



**Terrestrial Trunked Radio (TETRA);  
Voice plus Data (V+D);  
Part 12: Supplementary services stage 3;  
Sub-part 16: Pre-emptive Priority Call (PPC)**

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## Foreword

This draft European Standard (EN) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI EN Approval Procedure (ENAP).

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

The present document is part 12, sub-part 16 of a multi-part deliverable covering Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D), as identified below:

- Part 1: "General network design";
- Part 2: "Air Interface (AI)";
- Part 3: "Interworking at the Inter-System Interface (ISI)";
- Part 4: "Gateways basic operation";
- Part 5: "Peripheral Equipment Interface (PEI)";
- Part 7: "Security";
- Part 9: "General requirements for supplementary services";

Part 10: "Supplementary services stage 1";

Part 11: "Supplementary services stage 2";

Part 12: "Supplementary services stage 3";

Sub-part 1: "Call Identification (CI)";

Sub-part 2: "Call Report (CR)";

Sub-part 3: "Talking Party Identification (TPI)";

Sub-part 4: "Call Forwarding (CF)";

Sub-part 5: "List Search Call (LSC)";

Sub-part 6: "Call Authorized by Dispatcher (CAD)";

Sub-part 7: "Short Number Addressing (SNA)";

Sub-part 8: "Area Selection (AS)";

Sub-part 9: "Access Priority (AP)";

Sub-part 10: "Priority Call (PC)";

Sub-part 11: "Call Waiting (CW)";

Sub-part 12: "Call Hold (HOLD)";

Sub-part 13: "Call Completion to Busy Subscriber (CCBS)";

Sub-part 14: "Late Entry (LE)";

**Sub-part 16: "Pre-emptive Priority Call (PPC)";**

Sub-part 17: "Include Call (IC)";

Sub-part 18: "Barring of Outgoing Calls (BOC)";

Sub-part 19: "Barring of Incoming Calls (BIC)";

Sub-part 20: "Discreet Listening (DL)";

Sub-part 21: "Ambience Listening (AL)";

Sub-part 22: "Dynamic Group Number Assignment (DGNA)";

Sub-part 23: "Call Completion on No Reply (CCNR)";

Sub-part 24: "Call Retention (CRT)";

Part 13: "SDL model of the Air Interface (AI)";

Part 14: "Protocol Implementation Conformance Statement (PICS) proforma specification";

Part 15: "TETRA frequency bands, duplex spacings and channel numbering";

Part 16: "Network Performance Metrics";

Part 17: "TETRA V+D and DMO specifications";

Part 18: "Air interface optimized applications";

Part 19: "Interworking between TETRA and Broadband systems".

NOTE 1: Part 3, sub-parts 6 and 7 (Speech format implementation), part 4, sub-part 3 (Data networks gateway), part 10, sub-part 15 (Transfer of control), part 13 (SDL) and part 14 (PICS) of this multi-part deliverable are in status "historical" and are not maintained.

NOTE 2: Some parts are also published as Technical Specifications such as ETSI TS 100 392-2 and those may be the latest version of the document.

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## Modal verbs terminology

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

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# 1 Scope

The present document defines the stage 3 specifications of the Supplementary Service Pre-emptive Priority Call (SS-PPC) for the Terrestrial Trunked Radio (TETRA).

SS-PPC enables a user to have preferential access to the network resources in a TETRA system in times of congestion including pre-emption of calls. SS-PPC is applicable for pre-emptive priorities including the emergency priority. SS-PPC includes the capability to pre-empt resources needed for higher priority calls and the capability to pre-empt users from ongoing calls in order to move them to higher priority calls. SS-PPC specifies the definition, activation, deactivation and interrogation for the usage of pre-emptive call priorities in the TETRA system. The Switching and Management Infrastructure (SwMI) applies the SS-PPC priorities when it allocates the resources for calls. The SS-PPC operations are defined for the SwMI and for the Mobile Station (MS).

SS-PPC is defined to subscribers of one TETRA system, but the subscribers may be located in several TETRA systems and the information flows may be delivered over the Inter System Interface (ISI). SS-PPC is invoked for calls within one TETRA system or for calls that extend over ISI to several TETRA systems.

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

Supplementary Service stage 3 specification is preceded by the stage 1 and the stage 2 specifications of the service. Stage 1 describes the functional capabilities from the user's point of view. Stage 2 defines the functional behaviour in terms of Functional Entities (FEs) and information flows. Stage 3 gives a precise description of the supplementary service from the implementation point of view. It defines the protocol for the service and the encoding rules for the information flows. It defines the processes for the FEs and their behaviour. The described protocols and behaviour apply to the SwMI, for the MS and may be applied over the ISI between TETRA systems. Aspects relating to all supplementary services are detailed in ETSI EN 300 392-9 [3].

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## 2 References

### 2.1 Normative references

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

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

- [1] [ETSI EN 300 392-2](#): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".
- [2] [ETSI EN 300 392-1 \(V1.2.1\)](#): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".
- [3] [ETSI EN 300 392-9](#): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 9: General requirements for supplementary services".
- [4] [ETSI EN 300 392-3-1](#): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 1: General design".
- [5] [Recommendation ITU-T Z.100](#): "Specification and Description Language - Overview of SDL-2010".

- [6] [ETSI EN 300 392-12-10](#): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 10: Priority Call (PC)".

## 2.2 Informative references

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The following referenced documents may be useful in implementing an ETSI deliverable or add to the reader's understanding, but are not required for conformance to the present document.

Not applicable.

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## 3 Definition of terms, symbols and abbreviations

### 3.1 Terms

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

**authorized user:** user who is authorized to define, activate, deactivate and interrogate SS-PPC

**Call Control Agent (CCA):** Call Control sub-entity for Supplementary Service Pre-emptive Priority Call in Circuit Mode Control Entity in Mobile Station

**emergency priority:** highest pre-emptive priority level

**Functional Entity (FE):** functional characteristics of the SS sub-entity within an MS or a SwMI related to an SS-PPC action, e.g. definition or invocation

**SS-PPC call:** basic service (call) to which the defined SS-PPC priority is applied

**SS-PPC invocation:** sending of priority request to infrastructure

NOTE: The SS-PPC invocation is done with the basic service invocation request.

**SS-PPC operation:** usage of SS-PPC priority for and in a basic service set-up

**SS-PPC pre-emption:** exclusion of one or more parties from an ongoing basic service due an SS-PPC operation for another basic service

NOTE: The pre-emption may be done due to the lack of resources or due to the need to join a called party to a higher priority pre-emptive call.

**SS-PPC priority:** any pre-emptive priority invoked and operated for an SS-PPC call

**user A:** calling party, the party that invokes or generates invocation of SS-PPC

**user B:** called party in a call in which SS-PPC is operated

**user C:** pre-empted user, a user that is involved in a call, which is pre-empted due to lack of resources for a SS-PPC

NOTE: There may be one, two or more pre-empted users due to a pre-empted call.

**user D:** remaining user or users in a call from which a user or users have been pre-empted

**visited SwMI:** TETRA system of which the Mobile Network Identity (MNI) is not equal to the MNI of the user

## 3.2 Symbols

Void.

## 3.3 Abbreviations

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

CC	Call Control sub-entity for SS-PPC in CMCE in SwMI
CCA	Call Control Agent
CMCE	Circuit Mode Control Entity
FE	Functional Entity
GTSI	Group TETRA Subscriber Identity
ISI	Inter System Interface
ITSI	Individual TETRA Subscriber Identity
MCC	Mobile Country Code
MNC	Mobile Network Code
MNI	Mobile Network Identity
MS	Mobile Station
PDU	Protocol Data Unit
SS	Supplementary Service sub-entity within CMCE
SSI	Short Subscriber Identity
SS-PPC	Supplementary Service Pre-emptive Priority Call
SwMI	Switching and Management Infrastructure
TETRA	TERrestrial TRunked RADio
TNCC-SAP	TETRA Network layer Call Control Service Access Point
TNSS-SAP	TETRA Network layer Supplementary Service Service Access Point
TSI	TETRA Subscriber Identity

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## 4 SS-PPC service primitives

### 4.1 General

This clause describes the SS-PPC services offered by Supplementary Service (SS) and call control sub entities of CMCE of the TETRA voice plus data layer 3 service boundary in the MS. The SS-PPC services shall be offered at the Supplementary Service Service Access Point (TNSS-SAP) and the Call Control Service Access Point (TNCC-SAP). The SS-PPC services described in this clause shall be applicable for the MS.

**NOTE:** The SS-PPC services within the SwMI are outside the scope of the present document.

The SS-PPC services specified in the present document shall complement the Supplementary services and Call control services specified in ETSI EN 300 392-2 [1], clauses 12 and 11 respectively and the Supplementary Services general design standard ETSI EN 300 392-9 [3]. The SS-PPC services shall act as sub-services within the general supplementary services and call control services.

SS-PPC shall be an optional supplementary service for TETRA voice plus data layer 3. If SS-PPC is supported, this clause shall specify the services and their availability.

### 4.2 SS-PPC services offered over the TNSS-SAP

#### 4.2.0 General

When the optional SS-PPC definition, user definition, activation, deactivation, interrogation, impending pre-emption indication and pre-empted party indication are supported, they shall be provided at TNSS-SAP.

NOTE: As the present document only deals with the SS-PPC all the service primitives have been shown without a TNSS-PPC-prefix e.g. the TNSS-PPC-ASSIGN request is shortened into an ASSIGN request.

The SS-PPC primitives for the user A (FE1) at the MS TNSS-SAP shall be:

- a) INTERROGATE request;
- b) INTERROGATE indication;
- c) ASSIGN indication;
- d) ASSIGN response.

The SS-PPC primitives for the authorized user (FE3) at the MS TNSS-SAP shall be:

- a) DEFINE request;
- b) DEFINE indication;
- c) INTERROGATE request;
- d) INTERROGATE indication.

The SS-PPC primitives for the pre-empted called user (FE5) at the MS TNSS-SAP shall be:

- a) IMPENDING-PRE-EMPTION indication.

The SS-PPC primitives for the pre-empted user (FE8) at the MS TNSS-SAP shall be:

- a) IMPENDING-PRE-EMPTION indication.

The SS-PPC primitives for the user (FE9) remaining in a call after pre-emption at the MS TNSS-SAP shall be:

- a) USER-PRE-EMPTED indication.

The activation and deactivation shall be done with the DEFINE request; the acknowledgement for activation and deactivation shall be done with DEFINE indication.

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

- Remark: comment;
- C: conditional;
- O: optional;
- M: mandatory.

#### 4.2.1 DEFINE request

Optional DEFINE request primitive may be offered from the user application to FE3 over TNSS-SAP. The primitive shall contain the SS-PPC information parameters listed in table 1.

The subscriber identity parameter(s) shall indicate the subscriber identities on which the following definition shall be made.

**Table 1: DEFINE request contents**

Parameter	Request	Remark
Subscriber identity	M	Repeatable
Activated/deactivated	M	Note 1
Basic service	M	Repeatable
SS-PPC priority	M	Repeatable
Delivered to user A(s)	M	
Acknowledgement from user A(s)	C	Note 2
NOTE 1: Shall be used to indicate whether or not this PDU is used to activate a new PPC value or to deactivate an existing PPC value. When a PPC value is de-activated, a pre-programmed default value may then apply.		
NOTE 2: Conditional on the information element "Delivered to user A(s)".		

## 4.2.2 DEFINE confirm

If DEFINE request primitive is supported, then DEFINE confirm primitive shall be offered from FE3 to the user application over TNSS-SAP as an acknowledgement to a previously made definition request. The primitive shall contain the SS-PPC information parameters listed in table 2.

The Result for definition parameter shall indicate the result for all listed subscriber numbers and all basic service types.

NOTE 1: If the acknowledgements are different for different subscriber identities, FE3 may deliver several DEFINE confirm primitives to the user application.

NOTE 2: If the result for definition/activation/deactivation is "accepted, but some values changed by SwMI", the interrogation can be used to interrogate the values.

**Table 2: DEFINE confirm contents**

Parameter	Indication	Remark
Subscriber identity	M	Repeatable
Activated/deactivated	M	
Result for definition	M	

## 4.2.3 ASSIGN indication

Optional ASSIGN indication primitive may be offered from FE1 to the user application over TNSS-SAP. The primitive shall contain the SS-PPC information parameters listed in table 3.

FE1 shall only consider definitions made to a group number of which the subscriber is a member.

**Table 3: ASSIGN indication contents**

Parameter	Indication	Remark
Subscriber identity	M	
Activated/deactivated	M	
Basic service	M	Repeatable
SS-PPC priority	M	Repeatable
Acknowledgement from user A(s)	M	Note
NOTE: Parameter shall indicate if FE1 shall acknowledge the reception of the definition.		

## 4.2.4 ASSIGN response

If ASSIGN indication primitive is supported, then ASSIGN response primitive shall be offered from the user application to FE1 over TNSS-SAP as an acknowledgement to a previously received ASSIGN request, if acknowledgement was requested. The primitive shall contain the SS-PPC information parameters listed in table 4.

**Table 4: ASSIGN response contents**

Parameter	Response	Remark
Subscriber identity	M	
Activated/deactivated	M	
Basic service	M	
SS-PPC priority	M	
Result for definition	M	

## 4.2.5 INTERROGATE request

Optional INTERROGATE request primitive may be offered from the user application to FE1 or FE3 over TNSS-SAP and it shall be used to interrogate SS-PPC definitions. INTERROGATE request primitive shall contain the SS-PPC information parameters listed in table 5.

**Table 5: INTERROGATE request contents**

Parameter	Request	Remark
Subscriber identity	M	Repeatable

## 4.2.6 INTERROGATE confirm

If INTERROGATE request primitive is supported, then INTERROGATE confirm primitive shall be offered from FE1 or FE3 to the user application over TNSS-SAP as a response to a previously sent interrogation request. INTERROGATE confirm primitive shall contain the SS-PPC information parameters listed in table 6.

If the Subscriber identity parameter is repeated, the definition(s) shall be valid for all given numbers. The delivered to user A(s) and acknowledgement from user A(s) parameters shall indicate if these have been requested with the last successful definition request. The result for interrogation shall indicate, if the definition has been distributed to user A(s) and if user A(s) have acknowledged the distribution.

NOTE: If definitions/responses are different for different subscriber identity parameters FE3 may send several INTERROGATE confirm primitives to the user application.

**Table 6: INTERROGATE confirm contents**

Parameter	Indication	Remark
Subscriber identity	M	Repeatable
Result for interrogation	M	
Activated/deactivated	C	Note
Basic service	C	Repeatable
SS-PPC priority	C	Repeatable
Delivered to user A(s)	C	MS/LS-subscribers, note
Acknowledgement from user A(s)	C	Note
NOTE:	The parameter shall appear only if the "Result for interrogation" has the value "accepted", "accepted, but request to user A(s) pending in the SwMI" or "accepted, but user A(s) could not accept the request/ user A(s) was not reached".	

## 4.2.7 REMOVE indication

Optional REMOVE indication primitive may be offered from FE1 to the user application over TNSS-SAP. This primitive shall be used to withdraw the SS-PPC service from a subscriber. The primitive shall contain the SS-PPC information parameters listed in table 7.

**Table 7: REMOVE indication contents**

Parameter	Indication	Remark
Subscriber identity	M	
Acknowledgement from user A(s)	M	Note
NOTE: Parameter shall indicate if FE1 shall acknowledge the reception of the removal.		

## 4.2.8 REMOVE response

If REMOVE indication parameter is supported, then REMOVE response primitive shall be offered from the user application to FE1 over TNSS-SAP as an acknowledgement to a previously received REMOVE request, if acknowledgement was requested. The primitive shall contain the SS-PPC information parameters listed in table 8.

**Table 8: REMOVE response contents**

Parameter	Response	Remark
Subscriber identity	M	
Result for withdrawal	M	

## 4.2.9 WITHDRAW request

Optional WITHDRAW request primitive may be offered from the user application to FE3 over TNSS-SAP and it shall be used to withdraw the PPC service from a subscriber. WITHDRAW request primitive shall contain the SS-PPC information parameters listed in table 9.

**Table 9: WITHDRAW request contents**

Parameter	Request	Remark
Subscriber identity	M	Repeatable
Delivery to user A(s)	M	MS/LS-subscribers
Acknowledgement from user A(s)	M	

## 4.2.10 WITHDRAW confirm

If WITHDRAW request primitive is supported, then WITHDRAW confirm primitive shall be offered from FE3 to the user application over TNSS-SAP as an acknowledgement to a previously received WITHDRAW request. The primitive shall contain the SS-PPC information parameters listed in table 10.

NOTE: If the acknowledgements are different for different subscriber identities, FE3 may deliver several WITHDRAW confirm primitives to the user application.

**Table 10: WITHDRAW confirm contents**

Parameter	Indication	Remark
Subscriber identity	M	Repeatable
Result for withdrawal	M	

## 4.2.11 IMPENDING-PRE-EMPTION indication

Optional IMPENDING-PRE-EMPTION indication may be offered from FE8 or FE5 to the user application to inform of a forthcoming pre-emption. IMPENDING-PRE-EMPTION indication primitive shall contain the SS-PPC information parameters listed in table 11.