDU indicates to the SwMI that the MS really supports SS-AL call and is not just responding to a basic call set-up.

If the user application rejects the AL call the affected user FE5 should construct the INVOKE ACK PDU containing the result for the invocation to be sent with the U-DISCONNECT PDU to the SwMI.

If the affected user FE5 receives during the AL call an AL-TX INFORM or INFORMATION PDU the user application shall not present any information to the user.

5.6.4.2   Invocation during on-going call

Optionally MS may accept SS-AL while being in a call without disconnecting the existing call.

Upon reception of AL-TX GRANTED PDU in a D-INFO PDU the affect user FE5 shall either:

- accept the transmission permission and construct INVOKE ACK PDU and send it in a U-INFO PDU to SwMI FE2; or

- reject the AL speech item and should construct INVOKE ACK PDU and send it in a U-INFO PDU to SwMI FE2.

Upon reception of basic call D-TX INTERRUPT PDU the affected user MS shall stop transmission as defined in clause 14.5.2.2.1 of EN 300 392-2 [2].

If the affected user FE5 receives during the AL speech item an AL-TX INFORM or INFORMATION PDU the user application shall not present any information to the user.

5.6.4.3   Affected user request for invocation

The affected user may ask for SS-AL call to be invoked on himself by sending a pre-defined short data status to another user. Refer to annex A.

5.6.5   Procedures for second listening party FE6

5.6.5.1   Invocation

Upon reception of INFORM PDU in a D-SETUP PDU the second listening party FE6 shall follow basic call procedures and pass indication about the AL call to the application. The AL call on the second listening party FE6 point of view is a group call without permission to ask transmission permission.

5.6.5.2   Invocation during on-going call

Upon reception of INFORM PDU in a D-TX GRANTED PDU the second listening party FE6 shall follow basic call procedures and pass indication about the AL speech item to the application. The AL speech item on the second listening party FE6 point of view is a basic group call speech item and the second listening party may request permission to transmit, if allowed in the D-TX GRANTED PDU.

5.7   Interactions with other supplementary services

5.7.1   General

General interactions with other supplementary services are described in EN 300 392-10-21 [7]. Most of those affect only locally and no specific procedure is provided in the present document expect those described in clauses 5.7.2 and 5.7.3

5.7.2   Call Forwarding

The SS-AL shall take precedence over other supplementary services as described in EN 300 392-10-21 [7] so that the ambience listening call to listened user will never be forwarded to any other user.

If during ambience listening call there is another call attempt to the ambience listened user, then the network may either disconnect the ambience listening call and proceed with the new call or invoke SS-CFB.

5.7.3   Ambience Listening

If the user is already being ambience listened to by another user, then the new request for SS-AL can be rejected and busy indication is returned to the second served user.

An implementation may allow any number of authorized users to invoke SS-AL to the same ITSI at the same time.

Annex A (informative):
SS-AL Call request

A user can ask for SS-AL call to be invoked on himself/herself by sending a pre-coded status (U-STATUS PDU) to another user, refer to clause 14.7.2.7 of EN 300 392-2 [2]. Two status values of the available for TETRA network and user specific definitions are reserved for this purpose, see table A.1. SwMI actions on the potential reception of multiple SS-AL invocations due to multiple group members' reaction is outside the scope of this annex.

Table A.1: SS-AL call request SDS values

Name of status	Hex value of the status	Called party address	Calling party address	Remark
SS-AL call request (normal)	FEF6	ISSI/GSSI	ISSI	
SS-AL call request (emergency)	FEF7	ISSI/GSSI	ISSI	

Annex B (informative): INTERROGATE ACK PDU encoding

The present annex presents in table B.1 how the INTERROGATE ACK PDU is encoded. The encoding rules are presented in EN 300 392-2 [2], clause E.1.1.

Table B.1: D-FACILITY with SS-AL INTERROGATE ACK PDU

Information Element			Length	Type	C/O/M	Value
Protocol discriminator			3	1	M	CMCE
PDU Type			5	1	M	D-FACILITY
Number of SS PDUs			4	1	M	1
Length indicator			11	1	M	159
SS-PDU contents						See next 22 rows
	SS type		6	1	M	SS-AL
	SS-AL PDU type		5	1	M	INTERRROGATE ACK
	Range type of interrogated users		3	1	M	3 interrogated users
	1	Interrogated Party type identifier	2	1	M	1 SSI
		SSI	24		C	SSI of the first interrogated user
		Result of interrogation	3	1	M	1 SS-AL not invoked for TETRA identity
		Optional elements present?	1	O-bit		0 No listening party
	2	Interrogated Party type identifier	2	1	M	1 SSI
		SSI	24		C	SSI of the second interrogated user
		Result of interrogation	3	1	M	0 SS-AL invoked for TETRA identity
		Optional elements present?	1	O-bit		1 optional elements present
		P-bit for element	1	P-bit		1 Listening party
		Listening party type identifier	2	2	O	1 SSI
		SSI	24		C	SSI of the "second" listening party
	3	Interrogated Party type identifier	2	1	M	1 SSI
		SSI	24		C	SSI of the third interrogated user
		Result of interrogation	3	1	M	0 SS-AL invoked for TETRA identity
		Optional elements present?	1	O-bit		1 optional elements present
		P-bit for element	1	P-bit		1 Listening party
		Listening party type identifier	2	2	O	1 SSI
		SSI	24		C	SSI of the "third" listening party
	Optional elements present?		1	O-bit		0 (for SS-AL PDU)
Optional elements present?			1	O-bit		0 (for D-FACILITY PDU)

Annex C (informative):
Change requests

The present documents includes Change requests since edition 1 as presented in table C.1.

Table C.1: Change requests

No	CR vers.	Standard Version	Clauses affected	Title	CR Status
001	APP	Ed. 1	5.4.15, 5.4.16, 5.4.17	AL Result of invocation	EPT approved 030204
101	APP	V1.1.1	Annex B	INTERROGATE ACK example	EPT approved 0405

History

Document history			
V1.1.1	May 2003	Publication	
V1.2.0	June 2004	One-step Approval Procedure	OAP 20041029: 2004-06-30 to 2004-10-29