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**Digitalne izboljšane brezvrvične telekomunikacije (DECT) - Skupni vmesnik (CI) - 7.  
del: Varnostne lastnosti**

Digital Enhanced Cordless Telecommunications (DECT) - Common Interface (CI) - Part  
7: Security features

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# ETSI EN 300 175-7 V2.8.1 (2019-12)



## Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features

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# Contents

Intellectual Property Rights .....	10
Foreword.....	10
Modal verbs terminology.....	10
Introduction .....	11
1 Scope .....	15
2 References .....	15
2.1 Normative references .....	15
2.2 Informative references.....	16
3 Definition of terms, symbols and abbreviations.....	17
3.1 Terms.....	17
3.2 Symbols.....	17
3.3 Abbreviations .....	18
4 Security architecture.....	20
4.1 Background .....	20
4.2 Security services.....	20
4.2.1 Authentication of a PT .....	20
4.2.2 Authentication of an FT .....	20
4.2.3 Mutual authentication .....	20
4.2.4 Data confidentiality.....	20
4.2.5 User authentication .....	21
4.3 Security mechanisms .....	21
4.3.0 General.....	21
4.3.1 Authentication of a PT (type 1 procedure).....	21
4.3.2 Authentication of an FT (type 1 procedure).....	22
4.3.3 Mutual authentication .....	24
4.3.4 Data confidentiality.....	24
4.3.4.0 General .....	24
4.3.4.1 Derived Cipher Key (DCK) .....	24
4.3.4.2 Static Cipher Key (SCK).....	25
4.3.4.3 Default Cipher Key (DefCK) .....	25
4.3.5 User authentication .....	25
4.3.6 Authentication of a PT (type 2 procedure).....	25
4.3.7 Authentication of a FT (type 2 procedure).....	28
4.4 Cryptographic parameters and keys .....	30
4.4.1 Overview .....	30
4.4.2 Cryptographic parameters.....	30
4.4.2.0 Description of parameters .....	30
4.4.2.1 Provisions related to the generation of random numbers .....	33
4.4.3 Cryptographic keys .....	33
4.4.3.0 General .....	33
4.4.3.1 Authentication key K .....	33
4.4.3.2 Authentication session keys KS and KS' .....	34
4.4.3.3 Cipher key CK .....	35
4.5 Security processes .....	35
4.5.1 Overview .....	35
4.5.2 Derivation of authentication key, K.....	35
4.5.2.0 General .....	35
4.5.2.1 K is derived from UAK.....	36
4.5.2.2 K is derived from AC.....	36
4.5.2.3 K is derived from UAK and UPI.....	36
4.5.3 Authentication processes .....	36
4.5.3.0 General .....	36
4.5.3.1 Processes for the derivation of KS and KS'.....	37
4.5.3.2 Processes for the derivation of DCK, RES1 and RES2.....	37

4.5.4	Key stream generation .....	38
4.5.5	CCM Authenticated Encryption .....	38
4.6	Combinations of security services.....	39
4.6.0	Service combinations and related considerations .....	39
4.6.1	Combinations of security algorithms .....	40
4.6.1.0	General .....	40
4.6.1.1	Limitations related to capering algorithms.....	40
5	Algorithms for security processes .....	40
5.1	Background .....	40
5.1.0	General.....	40
5.1.1	A algorithm .....	40
5.1.1.0	A algorithm, general.....	40
5.1.1.1	A algorithm, DSAA based (A-DSAA).....	41
5.1.1.2	A algorithm, DSAA2 based (A-DSAA2).....	41
5.1.1.3	A algorithm, proprietary.....	42
5.2	Derivation of session authentication key(s).....	42
5.2.1	A11 process .....	42
5.2.2	A21 process .....	42
5.3	Authentication and cipher key generation processes.....	43
5.3.1	A12 process .....	43
5.3.2	A22 process .....	44
5.4	CCM algorithm .....	44
6	Integration of security .....	45
6.1	Background .....	45
6.2	Association of keys and identities .....	45
6.2.1	Authentication key .....	45
6.2.1.0	General .....	45
6.2.1.1	K is derived from UAK.....	45
6.2.1.2	K derived from AC.....	45
6.2.1.3	K derived from UAK and UPI .....	46
6.2.2	Cipher keys .....	46
6.2.3	Cipher keys for CCM.....	46
6.2.3.0	General .....	46
6.2.3.1	Single use of the keys for CCM .....	47
6.2.3.2	Cipher keys for CCM encryption of C/L multicast channels .....	48
6.3	NWK layer procedures .....	48
6.3.1	Background.....	48
6.3.2	Authentication exchanges .....	48
6.3.3	Authentication procedures .....	50
6.3.3.1	Authentication of a PT type 1 procedure.....	50
6.3.3.2	Authentication of an FT type 1 procedure.....	50
6.3.3.3	Authentication of a PT type 2 procedure.....	51
6.3.3.4	Authentication of an FT type 2 procedure.....	51
6.3.4	Transfer of Cipher Key, CK.....	52
6.3.5	Re-Keying.....	52
6.3.6	Encryption with Default Cipher Key .....	52
6.3.7	Transfer of Cipher Key CK for CCM .....	52
6.3.7.0	General .....	52
6.3.7.1	Transfer by Virtual Call setup CC procedure.....	52
6.3.7.2	Transfer using MM procedures for CCM re-keying and sequence reset.....	53
6.3.8	Transfer of Cipher Keys for CCM encryption of multicast channels .....	53
6.3.8.1	General .....	53
6.3.8.2	Multicast encryption parameter assignment procedure, FT initiated .....	53
6.3.8.2.0	General .....	53
6.3.8.2.1	Transport of the security parameters .....	54
6.3.8.2.2	<<INFO TYPE>> coding .....	54
6.3.8.3	Multicast encryption parameter retrieval procedure, PT initiated .....	54
6.3.8.3.0	General .....	54
6.3.8.3.1	Transport of the security parameters .....	55
6.3.8.3.2	<<INFO TYPE>> coding.....	55

6.3.8.4	Error cases.....	55
6.3.8.4.1	FT initiated parameter assignment procedure - PT reject.....	55
6.3.8.4.2	PT initiated parameter retrieval procedure - FT reject.....	55
6.3.8.4.3	Coding of the {MM-INFO-REJECT} in the error cases.....	56
6.3.9	Transfer of Cipher Keys to Wireless Relay Stations (WRS).....	56
6.3.9.1	General.....	56
6.3.9.2	Security considerations.....	56
6.3.9.3	Indication of cipher key FT initiated procedure.....	56
6.3.9.4	Cipher key retrieval procedure. PT initiated.....	57
6.3.9.5	Error cases.....	59
6.3.9.5.1	PT initiated cipher key retrieval procedure - FT reject.....	59
6.4	MAC layer procedures.....	60
6.4.1	Background.....	60
6.4.2	MAC layer field structure.....	60
6.4.3	Data to be encrypted.....	62
6.4.4	Encryption process.....	62
6.4.5	Initialization and synchronization of the encryption process.....	65
6.4.5.0	General.....	65
6.4.5.1	Construction of CK.....	65
6.4.5.2	The Initialization Vector (IV).....	65
6.4.5.3	Generation of two Key Stream segments.....	65
6.4.6	Encryption mode control.....	66
6.4.6.1	Background.....	66
6.4.6.2	MAC layer messages.....	66
6.4.6.3	Procedures for switching to encrypt mode.....	66
6.4.6.3.1	General.....	66
6.4.6.3.2	PT procedure for switching from clear to encrypt mode with a DCK.....	67
6.4.6.3.3	FT procedure for switching from clear to encrypt mode with a DCK.....	67
6.4.6.3.4	PT procedure for switching from clear to encrypt mode with a Default Cipher Key (DefCK).....	68
6.4.6.3.5	Error handling - poor link.....	70
6.4.6.4	Procedures for switching to clear mode.....	72
6.4.6.5	Procedures for re-keying.....	73
6.4.6.5.1	Re-keying to a DCK.....	73
6.4.6.5.2	Re-keying to a DefCK.....	74
6.4.6.5.3	FT Indication of re-keying to a DefCK.....	75
6.4.6.6	Insertion of WAIT.....	76
6.4.7	Handover of the encryption process.....	77
6.4.7.0	General.....	77
6.4.7.1	Bearer handover, uninterrupted ciphering.....	77
6.4.7.2	Connection handover, uninterrupted ciphering.....	77
6.4.7.3	External handover - handover with ciphering.....	78
6.4.8	Modifications for half and long slot specifications (2-level modulation).....	78
6.4.8.1	Background.....	78
6.4.8.2	MAC layer field structure.....	78
6.4.8.3	Data to be encrypted.....	79
6.4.8.4	Encryption process.....	79
6.4.8.5	Initialization and synchronization of the encryption process.....	80
6.4.8.6	Encryption mode control.....	80
6.4.8.7	Handover of the encryption process.....	80
6.4.9	Modifications for double slot specifications (2-level modulation).....	80
6.4.9.1	Background.....	80
6.4.9.2	MAC layer field structure.....	80
6.4.9.3	Data to be encrypted.....	81
6.4.9.4	Encryption process.....	81
6.4.9.5	Initialization and synchronization of the encryption process.....	82
6.4.9.6	Encryption mode control.....	82
6.4.9.7	Handover of the encryption process.....	82
6.4.10	Modifications for multi-bearer specifications.....	83
6.4.11	Modifications for 4-level, 8-level, 16-level and 64-level modulation formats.....	83
6.4.11.1	Background.....	83
6.4.11.2	MAC layer field structure.....	83
6.4.11.3	Data to be encrypted.....	83

6.4.11.4	Encryption process .....	84
6.4.11.4.0	General .....	84
6.4.11.4.1	Encryption process for the A-field and for the unprotected format .....	84
6.4.11.4.2	Encryption process for the single subfield protected format .....	85
6.4.11.4.3	Encryption process for the multi-subfield protected format .....	86
6.4.11.4.4	Encryption process for the constant-size-subfield protected format .....	88
6.4.11.4.5	Encryption process for the encoded protected format (MAC service $I_{PX}$ ) .....	88
6.4.11.5	Initialization and synchronization of the encryption process .....	90
6.4.11.6	Encryption mode control .....	90
6.4.11.7	Handover of the encryption process .....	90
6.4.12	Procedures for CCM re-keying and sequence reset .....	90
6.5	Security attributes .....	90
6.5.1	Background .....	90
6.5.2	Authentication protocols .....	91
6.5.2.0	General .....	91
6.5.2.1	Authentication of a PT type 1 procedure .....	91
6.5.2.2	Authentication of an FT type 1 procedure .....	92
6.5.2.3	Authentication of a PT type 2 procedure .....	93
6.5.2.4	Authentication of an FT type 2 procedure .....	94
6.5.3	Confidentiality protocols .....	95
6.5.4	Access-rights protocols .....	97
6.5.5	Key numbering and storage .....	98
6.5.5.0	General .....	98
6.5.5.1	Authentication keys .....	98
6.5.5.2	Cipher keys .....	98
6.5.6	Key allocation .....	99
6.5.6.1	Introduction .....	99
6.5.6.2	UAK allocation (DSAA algorithm) .....	100
6.5.6.3	UAK allocation (DSAA2 algorithm) .....	101
6.6	DLC layer procedures .....	101
6.6.1	Background .....	101
6.6.2	CCM Authenticated Encryption .....	102
6.6.2.0	CCM overview .....	102
6.6.2.1	CCM operation .....	102
6.6.2.2	Key management .....	103
6.6.2.3	CCM Initialization Vector .....	103
6.6.2.3.0	CCM Initialization Vector: overview .....	103
6.6.2.3.1	CCM Initialization Vector: first byte .....	103
6.6.2.3.2	CCM Initialization Vector: bytes 8-11 .....	104
6.6.2.3.3	CCM Initialization Vector: bytes 12 .....	104
6.6.2.4	CCM Sequence Number .....	104
6.6.2.5	CCM Start and Stop .....	105
6.6.2.6	CCM Sequence resetting and re-keying .....	105
6.6.2.7	CCM encryption for multicast channels .....	105
6.6.2.7.0	General .....	105
6.6.2.7.1	Applicable types of multicast channels and identifiers .....	105
6.6.2.7.2	Process for encryption of multicast channels .....	105
6.6.2.7.3	DLC service for encrypted multicast channels .....	105
6.6.2.7.4	Encryption key for multicast channels .....	105
6.6.2.7.5	CCM and DLC sequence numbers .....	106
6.6.2.7.6	Initialization Vector for multicast channels .....	106
6.6.2.7.7	Security provisions regarding the key .....	107
6.6.2.8	CCM encryption for service channels .....	107
6.6.2.8.0	General .....	107
6.6.2.8.1	Initialization Vector for service channels .....	108
6.7	Security meta-procedures .....	108
6.7.1	General .....	108
6.7.2	Re-keying .....	108
6.7.2.1	Aim and strategy .....	108
6.7.2.2	Re-keying procedure .....	108
6.7.2.3	Re-keying procedure with Wireless Relay Stations (WRSs) .....	109



6.7.2.3.1	General .....	109
6.7.2.3.2	Key aging model.....	110
6.7.3	Early encryption.....	110
6.7.3.1	Aim and strategy .....	110
6.7.3.2	The Default Cipher Keys (DefCK) .....	110
6.7.3.3	The Default Cipher Key Index .....	111
6.7.3.4	Generation and refresh strategy.....	111
6.7.3.5	Running the procedure .....	111
6.7.3.6	Security considerations .....	111
7	Use of security features .....	112
7.1	Background .....	112
7.2	Key management options .....	112
7.2.1	Overview of security parameters relevant for key management.....	112
7.2.2	Generation of authentication keys .....	113
7.2.3	Initial distribution and installation of keys .....	114
7.2.4	Use of keys within the fixed network .....	115
7.2.4.0	Use of keys within the fixed network: general.....	115
7.2.4.1	Use of keys within the fixed network: diagrams for authentication type 1 scenarios .....	117
7.2.4.2	Use of keys within the fixed network: diagrams for authentication type 2 scenarios .....	120
7.3	Confidentiality service with a Cordless Radio Fixed Part (CRFP).....	122
7.3.1	General.....	122
7.3.2	CRFP initialization of PT cipher key.....	122
<b>Annex A (informative): Security threats analysis.....</b>		<b>123</b>
A.1	Introduction .....	123
A.2	Threat A - Impersonating a subscriber identity.....	124
A.3	Threat B - Illegal use of a handset (PP).....	124
A.4	Threat C - Illegal use of a base station (FP).....	124
A.5	Threat D - Impersonation of a base station (FP).....	125
A.6	Threat E - Illegally obtaining user data and user related signalling information .....	125
A.7	Conclusions and comments .....	126
<b>Annex B (informative): Security features and operating environments .....</b>		<b>128</b>
B.1	Introduction .....	128
B.2	Definitions.....	128
B.3	Enrolment options .....	128
<b>Annex C (informative): Reasons for not adopting public key techniques.....</b>		<b>130</b>
<b>Annex D (informative): Overview of security features .....</b>		<b>131</b>
D.1	Introduction .....	131
D.2	Authentication of a PT .....	131
D.3	Authentication of an FT .....	132
D.4	Mutual authentication of a PT and an FT.....	132
D.4.0	General .....	132
D.4.1	Direct method.....	132
D.4.2	Indirect method 1.....	132
D.4.3	Indirect method 2.....	132
D.5	Data confidentiality .....	132
D.5.0	General .....	132
D.5.1	Cipher key derivation as part of authentication.....	133
D.5.2	Static cipher key .....	133

D.6	User authentication.....	133
D.7	Key management in case of roaming .....	133
D.7.1	Introduction .....	133
D.7.2	Use of actual authentication key K.....	133
D.7.3	Use of session keys.....	134
D.7.4	Use of precalculated sets .....	134
<b>Annex E (informative): Limitations of DECT security.....</b>		<b>135</b>
E.1	Introduction .....	135
E.2	Protocol reflection attacks .....	135
E.3	Static cipher key and short Initial Vector (IV) .....	135
E.4	General considerations regarding key management.....	136
E.5	Use of a predictable challenge in FT authentication .....	136
<b>Annex F (informative): Security features related to target networks .....</b>		<b>137</b>
F.1	Introduction .....	137
F.1.0	General .....	137
F.1.1	Notation and DECT reference model .....	137
F.1.2	Significance of security features and intended usage within DECT.....	137
F.1.3	Mechanism/algorithm and process requirements .....	138
F.2	PSTN reference configurations .....	139
F.2.1	Domestic telephone .....	139
F.2.2	PBX.....	140
F.2.3	Local loop.....	142
F.3	ISDN reference configurations.....	143
F.3.1	Terminal equipment .....	143
F.3.2	Network termination 2.....	144
F.3.3	Local loop.....	144
F.4	X.25 reference configuration.....	144
F.4.1	Data Terminal Equipment (DTE).....	144
F.4.2	PAD equipment .....	145
F.5	GSM reference configuration.....	145
F.5.1	Base station substation .....	145
F.5.2	Mobile station.....	145
F.6	IEEE 802 reference configuration.....	145
F.6.1	Bridge.....	145
F.6.2	Gateway.....	145
F.7	Public access service reference configurations .....	146
F.7.1	Fixed public access service reference configuration .....	146
<b>Annex G (informative): Compatibility of DECT and GSM authentication .....</b>		<b>147</b>
G.1	Introduction .....	147
G.2	SIM and DAM functionality .....	147
G.3	Using an SIM for DECT authentication.....	148
G.4	Using a DAM for GSM authentication .....	148
<b>Annex H (normative): DECT Standard Authentication Algorithm (DSAA).....</b>		<b>149</b>
<b>Annex I (normative): Security system parameters .....</b>		<b>150</b>
I.1	Security timers.....	150

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<b>Annex J (normative):</b>	<b>DECT Standard Cipher (DSC).....</b>	<b>152</b>
<b>Annex K (normative):</b>	<b>Clarifications, bit mappings and examples for DSAA and DSC .....</b>	<b>153</b>
K.1	Ambiguities concerning the DSAA.....	153
K.2	Ambiguities concerning the DSC DECT-standard cipher.....	154
<b>Annex L (normative):</b>	<b>DECT Standard Authentication Algorithm #2 (DSAA2) .....</b>	<b>156</b>
L.1	Introduction .....	156
L.2	Operation of the Authentication Algorithm .....	156
L.2.1	DSAA2-1.....	156
L.2.2	DSAA2-2.....	157
L.3	Test Sets .....	158
L.3.1	DSAA2-1.....	158
L.3.2	DSAA2-2.....	161
L.4	DSAA2 Examples .....	164
L.4.0	General .....	164
L.4.1	Subscription with Key Allocation .....	164
L.4.1.0	Message sequence and coding .....	164
L.4.1.1	PP AC Authentication.....	165
L.4.1.2	FP AC Authentication.....	166
L.4.2	DCK Allocation through PP UAK Authentication.....	166
L.4.2.0	Message sequence and coding .....	166
L.4.2.1	PP UAK Authentication.....	167
L.4.2.2	Derivation of 64 bit DCK for DSC .....	167
L.5	DCK to CK mapping.....	167
<b>Annex M (normative):</b>	<b>DECT Standard Cipher #2 (DSC2).....</b>	<b>169</b>
M.1	Introduction .....	169
M.2	Operation of the Cipher.....	169
M.3	Test Sets .....	170
M.4	DSC2 Test Set .....	172
M.5	Mapping of DECT values into AES-128 plaintext.....	174
<b>Annex N (normative):</b>	<b>CCM Authenticated Encryption .....</b>	<b>175</b>
N.1	Introduction .....	175
N.1.0	General .....	175
N.1.1	Key management.....	175
N.2	Operation of the CCM encryption algorithm .....	175
N.2.0	Description of the CCM algorithm: general .....	175
N.2.1	Description of the CCM algorithm: encryption.....	176
N.2.1.0	Overview .....	176
N.2.1.1	Block ciphers .....	176
N.2.1.2	Counter function (CTR).....	176
N.2.1.3	AES block "B" and generation of the encryption stream.....	177
N.2.1.4	AES block "A" and generation of the Message Integrity Code (MIC) .....	177
N.2.1.5	"c" stream.....	177
N.2.2	Description of the CCM algorithm: decoding .....	177
<b>Annex O (informative):</b>	<b>Change history .....</b>	<b>178</b>
History .....		179

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## Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Digital Enhanced Cordless Telecommunications (DECT).

The present document is part 7 of a multi-part deliverable ([1] to [8]). Full details of the entire series can be found in part 1 [1].

The following cryptographic algorithms are subject to controlled distribution:

- a) DECT Standard Authentication Algorithm (DSAA);
- b) DECT Standard Cipher (DSC).

These algorithms are distributed on an individual basis. Further information and details of the current distribution procedures can be obtained from the ETSI Secretariat at the address on the first page of the present document.

Further details of the DECT system may be found in ETSI TR 101 178 [i.1] and ETSI ETR 043 [i.2].

National transposition dates	
Date of adoption of this EN:	28 November 2019
Date of latest announcement of this EN (doa):	29 February 2020
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Date of withdrawal of any conflicting National Standard (dow):	31 August 2021

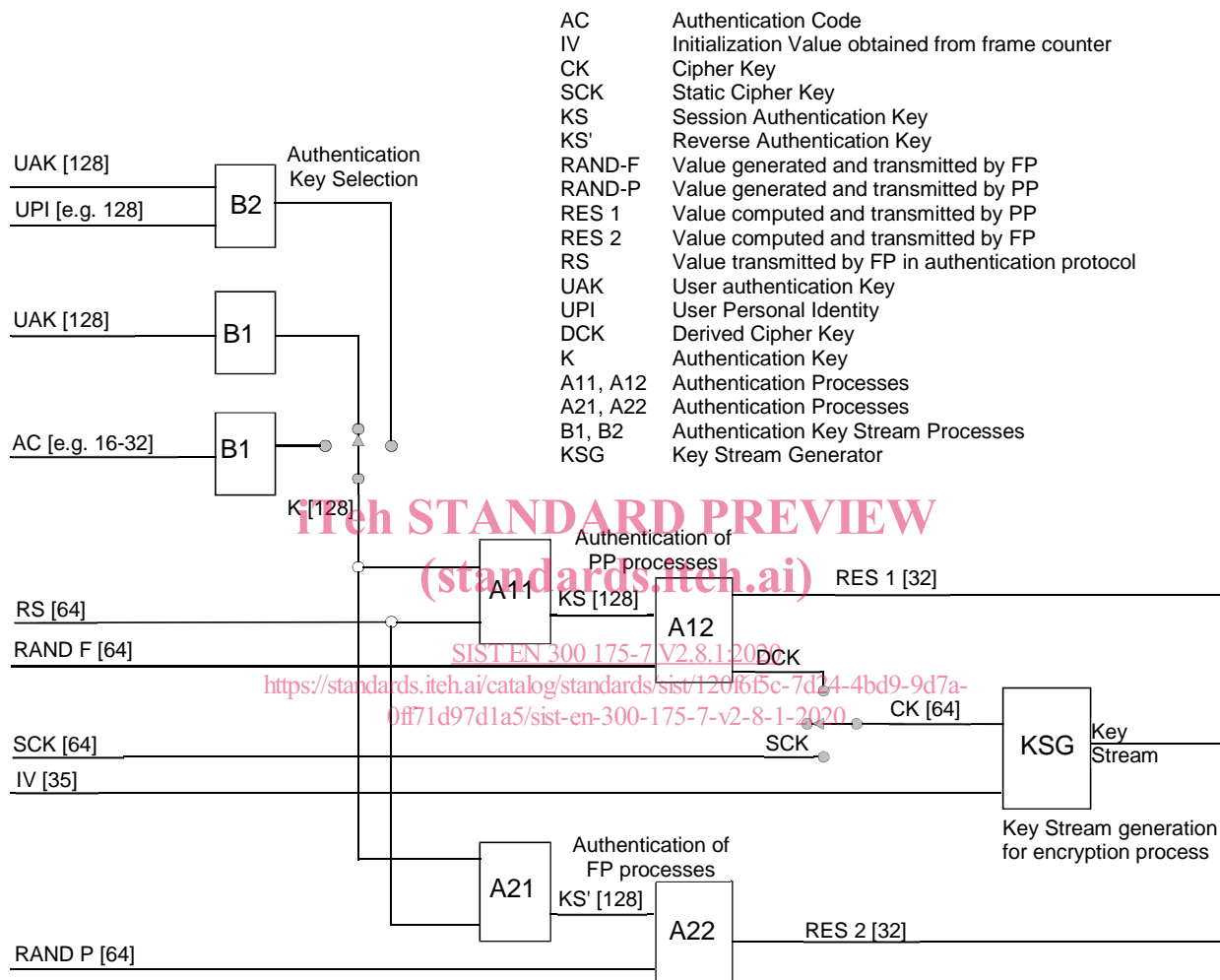
## Modal verbs terminology

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).

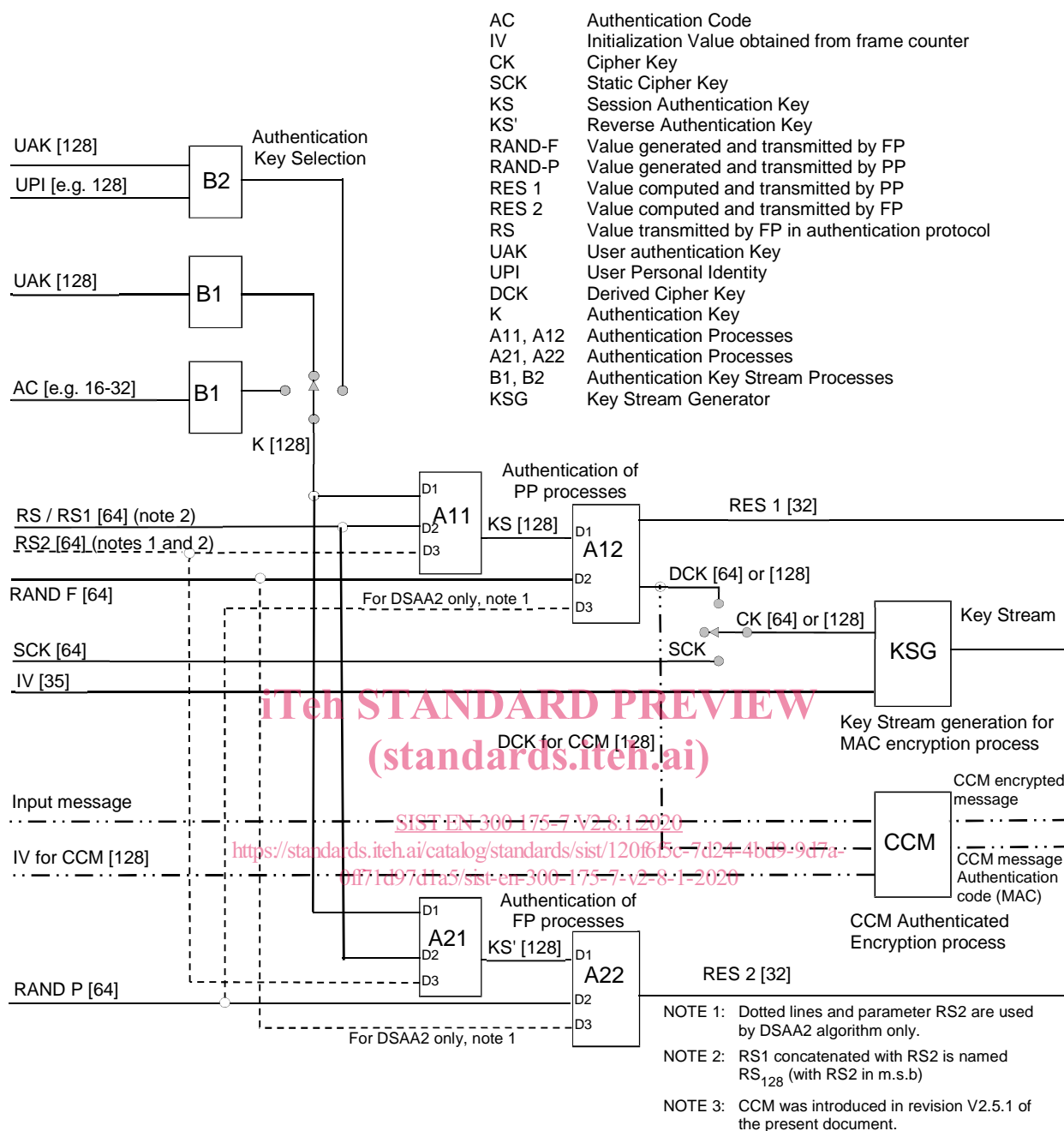
"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

## Introduction

The present document contains a detailed specification of the security features which may be provided by DECT systems. An overview of the processes required to provide all the features detailed in the present document is presented in figures 0.1 and 0.2.



**Figure 0.1: Overview of DECT historic security processes (until revision V2.3.1 of the present document)**



**Figure 0.2: Overview of DECT current security processes  
(from revisions V2.4.1 and V2.5.1 of the present document)**

The present document consists of four main clauses (clauses 4 to 7), together with a number of informative/normative and important annexes (A to O). The purpose of this introduction is to briefly preview the contents of each of the main clauses and the supporting annexes.

Each of the main clauses starts with a description of its objectives and a summary of its contents. Clause 4 is concerned with defining a security architecture for DECT. This architecture is defined in terms of the security services which may be offered (see clause 4.2), the mechanisms which are used to provide these services (see clause 4.3), the security parameters and keys required by the mechanisms (challenges, keys, etc.), and which are passed across the air interface or held within DECT Portable Parts (PPs), Fixed Parts (FPs) or other network entities (for example management centres) (see clause 4.4), the processes which are required to provide the security mechanisms (see clause 4.5) and the recommended combinations of services (see clause 4.6).

Clause 5 is concerned with specifying how certain cryptographic algorithms are to be used for the security processes. Three algorithms are required:

- an authentication algorithm;
- a key stream generator for MAC layer encryption; and
- a key stream generator plus a Message Authentication Code generator for CCM authenticated encryption.

The key stream generator is only used for the MAC encryption process, and this process is specified in clause 4.5.4.

The key stream generator plus a Message Authentication Code generator for CCM encryption are used for the CCM authenticated encryption and this process is described in clauses 4.5.5 and 6.6.

For both encryption processes, the authentication algorithm may be used to derive authentication session keys and cipher keys, and is the basis of the authentication process itself. The way in which the authentication algorithm is to be used to derive authentication session keys is specified in clause 5.2. The way in which the algorithm is to be used to provide the authentication process and derive cipher keys is specified in clause 5.3.

Neither the key stream generator nor the authentication algorithm are specified in the clause 5 of the present document. Only their input and output parameters are defined. In principle, the security features may be provided by using appropriate proprietary algorithms. The use of proprietary algorithms may, however, limit roaming in the public access service environment, as well as the use of PPs in different environments.

For example, for performance reasons, the key stream generator for MAC layer encryption will need to be implemented in hardware in PPs and FPs. The use of proprietary generators will then limit the interoperability of systems provided by different manufacturers.

Five standard algorithms have been specified. These are the DECT Standard Authentication Algorithm (DSAA, see annex H), the DECT Standard Authentication Algorithm #2 (DSAA2, see annex L), the DECT Standard Cipher (DSC, see annex J), the DECT Standard Cipher #2 (DSC2, see annex M) and the CCM Authenticated Encryption Algorithm (see annex N).

The DECT Standard Authentication Algorithm #2 (DSAA2, see annex L) and the DECT Standard Cipher #2 (DSC2, see annex M) are based on AES [10] and were introduced with the revision V2.4.1 of the present document.

The CCM Authenticated Encryption Algorithm (CCM, see annex N) is also based on AES [10] and was introduced with the revision V2.5.1 of the present document.

The DECT Standard Authentication Algorithm (DSAA) and the DECT Standard Cipher (DSC) are confidential. Because of their confidential nature, these algorithms are not included in the present document. However, the algorithms will be made available to DECT equipment manufacturers. The DSAA may also need to be made available to public access service operators who, in turn, may need to make it available to manufacturers of authentication modules.

The DECT Standard Authentication Algorithm #2 (DSAA2), the DECT Standard Cipher #2 (DSC2) and the CCM Algorithm (CCM) are publicly available and they are defined in annex L (DSAA2), annex M (DSC2) and annex N (CCM) of the present document.

Clause 6 is concerned with integrating the security features into the DECT system. Four aspects of integration are considered. The first aspect is the association of user security parameters (in particular, authentication keys) with DECT identities. This is the subject of clause 6.2. The second aspect of integration is the definition of the NWK layer protocol elements and message types needed for the exchange of authentication parameters across the air interface. This is dealt with in clause 6.3. The MAC layer procedures for the encryption of data passed over the air interface are the subject of clause 6.4. Finally, clause 6.5 is concerned with security attributes which DECT systems may support, and the NWK layer messages needed to enable PPs and FPs to identify which security algorithms and keys will be used to provide the various security services.

Clause 7 is concerned with key management issues. Careful management of keys is fundamental to the effective operation of a security system, and clause 7.2 is intended to provide guidance on this subject. The clause includes an explanation of how the DECT security features may be supported by different key management options.