

ETSI TS 101 052-1 V3.2.1 (2025-07)



Rules for the management of the TETRA standard authentication and key management algorithm sets; Part 1: TAA1

Reference

RTS/TCCE-06222

Keywords

algorithm, security, TAA1, TETRA

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Foreword

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

The present document is part 1 of a multi-part deliverable covering the rules for the management of the TETRA standard authentication and key management algorithm sets, as identified below:

Part 1: "TAA1";

Part 2: "TAA2".

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.

1 Scope

The purpose of the present document is to specify the rules for the management of the TETRA standard authentication and key management algorithm set TAA1. This algorithm set is intended for air interface security in TETRA products.

The specification for TAA1 consists of the following three parts:

- Part 1: Algorithm specification.
- Part 2: Design conformance test data.
- Part 3: Algorithm input/output test data.

The procedures described in the present document apply to parts 1 and 2 of the specification. Parts 1 and 2 are confidential for each of the algorithms. The algorithm primitives' section of part 1 of the specification has been published as ETSI TS 104 053-3 [i.1].

Part 3 of the specification is not confidential and can be obtained directly from the TAA1 Custodian (see clause 5.2). There are no restrictions on the distribution of this part of the specification.

The management structure is defined in clause 4. This structure is defined in terms of the principals involved in the management of TAA1 (ETSI, ETSI Technical Committee TCCE, TAA1 Custodian and approved recipients (beneficiaries)) together with the relationships and interactions between them.

The procedures for delivering TAA1 to approved recipients are defined in clause 5. This clause is supplemented by annex A which specifies the items which are to be delivered.

Clause 6 is concerned with the criteria for approving an organization for receipt of TAA1 and with the responsibilities of an approved recipient.

Clause 7 is concerned with the appointment and responsibilities of the TAA1 Custodian.

Clause 8 describes an overview of the algorithms.

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 in the [ETSI docbox](#).

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 necessary for the application of the present document.

- [1] Void.

2.2 Informative references

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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 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.

[i.1] [ETSI TS 104 053-3](#): "TETRA Air Interface Security, Algorithms specification; Part 3: TETRA and Authentication and Key Management Algorithms TAA1".

[i.2] [ETSI TS 100 392-7](#): "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security".

NOTE: ETSI TS 100 392-7 [i.2] may also be published as an ETSI European Norm, specifically ETSI EN 300 392-7. The latest version of the specification, either TS or EN, applies.

[i.3] [ETSI Algorithms & Codes](#) webpage.

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

approved recipient: beneficiary of the algorithm specification as described in the Confidentiality and Restricted Usage Undertaking (CRUU)

3.2 Symbols

Void.

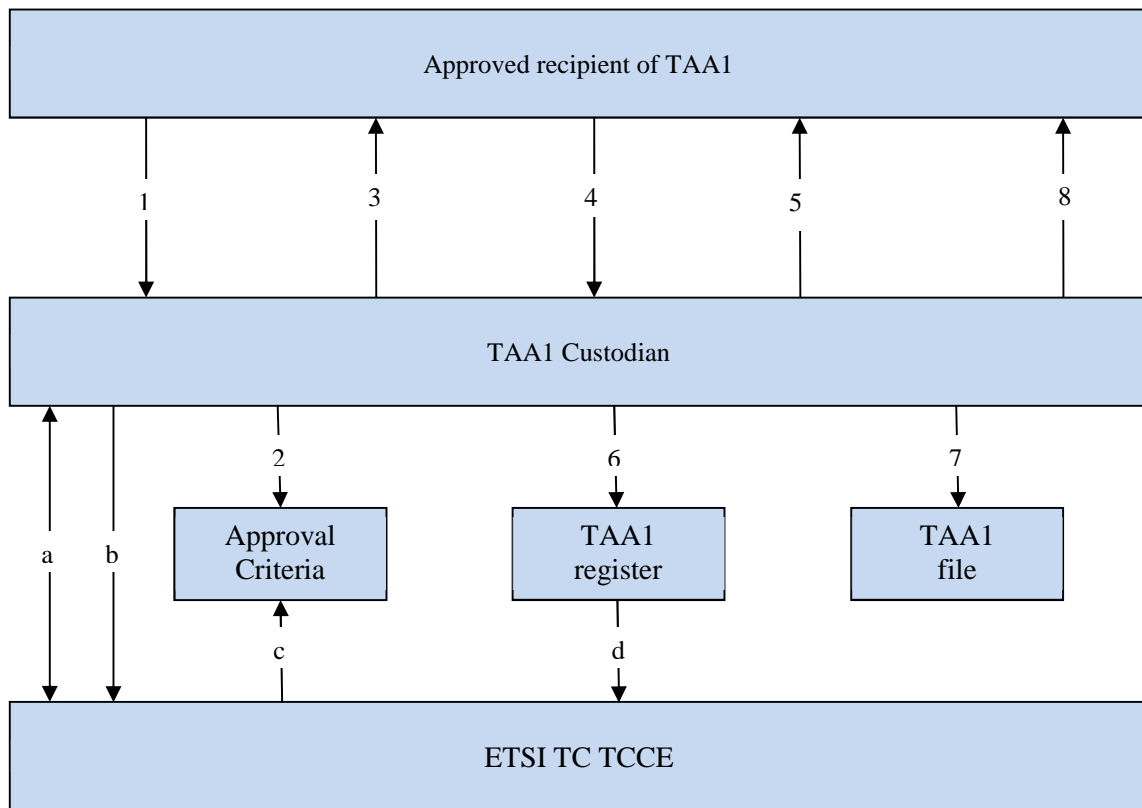
3.3 Abbreviations

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

CRUU	Confidentiality and Restricted Usage Undertaking
TAA1	TETRA Authentication Algorithm set No. 1
TC	Technical Committee
TCCE	TETRA and Critical Communications Evolution
TETRA	TErrestrial Trunked Radio

4 TAA1 management structure

The management structure is depicted in figure 1.



Key:

- a = Agreement between TAA1 Custodian and ETSI TC TCCE
- b = Status reports and recommendations
- c = Setting of approval criteria
- d = Requested details of the TAA1 register
- 1 = Request for TAA1
- 2 = Check of request against approval criteria
- 3 and 4 = Exchange of Confidentiality and Restricted Usage Undertaking
- 5 = Dispatch of TAA1 specification
- 6 = Update the TAA1 register
- 7 = Document filing
- 8 = Technical advice

Figure 1: TAA1 management structure

Figure 1 shows the three principals involved in the management of TAA1 and the relationships and interactions between them.

ETSI is the Custodian of TAA1. ETSI together with ETSI TC TCCE sets the approval criteria for receipt of the algorithm (see clause 6).

The TAA1 Custodian is the interface between ETSI TC TCCE and the approved recipients of TAA1.

The Custodian shall be ETSI unless it is decided by ETSI and/or ETSI TC TCCE to delegate this task to a third party on the basis of an agreement between the latter and ETSI. The TAA1 Custodian's duties are detailed in clause 7. They include distributing TAA1 to approved recipients, as detailed in clause 5, providing limited technical advice to approved recipients.

5 Distribution procedures

5.1 Distribution of parts 1, 2 and 3 of the TAA1 specification by the TAA1 Custodian

The process for purchase and distribution of algorithm specifications is described at [ETSI Algorithms & Codes](#) [i.3].

5.2 Distribution of TAA1 specification part 3 by the TAA1 Custodian

The following procedure is defined for distributing only part 3 of the TAA1 specification:

- 1) The TAA1 Custodian receives a request for one single copy of part 3 of the TAA1 specification.
- 2) The TAA1 Custodian sends one copy of part 3 of the TAA1 specification to the applicant.
- 3) The TAA1 Custodian informs ETSI TC TCCE.

6 Approval criteria and restrictions

The approval criteria are set by ETSI together with ETSI TC TCCE. ETSI together with ETSI TC TCCE may recommend changes to these criteria.

ETSI TC TCCE shall decide whether an organization requesting the TAA1 specification may be considered to be an approved recipient. Where an organization consists of a group of companies or organizations, ETSI TC TCCE will decide whether one organization or company within the group may be an approved recipient on behalf of other organizations or companies within the group.

In order for an organization to be considered an approved recipient of the TAA1 specification it has to satisfy at least one of criteria indicated in Article 3.2 of the Confidentiality and Restricted Usage Undertaking (CRUU) available at [ETSI Algorithms & Codes](#) [i.3].

In the event that an organization cannot comply with the rules as described in the present document, TAA1 Custodian will inform ETSI TC TCCE who may provide a justification. If a special Confidentiality and Restricted Usage Undertaking is used, the TAA1 Custodian will first ask the ETSI Legal Department to approve this Confidentiality and Restricted Usage Undertaking (CRUU).

7 The TAA1 Custodian

7.1 Responsibilities

The TAA1 Custodian is expected to perform the following tasks:

- | | |
|-------|--|
| T1 | To approve requests for TAA1 by reference to the Approval Criteria given in Article 3.2 of the Confidentiality and Restricted Usage Undertaking (CRUU) after confirmation by ETSI TC TCCE. |
| T2 | To process the Confidentiality and Restricted Usage Undertaking with approved recipients as described at ETSI Algorithms & Codes [i.3]. |
| T2bis | To obtain the administrative authorization and export licences required by the Customs Services of its country if any. |
| T3 | To distribute, if approved, the TAA1 specifications as described at ETSI Algorithms & Codes [i.3]. |

T4	To maintain the TAA1 Register as described in clause 4.
T5	To hold in custody the contents of the TAA1 File as specified in clause 4.
T6	To provide recipients of TAA1 with limited technical support, i.e. answer written queries arising from the specification or test data (see note).
T7	To advise ETSI TC TCCE of any problems arising with the approval criteria.
T8	In the light of written queries from recipients of the TAA1 specifications, to make recommendations to ETSI TC TCCE for improvements/corrections to the specification and, subject to ETSI TC TCCE approval.
T9	To provide ETSI TC TCCE with information from the TAA1 Register when requested to do so.

NOTE: The TAA1 Custodian will only endeavour to answer questions relating to the TAA1 specifications. The TAA1 Custodian is not expected to provide technical support for development programmes.

7.2 Appointment

The TAA1 Custodian is:

- ETSI

The contact person is:

- ETSI Algorithms & Codes service
- Email: algorithms@etsi.org
- ETSI
F-06921 Sophia Antipolis Cedex
FRANCE

The TAA1 Custodian will ask a fee from the recipient to cover the cost of distribution of parts 1 and 2 of the specifications.

The TAA1 Custodian may ask for an optional fee from the recipient to cover the cost of distribution of part 3.

All requests for either the TAA1 specification parts 1 and 2 or the TAA1 specification part 3 should be addressed to the indicated contact person or to ETSI.

8 TAA1 Overview Description

The TAA1 algorithm set is used to provide secure authentication and key management processes across the Air Interface and Inter-System Interface (ISI) of TETRA systems.

The set of TAA1 algorithms is described in detail in clause 5 of ETSI TS 104 053-3 [i.1].

A full description of the TETRA air interface encryption, authentication and key management protocols is contained in ETSI TS 100 392-7 [i.2].

All algorithms specified in TAA1, with the exception of the rather simple algorithms TB1 to TB7, make use of a block cipher. The block cipher that is used for this algorithm set is the HURDLE-II Algorithm described in clause 6 of ETSI TS 104 053-3 [i.1].

Annex A (informative):

Items delivered to approved recipient of TAA1

- ITEM-1: The TAA1 specification (parts 1, 2 and 3).
- ITEM-2: A countersigned Confidentiality and Restricted Usage Undertaking.

Annex B (normative):
Void

Annex C (informative): Bibliography

- ETSI TS 101 052-2: "Rules for the management of the TETRA standard authentication and key management algorithm sets; Part 2: TAA2".
- ETSI TS 101 053-1: "Rules for the management of the TETRA standard encryption algorithms; Part 1: TEA1".
- ETSI TS 101 053-2: "Rules for the management of the TETRA standard encryption algorithms; Part 2: TEA2".
- ETSI TS 101 053-3: "Rules for the management of the TETRA standard encryption algorithms; Part 3: TEA3".
- ETSI TS 101 053-4: "Rules for the management of the TETRA standard encryption algorithms; Part 4: TEA4".
- ETSI TS 101 053-5: "Rules for the management of the TETRA standard encryption algorithms; Part 5: TEA5".
- ETSI TS 101 053-6: "Rules for the management of the TETRA standard encryption algorithms; Part 6: TEA6".
- ETSI TS 101 053-7: "Rules for the management of the TETRA standard encryption algorithms; Part 7: TEA7".

History

Document history		
V1.1.1	June 1997	Publication as ETSI TR 101 052 (Historical)
V2.1.1	February 2016	Publication as ETSI TS 101 052
V3.1.1	February 2023	Publication
V3.2.1	July 2025	Publication