ETSI TS 101 053-1 V3.1.1 (2023-02)

Rules for the management of the TETRA standard encryption algorithms; Part 1: TEA1

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Reference
RTS/TCCE-06204

Keywords
algorithm, security, TETRA

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Foreword

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

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The present document is part 1 of a multi-part deliverable covering the rules for the management of the TETRA standard encryption algorithms, as identified below:

Part 1: "TEA1";

Part 2: "TEA2";

Part 3: "TEA3";

Part 4: "TEA4";

Part 5: "TEA5";

Part 6: "TEA6";

Part 7: "TEA7".

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 encryption algorithm TEA1. This algorithm is intended for air interface encryption in TETRA products.

The specification for TEA1 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 specifications. Parts 1 and 2 are confidential for each of the algorithms.

Part 3 of each of the specifications is not confidential and can be obtained directly from the TEA1 Custodian (see clause 5.2). There are no restrictions on the distribution of this part of the specifications.

The management structure is defined in clause 4. This structure is defined in terms of the principals involved in the management of TEA1 (ETSI, ETSI Technical Committee TCCE, TEA1 Custodian and approved recipients) together with the relationships and interactions between them.

The procedures for delivering TEA1 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 TEA1 and with the responsibilities of an approved recipient.

Clause 7 is concerned with the appointment and responsibilities of the TEA1 Custodian.

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2 References

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2.1 Normative references

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

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] ETSI Algorithms.

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

Not applicable.

3 Definition of terms, symbols and abbreviations

3.1 Terms

Void.

3.2 Symbols

Void.

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3.3 Abbreviations

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

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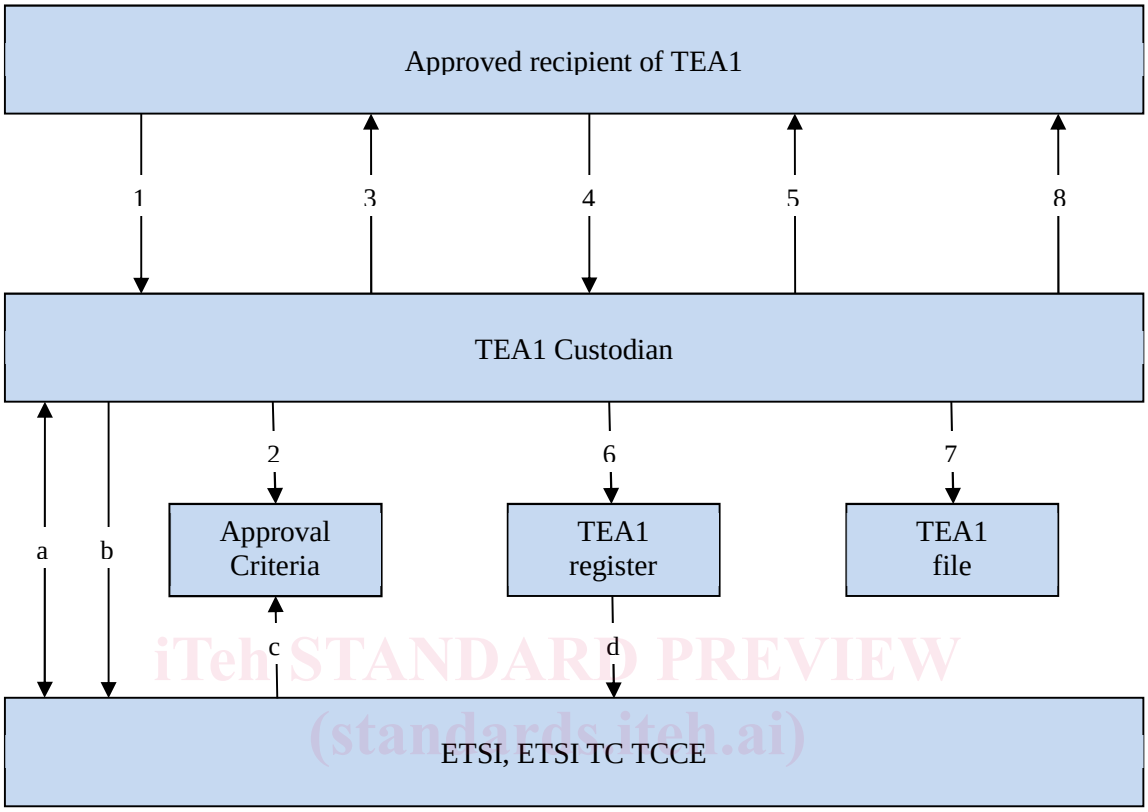
CRUU	Confidentiality and Restricted Usage Undertaking
DMO	Direct Mode Operation
TC	Technical Committee
TCCE	TETRA and Critical Communications Evolution
TEA1	TETRA Encryption Algorithm No. 1
TETRA	TErrestrial Trunked RAdio

4 TEA1 management structure

The management structure is depicted in figure 1.



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Key:

a	=	Agreement between TEA1 Custodian and ETSI
b	=	Status reports and recommendations
c	=	Setting of approval criteria
d	=	Requested details of the TEA1 register
1	=	Request for TEA1
2	=	Check of request against approval criteria
3 and 4	=	Exchange of Confidentiality and Restricted Usage Undertaking
5	=	Dispatch of TEA1 specification
6	=	Update the TEA1 register
7	=	Document filing
8	=	Technical advice

Figure 1: TEA1 management structure

Figure 1 shows the three principals involved in the management of TEA1 and the relationships and interactions between them.

ETSI is the owner of TEA1. The ETSI Secretariat together with ETSI TC TCCE sets the approval criteria for receipt of the algorithm (see clause 6).

The TEA1 Custodian is the interface between ETSI and the approved recipients of TEA1.

The Custodian shall be the ETSI Secretariat unless it is decided by ETSI Secretariat and/or ETSI TC TCCE to (temporarily) delegate this task to a third party on the basis of an agreement between the latter and the ETSI Secretariat. The TEA1 Custodian's duties are detailed in clause 7. They include distributing TEA1 to approved recipients, as detailed in clause 5, providing limited technical advice to approved recipients and providing algorithm status reports to ETSI TC TCCE.

5 Distribution procedures

5.1 Distribution of parts 1, 2 and 3 of the TEA1 specification by the TEA1 Custodian

The process for distribution of algorithm specifications is described at https://www.etsi.org/security-algorithms-and-codes/security-algorithms [1].

5.2 Distribution of TEA1 specification part 3 by the TEA1 Custodian

The following procedure is defined for distributing only part 3 of the TEA1 specification:

1) The TEA1 Custodian receives a request for one single copy of part 3 of the TEA1 specification.

2) The TEA1 Custodian sends one copy of part 3 of the TEA1 specification to the applicant.

6 Approval criteria and restrictions

The approval criteria are set by the ETSI Secretariat together with ETSI TC TCCE and maintained by the TEA1 Custodian. The TEA1 Custodian may recommend changes to these criteria.

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The TEA1 Custodian shall decide whether an organization requesting the TEA1 specification may be considered to be an approved recipient. Where an organization consists of a group of companies or organizations, the TEA1 Custodian 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. Any doubtful cases shall be referred back to ETSI Secretariat or ETSI TC TCCE.

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In order for an organization to be considered an approved recipient of the TEA1 specification it has to satisfy at least one of the following criteria:

C1 The organization is a bona fide designer or manufacturer of TETRA subscriber or fixed network equipment, where the algorithm requested is included in the systems.

C2 The organization is a bona fide designer or manufacturer of components for TETRA subscriber or fixed network equipment, where at least one of the components includes the algorithm requested.

C3 The organization is a bona fide designer or manufacturer of a TETRA system simulator for testing of TETRA subscriber or fixed network equipment, where the simulator includes the algorithm requested.

C4 The organization has provided the TEA1 Custodian with exceptional reasons that have been approved by the TEA1 Custodian.

In the event that an organization cannot comply with the rules as described in the present document, the TEA1 Custodian may still decide, on an exceptional basis, to distribute the TEA1 specifications to this organization. In this case the TEA1 Custodian will inform ETSI TC TCCE about the decision and at the same time provide a motivation. If a special Confidentiality and Restricted Usage Undertaking is used, the TEA1 Custodian will first ask the ETSI Legal Department to approve this Confidentiality and Restricted Usage Undertaking (CRUU).

7 The TEA1 Custodian

7.1 Responsibilities

The TEA1 Custodian is expected to perform the following tasks:

T1 To approve requests for TEA1 by reference to the Approval Criteria given in clause 6.

T2 To exchange the Confidentiality and Restricted Usage Undertaking with approved recipients as described in clause 5.

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 TEA1 specifications as detailed in clause 5.

T4 To maintain the TEA1 Register as described in clause 4.

T5 To hold in custody the contents of the TEA1 File as specified in clause 4.

T6 To provide recipients of TEA1 with limited technical support, i.e. answer written queries arising from the specification or test data (see note 1).

T7 To advise ETSI/ETSI TC TCCE of any problems arising with the approval criteria.

T8 In the light of written queries from recipients of the TEA1 specifications, to make recommendations to ETSI/ETSI TC TCCE for improvements/corrections to the specification and, subject to ETSI/ETSI TC TCCE approval, make and distribute the changes (see note 2).

T9 To provide ETSI/ETSI TC TCCE with information from the TEA1 Register when requested to do so.

T10 To monitor published advances in cryptanalysis and advise the ETSI TC TCCE of any advances which have a significant impact upon the continued suitability of TEA1 for the TETRA application.

NOTE 1: The TEA1 Custodian will only endeavour to answer questions relating to the TEA1 specifications. The TEA1 Custodian is not expected to provide technical support for development programmes.

NOTE 2: Numbered copies of any changes to the TEA1 specifications will be automatically distributed to all recipients of the specification and a record of the distribution entered in the TEA1 Register.

7.2 Appointment

The TEA1 Custodian is:

- ETSI Secretariat

The contact person is:

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

The TEA1 Custodian will ask a fee from the recipient to cover the cost of distribution of parts 1 and 2 of the specifications.

The TEA1 Custodian may ask for an optional fee from the recipient to cover the cost of distribution of part 3.

All requests for either the TEA1 specification parts 1 and 2 or the TEA1 specification part 3 should be addressed to the indicated contact person or to ETSI.

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Annex A (informative): Items delivered to approved recipient of TEA1

ITEM-1: The TEA1 specification (parts 1, 2 and 3).

ITEM-2: A countersigned Confidentiality and Restricted Usage Undertaking.

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