SLOVENSKI STANDARD
oSIST prEN 300 392-3-8 V1.4.0:2019

01-november-2019

Prizemni snopovni radio (TETRA) - Govor in podatki (V+D) - 3. del: Medsebojno delovanje na medsistemskem vmesniku (ISI) - 8. poddel: Izvajanje splošnega formata govora

Terrestrial Trunked Radio (TETRA) - Voice plus Data (V+D) - Part 3: Interworking at the Inter-System Interface (ISI) - Sub-part 8: Generic Speech Format Implementation

Ta slovenski standard je istoveten z: **ETSI EN 300 392-3-8 V1.4.0 (2019-08)**

ICS:

33.070.10	Prizemni snopovni radio (TETRA)	Terrestrial Trunked Radio (TETRA)

oSIST prEN 300 392-3-8 V1.4.0:2019 **en**

Draft ETSI EN 300 392-3-8 V1.4.0 (2019-08)

Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 8: Generic Speech Format Implementation

Reference
REN/TCCE-03256

Keywords
interworking, radio, TETRA, V+D

ETSI

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

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

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

The present document can be downloaded from:
http://www.etsi.org/standards-search

Copyright Notification

Contents

Intellectual Property Rights

Essential patents

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

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

Trademarks

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

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 standards EN Approval Procedure.

The present document is part 3, sub-part 8 of a multi-part deliverable covering the 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)":

Sub-part 1: "General design";

Sub-part 2: "Additional Network Feature Individual Call (ANF-ISIIC)";

Sub-part 3: "Additional Network Feature Group Call (ANF-ISIGC)";

Sub-part 4: "Additional Network Feature Short Data Service (ANF-ISISDS)";

Sub-part 5: "Additional Network Feature for Mobility Management (ANF-ISIMM)";

Sub-part 6: "Speech format implementation for circuit mode transmission";

Sub-part 7: "Speech Format Implementation for Packet Mode Transmission";

Sub-part 8: "Generic Speech Format Implementation";

Sub-part 9: "Transport layer independent, General design";

Sub-part 10: "General design, PSS1 over E.1";

Sub-part 11: "General design, SIP/IP";

Sub-part 12: "Transport layer independent Additional Network Feature Individual Call (ANF-ISIIC)";

Sub-part 13: "Transport layer independent Additional Network Feature Group Call (ANF-ISIGC)";

Sub-part 14: "Transport layer independent Additional Network Feature Short Data Service (ANF-ISISDS)";

Sub-part 15: Transport layer independent Additional Network Feature, Mobility Management (ANF-ISIMM)";

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";

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.

For all subparts in the TETRA specification ETSI EN 300 392-3, "Interworking at the Inter-System Interface (ISI)" the terms ISI and TETRA ISI are equivalent.

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

Modal verbs terminology

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

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

Introduction

The present document defines the solution in the speech transportation format that applies in the ISI.

The present document also describes the transportation of ISI speech transmission over E1 time-division multiplexed digital lines using LAPF/HDLC encapsulation (when ISI signalling uses PSS1 as transport layer) and over IP network using RTP and UDP encapsulation (when ISI signalling adopts SIP as transport layer).

1 Scope

The present document specifies speech transmission format implementation independent of SwMI type.

The present document defines the format of user information that is transported between two SwMIs using the TETRA ISI.

The present document covers how TETRA air interface circuit mode traffic is encoded for transport over various media.

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.

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

NOTE 1: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

NOTE 2: Note that for the TETRA standards, the reference is always to a European Standard (ETSI EN 300 xxx) if such has been published, but the latest version of that standard can be either an EN or a Technical Specification (ETSI TS 100 xxx), even if this is not visible in the reference list.

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] Void.

[3] ETSI EN 300 395-2: "Terrestrial Trunked Radio (TETRA); Speech codec for full-rate traffic channel; Part 2: TETRA codec".

[4] ETSI ETS 300 402-3: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 3: Frame relay protocol specification".

[5] IETF RFC 3550: "RTP: A Transport Protocol for Real Time Applications".

[6] IETF RFC 4566: "SDP: Session Description Protocol".

[7] ETSI EN 300 392-3-10: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 10: General design, PSS1 over E.1".

2.2 Informative references

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

NOTE 1: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

NOTE 2: Note that for the TETRA standards, the reference is always to a European Standard (ETSI EN 300 xxx) if such has been published, but the latest version of that standard can be either an EN or a Technical Specification (ETSI TS 100 xxx), even if this is not visible in the reference list.

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] Recommendation ITU-T G.703: "Physical/electrical characteristics of hierarchical digital interfaces".

[i.2] Recommendation ITU-T G.704: "Synchronous frame structures used at 1544, 6312, 2048, 8448 and 44 736 kbit/s hierarchical levels".

[i.3] Recommendation ITU-T I.431: "Primary rate User-Network interface - Layer 1 specification".

[i.4] Recommendation ITU-T I.233.1: "ISDN Frame Relaying Bearer Service".

[i.5] Recommendation ITU-T Q.922: "Digital subscriber Signalling System No. 1 (DSS 1); Data Link Layer; ISDN Data Link Layer Specification for Frame Mode Bearer Services".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

ISI PDU frame rate: nominal time between start of two consecutive ISI Traffic PDUs

NOTE: There may be gaps in the flow of the ISI speech frames so that a ISI speech frame is missing in its normal time position.

3.2 Symbols

Void.

3.3 Abbreviations

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

ACELP	Algebraic CELP
AI	Air Interface
BECN	Backward Explicit Congestion Notification
CR	Change Request
CSRC	Contributing Source
DE	Discard Eligibility indicator
DLCI	Data Link Connection Identifier
DMO	Direct Mode Operation
E1	European format for digital transmission
ETS	European Technical Specification
FCS	Frame Check Sequence

FECN	Forward Explicit Congestion Notification
HDLC	High level Data Link Control
IETF	Internet Engineering Task Force
ISDN	Integrated Services Digital Network
IP	Internet protocol
ISI	Inter System Interface
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
LAPF	Link Access Procedures to Frame mode bearer services
MAC	Media Access Control
MS	Mobile Station
PDU	Protocol Data Unit
PEI	Peripheral Equipment Interface
PICS	Protocol Implementation Conformance Statement
PSS1	Private Network Signalling System Number 1
PVC	Permanent Virtual Circuit
RFC	Request For Comment
RoHC	Robust header Compression
RTCP	Real-time Control Protocol
RTP	Real-time Transport Protocol
SDL	Specification and Description Language
SIP	Session Initiation Protocol
SSRC	Synchronization Source
SwMI	Switching and Management Infrastructure
TDMA	Time Division Multiple Access
TETRA	Terrestrial Trunked Radio
UDP	User Datagram Protocol
V+D	Voice plus Data

4 Overview

Independently of SwMI implementation, TETRA speech and circuit mode data traffic and U-plane payload is carried in packets between two TETRA systems. The TETRA traffic and U-plane payload is carried in ISI traffic PDUs that may be transported in various media.

Since the transmission defined in the present document is "packet mode", packets may be subject to jitter. The maximum jitter is a SwMI specific characteristic. The value of the allowable maximum jitter value is outside the scope of the present document.

5 ISI Traffic PDU format and procedures

5.1 General on ISI traffic PDU contents

As TETRA is a radio system normally at least one end of the communication is using air interface. The structure of the TETRA air interface sets some requirements on the ISI traffic PDU contents and format on the ISI. The main structure of the air interface and speech encoding is retained and ISI traffic PDU supports:

- 170/3 ms (~56,67 ms) and 60 ms ISI traffic PDU rate;
- ACELP speech coding and reservation for other codecs; and
- Call reference.

The call reference is used to link the traffic and call instance together especially in scenarios where no virtual connection is applied.

Optionally a fully stolen or otherwise not available speech frame may be indicated to help an easier re-use of that timeslot for other signalling purposes at the terminating system.