ETSI TR 100 392-17-6 V1.1.1 (2018-12)

TETRA and Critical Communications Evolution (TCCE);
Part 17: TETRA V+D, DMO and associated specifications;
Sub-part 6: Release 2.2

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE).

The present document is part 17, sub-part 6 of a multi-part deliverable covering Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D), as identified below:

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

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

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

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

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

ETSI EN 300 392-7: "Security";

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

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

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

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

ETSI ETS 300 392-13: "SDL model of the Air Interface (AI)";

ETSI ETS 300 392-14: "Protocol Implementation Conformance Statement (PICS) proforma specification";

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

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

ETSI TR 100 392-17: "TETRA V+D and DMO specifications":

- Sub-part 1: "Release 1.1";
- Sub-part 2: "Release 1.2";

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- Sub-part 3: "Release 1.3";
- Sub-part 4: "Release 2.0";
- Sub-part 5: "Release 2.1";
- **Sub-part 6: "Release 2.2";**

ETSI TS 100 392-18: "Air interface optimized applications".

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.

Related specifications and reports outside of TETRA V+D and DMO release 2.2 are also included in the present document. These include Harmonized ENs covering EMC standards, Lawful Interception, QOS, mission critical broadband. Technical reports are included as they provide very useful information on TETRA and critical communications.

Modal verbs terminology

In the present document "**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.

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Introduction

The TETRA standard was developed to meet the needs of Professional Mobile Radio (PMR) user organizations for secure, reliable and robust critical communications. In particular, the following important services have been specified:

- Wide area fast call set-up "all informed net" group calls.
- Direct Mode Operation (DMO) allowing "back to back" communications between radio terminals independent of the network.
- High level voice encryption to meet the security needs of public safety organisations.
- An Emergency Call facility that gets through even if the system is busy.
- Full duplex voice for PABX and PSTN telephony communications.
- In addition to the needs of traditional PMR users, TETRA has been developed to meet the needs of Public Access Mobile Radio (PAMR)operators.

To meet the ever-changing user requirements and utilise the latest in technology developments, TETRA continues to be evolved and enhanced with the development of new standards including:

- TETRA Release 2, which incorporates the TETRA Enhanced Data Service (TEDS) that provides wideband high-speed data communication services.
- The interfacing between TETRA systems and mission-critical broadband services in order to allow interworking.
- TETRA Releases 2.x are defined in the Terms of Reference of ETSI Project TETRA for TETRA Release 2 [i.1] and are continuously maintained.

- Work has been ongoing since 2010 in developing specifications and reports related to the evolution to broadband critical communications and these are listed as they are either directly relevant to TETRA r2.2. e.g. interworking between TETRA and broadband systems or indirectly e.g. aspects of security for critical communications broadband systems.

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1 Scope

The present document identifies ETSI specifications and reports for TETRA V+D and DMO Release 2.2. It also includes ETSI specifications and reports relating to Critical Communications evolution undertaken by TC TCCE as well as specifications produced by other ETSI technical committees

ENs relating to TETRA specifications are often updated by first introducing an ETSI Technical Specification (TS) which will contain new features and change requests. Therefore, both the latest specification is shown along with the previous version if one is an EN and the other a TS. In the same way, EN versions of the same specification will also be updated replacing a TS in some cases Release 2.2 specifications were functionally frozen after the 52nd TC TCCE meeting in October 2018.

Release 2.2 specifications contain corrections and enhancements to Release 2.1 including a major development of the Inter System Interface specifications to develop separate specifications for IP and PSS1 over E.1 transport layers as well as transport layer independent parts.

NOTE 1: Functionally frozen means that no further functionality/features may be incorporated into the set of specifications, and that only corrective Change Requests (CRs) are to be accepted and agreed.

NOTE 2: It can be expected that corrective CRs will be introduced into the Release 2.2 specifications.

NOTE 3: Some of the CRs that will be produced will be for the next Release as they add new functionalities/features.

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2 References

2.1 Normative references

Normative references are not applicable in the present document.

2.2 Informative references

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

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

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

[i.1] Terms of Reference of ETSI Technical Committee TETRA and Critical Communications Evolution (TC TCCE) revised 2013.

NOTE: Available at https://portal.etsi.org/TBSiteMap/TCCE/TCCEToR.aspx.

3 Abbreviations

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

AGA	Air-Ground-Air
AI	Air Interface
AL	Ambience Listening
AMR	Adaptive Multi-Rate
ANF	Additional Network Feature
ANF-ISIGC	Additional Network Feature - Inter-System Interface Group Call

ANF-ISIIC	Additional Network Feature - Inter-System Interface Individual Call
ANF-ISIMM	Additional Network Feature - Inter-System Interface Mobility Management
ANF-ISISDS	Additional Network Feature - Inter-System Interface Short Data Service
AP	Access Priority
AS	Area Selection
BIC	Barring of Incoming Calls
BOC	Barring of Outgoing Calls
CAD	Call Authorized by Dispatcher
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
CF	Call Forwarding
CI	Call Identification
CR	Change Request
CRT	Call Retention
CW	Call Waiting
DG	Designer's Guide
DGNA	Dynamic Group Number Assignment
DL	Discreet Listening
DMO	Direct Mode Operation
DOTAM	Direct Mode Over the Air Management
EMC	Electromagnetic Compatibility
HOLD	Call Hold
HSD	High Speed Data
IC	Include Call
IC	Integrated Circuit
ISDN	Integrated Services Digital Network
ISI	Inter-System Interface
LE	Late Entry
LI	Lawful Interception
LIP	Location Information Protocol
LSC	List Search Call
MCPTT	Mission Critical Press To Talk
MS-MS	Mobile Station to Mobile Station
NAP	Net Assist Protocol
PABX	Private Automatic Base eXchange
PAMR	Public Access Mobile Radio
PC	Priority Call
PEI	Peripheral Equipment Interface
PICS	Protocol Implementation Conformance Statement
PMR	Private/ Professional Mobile Radio
PPC	Pre-emptive Priority Call
PSS	Public Security and Safety
PSTN	Public Switched Telephone Network
QAM	Quadrature Amplitude Modulation
QOS	Quality Of Service
R&TTE	Radio and Terminal Telecommunications Equipment
RF	Radio Frequency
SC	Smart Card
SDL	Specification and Description Language
SIM-ME	Subscriber Identity Module to Mobile Equipment
SNA	Short Number Addressing
SPAN	Service and Protocols for Advanced Networks
SSD	Service Specific Details
STQ	Speeech and multi-media Transmission Quality
TEDS	TETRA Enhanced Data Service
TMO	Trunked Mode Operation
ToR	Terms of Reference
TPI	Talking Party Identification
TR	Technical Report
UHF	Ultra High Frequency
UICC	Universal Integrated Circuit Card
V+D	Voice plus Data

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4 Specifications of TETRA Release 2.2 plus related specifications and reports

4.0 General

The following clauses contain ETSI deliverables included in TETRA V+D and DMO Release 2.2.

NOTE: After the list of TETRA V+D and DMO specifications there are listed specifications and reports applicable to TETRA including evolution to critical communications broadband.

4.1 Voice plus Data (V+D)

4.1.1 General Network Design

ETSI TS 100 392-1 (V1.5.1, 2018-04): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".

ETSI EN 300 392-1 (V1.4.1, 2009-01): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".

NOTE: This has been superseded by ETSI TS 100 392-1 (V1.5.1, 2018-04).

4.1.2 Air Interface

NOTE 1: A new version of this specification ETSI EN 300 392-2 (V3.9.1) is awaiting approval and will be published as soon as possible.

ETSI EN 300 392-2 (V3.8.1, 2016-08): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

ETSI TS 100 392-2 (V3.9.1): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

NOTE 2: This has been approved and is shortly to be published.

4.1.3 Inter-system interface

These specifications have been completely changed. The new TSs that now comprise the current ISI specification are listed, followed by the original EN specifications which have now been made historical. The next stage will be to issue the new TSs as ENs and after this the old ENs will be made void.

ETSI TS 100 392-3-8 (V1.3.1, 2018-05): "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".

ETSI TS 100 392-3-9 (V1.1.1, 2018-05): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 9: Transport Layer Independent, General Design".

ETSI TS 100 392-3-10 (V1.1.1, 2018-05): "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".

ETSI TS 100 392-3-11 (V1.1.1, 2018-05): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 11: General Design, SIP/IP".

ETSI TS 100 392-3-12 (V1.1.1, 2018-05): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 12: Transport Layer Independent Additional Network features".

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ETSI TS 100 392-3-13 (V1.1.1, 2018-05): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 13: Transport Layer Independent Additional Network features, Group Call (ANF- ISIGC)".

ETSI TS 100 392-3-14 (V1.1.1, 2018-05): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 14: Transport Layer Independent Additional Network features, Short Data Service (ANF-ISISDS)".

ETSI TS 100 392-3-15 (V1.1.1, 2018-05): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 15: Transport Layer Independent Additional Network features, Mobility Management (ANF-ISIMM)".

ETSI EN 300 392-3-1 (V1.4.1, 2015-12): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 1: General design".

NOTE 1: Made historical since being superseded by ETSI TS 100 392-3 subparts 9, 10 and 11.

ETSI EN 300 392-3-2 (V1.4.1, 2010-8): "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)".

NOTE 2: Made historical since being superseded by ETSI TS 100 392-3-12.

ETSI EN 300 392-3-3 (V1.4.1, 2017-12): "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)".

NOTE 3: Made historical since being superseded by ETSI TS 100 392-3-13.

ETSI EN 300 392-3-4 (V1.3.1, 2010-08): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 4: Additional Network Feature Short Data Service (ANF-ISISDS)".

NOTE 4: Made historical since being superseded by ETSI TS 100 392-3-14.

ETSI EN 300 392-3-5 (V1.5.1, 2016-6): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 3: Interworking at the Inter-System Interface (ISI); Sub-part 5: Additional Network Feature for Mobility Management (ANF-ISIMM)". Draft version ETSI EN 300 392-3-5 (V1.5.2, 2016-12).

NOTE 5: Made historical since being superseded by ETSI TS 100 392-3-15.

4.1.4 Voice +Data Gateways

ETSI ETS 300 392-4-1 (Ed.1, 1999-01): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 4: Gateways basic operation; Sub-part 1: Public Switched Telephone Network (PSTN)".

ETSI ETS 300 392-4-2 (Ed.1, 2000-09): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 4: Gateways basic operation; Sub-part 2: Integrated Services Digital Network (ISDN) gateway".

4.1.5 Peripheral Equipment Interface

ETSI TS 100 392-5 (V2.6.1, 2018-06): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 5: Peripheral Equipment Interface (PEI)".

ETSI EN 300 392-5 (V2.5.1, 2016-10): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 5: Peripheral Equipment Interface (PEI)".

NOTE: Superseded by ETSI TS 100 392-5 (V2.6.1, 2018-06).

4.1.6 Security

ETSI EN 300 392-7 (V3.4.1, 2017-01): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security".