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TECHNICAL SPECIFICATION

**Digital cellular telecommunications system (Phase 2+) (GSM);
3G Security;
Specification of the A5/3 encryption algorithms for GSM and
ECSD, and the GEA3 encryption algorithm for GPRS;
Document 1: A5/3 and GEA3 specifications
(3GPP TS 55.216 version 19.0.0 Release 19)**



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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

0 Scope

The present document specifies the A5/3 and GEA3 specification.

0A References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP Task Force Specification: "Specification of the A5/3 encryption algorithms for GSM and ECSD, and the GEA3 encryption algorithm for GPRS; Document 1: A5/3 and GEA3 specification" version 1.1, 2002-05-30

Note: Reference [2] is available via <http://portal.etsi.org/dvbandca/home.asp> and is subject to licensing conditions described at this site.

0B Definitions, symbols and abbreviations

0B.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [1] and in the 3GPP Task Force Specification [2] apply. A term defined in the latter document takes precedence over the definition of the same term, if any, in TR 21.905 [1].

0B.2 Symbols

For the purposes of the present document, the symbols defined in the 3GPP Task Force Specification [2] apply.

0B.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [2] and in the 3GPP Task Force Specification [2] apply. An abbreviation defined in the latter document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [1].

0C Technical provisions

The technical provisions of the current document are contained in the 3GPP Task Force Specification [2].

Annex D (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2002-05	-	-	-	-	ETSI SAGE first publication		SAGE V1.0
2002-07	-	-	-	-	Agreed at SA WG3 #24 for presentation to TSG SA #17 for approval. Converted into 3GPP TS format as TS 55.216 (Technically equivalent to SAGE V1.0)	SAGE V1.0	1.0.0
2002-09	SP-17	SP-020506	-	-	Approved for Release 6 - version 6.0.0	1.0.0	6.0.0
2002-12	SP-18	SP-020721	001	-	EGPRS algorithm	6.0.0	6.1.0
2003-09	SP-19	SP-030490	002	-	Clarification on the usage of the Key length	6.1.0	6.2.0
2007-12	SP-38	SP-070776	003	-	Conversion to pointer to export controlled document Note: Version 7.0.0 is a "readme" file placeholder with no technical content.	6.2.0	7.1.0
2008-12	SP-42	-	-	-	Upgrade to Release 8	7.1.0	8.0.0
2009-12	-	-	-	-	Update to Rel-9 version (MCC)	8.0.0	9.0.0
2011-03	-	-	-	-	Update to Rel-10 version (MCC)	9.0.0	10.0.0
2012-09	-	-	-	-	Update to Rel-11 version (MCC)	10.0.0	11.0.0
2014-09	-	-	-	-	Update to Rel-12 version (MCC)	11.0.0	12.0.0
2016-01	-	-	-	-	Update to Rel-13 version (MCC)	12.0.0	13.0.0
2017-03	SA#75	-	-	-	Promotion to Release 14 without technical change	13.0.0	14.0.0
2018-06	-	-	-	-	Update to Rel-15 version (MCC)	14.0.0	15.0.0
2020-07	-	-	-	-	Update to Rel-16 version (MCC)	15.0.0	16.0.0
2022-03	-	-	-	-	Update to Rel-17 version (MCC)	16.0.0	17.0.0
2024-03	-	-	-	-	Update to Rel-18 version (MCC)	17.0.0	18.0.0
2025-10	-	-	-	-	Update to Rel-19 version (MCC)	18.0.0	19.0.0

History

Document history		
V19.0.0	October 2025	Publication