

ETSI TS 101 851-2-3 V3.1.1 (2011-09)



**Satellite Earth Stations and Systems (SES);
Satellite Component of UMTS/IMT-2000;
Part 2: Multiplexing and channel coding;
Sub-part 3: G-family enhancements
(S-UMTS-G enhanced 25.212)**

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Contents

Intellectual Property Rights	6
Foreword.....	6
Introduction	6
1 Scope	8
2 References	8
2.1 Normative references	8
2.2 Informative references	8
3 Definitions, symbols and abbreviations	9
3.1 Definitions	9
3.2 Symbols.....	10
3.3 Abbreviations	10
4 Multiplexing, channel coding and interleaving	11
4.1 General	11
4.2 General coding/multiplexing of TrCHs	12
4.2.1 CRC attachment.....	16
4.2.1.1 CRC Calculation	16
4.2.1.2 Relation between input and output of the CRC attachment block.....	16
4.2.2 Transport block concatenation and code block segmentation.....	17
4.2.2.1 Concatenation of transport blocks.....	17
4.2.2.2 Code block segmentation	17
4.2.3 Channel coding	18
4.2.3.1 Convolutional coding	19
4.2.3.2 Turbo coding	19
4.2.3.2.1 Turbo coder	19
4.2.3.2.2 Trellis termination for Turbo coder	20
4.2.3.2.3 Turbo code internal interleaver.....	20
4.2.3.3 Concatenation of encoded blocks.....	24
4.2.4 Radio frame size equalization.....	24
4.2.5 1 st interleaving	24
4.2.5.1 Insertion of marked bits in the sequence to be input in first interleaver.....	25
4.2.5.2 1 st interleaver operation.....	26
4.2.5.3 Relation between input and output of 1 st interleaving in uplink.....	26
4.2.5.4 Relation between input and output of 1 st interleaving in downlink.....	27
4.2.6 Radio frame segmentation	27
4.2.6.1 Relation between input and output of the radio frame segmentation block in uplink	27
4.2.6.2 Relation between input and output of the radio frame segmentation block in downlink	27
4.2.7 Rate matching	28
4.2.7.1 Determination of rate matching parameters in uplink.....	30
4.2.7.1.1 Determination of SF and number of PhCHs needed.....	30
4.2.7.1.2 Determination of parameters needed for calculating the rate matching pattern	31
4.2.7.1.3 Convolutionally encoded TrCHs	31
4.2.7.1.4 Turbo encoded TrCHs	32
4.2.7.2 Determination of rate matching parameters in downlink	33
4.2.7.2.1 Determination of rate matching parameters for fixed positions of TrCHs	34
4.2.7.2.2 Determination of rate matching parameters for flexible positions of TrCHs	37
4.2.7.3 Bit separation and collection in uplink.....	39
4.2.7.3.1 Bit separation.....	41
4.2.7.3.2 Bit collection	41
4.2.7.4 Bit separation and collection in downlink.....	42
4.2.7.4.1 Bit separation.....	43
4.2.7.4.2 Bit collection	44
4.2.7.5 Rate matching pattern determination	44
4.2.8 TrCH multiplexing.....	45

4.2.9	Insertion of discontinuous transmission (DTX) indication bits	46
4.2.9.1	1 st insertion of DTX indication bits	46
4.2.9.2	2 nd insertion of DTX indication bits	46
4.2.10	Physical channel segmentation	47
4.2.10.1	Relation between input and output of the physical segmentation block in uplink	48
4.2.10.2	Relation between input and output of the physical segmentation block in downlink	48
4.2.11	2 nd interleaving.....	48
4.2.12	Physical channel mapping	49
4.2.12.1	Uplink	49
4.2.12.2	Downlink.....	49
4.2.13	Restrictions on different types of CCTrCHs.....	50
4.2.13.1	Uplink Dedicated channel (DCH)	50
4.2.13.2	Random Access CHannel (RACH)	50
4.2.13.3	Downlink Dedicated CHannel (DCH)	51
4.2.13.4	Broadcast channel (BCH)	51
4.2.13.5	Forward access and paging channels (FACH and PCH).....	51
4.2.14	Multiplexing of different transport channels into one CCTrCH, and mapping of one CCTrCH onto physical channels	51
4.2.14.1	Allowed CCTrCH combinations for one UE	52
4.2.14.1.1	Allowed CCTrCH combinations on the uplink	52
4.2.14.1.2	Allowed CCTrCH combinations on the downlink	52
4.2.15	Downlink data randomization.....	52
4.3	Transport format detection	53
4.3.1	Blind transport format detection	53
4.3.2	Single transport format detection.....	54
4.3.3	Transport format detection based on TFCI.....	54
4.3.4	Coding of Transport Format Combination Indicator (TFCI).....	54
4.3.5	Mapping of TFCI words	56
4.3.5.1	Mapping of TFCI word in normal mode	56
4.3.5.2	Mapping of TFCI word in compressed mode	56
4.3.5.2.1	Uplink compressed mode	56
4.3.5.2.2	Downlink compressed mode	56
4.4	Compressed mode	57
4.4.1	Frame structure in the uplink	57
4.4.2	Frame structure types in the downlink.....	58
4.4.3	Transmission time reduction method.....	58
4.4.3.1	Compressed mode by puncturing	58
4.4.3.2	Compressed mode by reducing the spreading factor by 2.....	58
4.4.3.3	Compressed mode by higher layer scheduling.....	58
4.4.4	Transmission gap position	59
4.5	TPC command coding	60
4.5.1	Transmission gap position	60
4.5.2	Mapping of TPC words.....	61

Annex A (informative): Blind transport format detection.....62

A.1	Blind transport format detection using fixed positions	62
A.1.1	Blind transport format detection using received power ratio.....	62
A.1.2	Blind transport format detection using CRC	62

Annex B (informative): Compressed mode idle lengths.....65

B.1	Idle lengths for DL, UL and DL+UL compressed mode.....	65
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Annex C (normative): Description of G-family enhancements.....67

C.1	Definition of the optional modes A and C.....	67
C.2	Description of Optional mode A	67
C.3	Description of Optional mode C	68

Annex D (informative): Change history

D.1	A-family optional features.....	69
D.2	C-family optional features.....	69
History		72

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

The present document is specifying the Satellite Radio Interface referenced as SRI Family G at ITU-R, in the frame of the modification of ITU-R Recommendation M.1457 [i.5]. This modification has been approved at SG8 meeting in November 2005.

The present document is part 2, sub-part 3 of a multi-part deliverable covering Satellite Earth Stations and Systems (SES); Satellite Component of UMTS/IMT-2000; G-family enhancements, as identified below:

Part 1: "Physical channels and mapping of transport channels into physical channels";

Part 2: "Multiplexing and channel coding";

Sub-part 1: "G-family (S-UMTS-G 25.212)";

Sub-part 2: "A-family (S-UMTS-A 25.212)";

Sub-part 3: "G-family enhancements (S-UMTS-G enhanced 25.212)";

Part 3: "Spreading and modulation";

Part 4: "Physical layer procedures";

Part 5: "UE Radio Transmission and Reception";

Part 6: "Ground stations and space segment radio transmission and reception".

Introduction

S-UMTS stands for the Satellite component of the Universal Mobile Telecommunication System. S-UMTS systems will complement the Terrestrial UMTS (T-UMTS) and inter-work with other IMT-2000 family members through the UMTS core network. S-UMTS will be used to deliver 3rd generation Mobile Satellite Services (MSS) utilizing either low (LEO) or medium (MEO) earth orbiting, or geostationary (GEO) satellite(s). S-UMTS systems are based on terrestrial 3GPP specifications and will support access to GSM/UMTS core networks.

NOTE 1: The term T-UMTS will be used in the present document to further differentiate the Terrestrial UMTS component.

Due to the differences between terrestrial and satellite channel characteristics, some modifications to the terrestrial UMTS (T-UMTS) standards are necessary. Some specifications are directly applicable, whereas others are applicable with modifications. Similarly, some T-UMTS specifications do not apply, whilst some S-UMTS specifications have no corresponding T-UMTS specification.

Since S-UMTS is derived from T-UMTS, the organization of the S-UMTS specifications closely follows the original 3rd Generation Partnership Project (3GPP) structure. The S-UMTS numbers have been designed to correspond to the 3GPP terrestrial UMTS numbering system. All S-UMTS specifications are allocated a unique S-UMTS number as follows:

S-UMTS-n xx.yyy

Where:

- The numbers xx and yyy correspond to the 3GPP numbering scheme.
- n (n = A, B, C, etc.) denotes the family of S-UMTS specifications.

An S-UMTS system is defined by the combination of a family of S-UMTS specifications and 3GPP specifications, as follows:

- If an S-UMTS specification exists it takes precedence over the corresponding 3GPP specification (if any). This precedence rule applies to any references in the corresponding 3GPP specifications.

NOTE 2: Any references to 3GPP specifications within the S-UMTS specifications are not subject to this precedence rule.

EXAMPLE: An S-UMTS specification may contain specific references to the corresponding 3GPP specification.

- If an S-UMTS specification does not exist, the corresponding 3GPP specification may or may not apply. The exact applicability of the complete list of 3GPP specifications shall be defined at a later stage.

The present document is part of the S-UMT sub-part 3 specifications. Sub-part 3 specifications are identified in the title and can also be identified by the specification number:

- Sub-part 1 specifications have an S-UMTS-G prefix in the title and a sub-part number of "1" (TS 101 851-x-1).
- Sub-part 2 specifications have an S-UMTS-A prefix in the title and a sub-part number of "2" (TS 101 851-x-2).
- Sub-part 3 specifications have an S-UMTS-G enhanced prefix in the title and a sub-part number of "3" (TS 101 851-x-3).

The sub-part 1 specifications introduce the WCDMA satellite radio interface (ITU-R G-family) specifications for the third generation (3G) wireless communication systems. It is also based on the WCDMA UTRA FDD radio interface already standardized in 3GPP. Mobile satellite systems intending to use this interface will address user equipment fully compatible with 3GPP UTRA FDD WCDMA, with adaptation for agility to the Mobile Satellite Service (MSS) frequency band.

The sub-part 2 specifications introduce the SW-CDMA satellite radio interface (ITU-R A-family) specifications for third generation (3G) wireless communication systems. SW-CDMA is based on the adaptation to the satellite environment of terrestrial WCDMA. The intention is to reuse the same core network and reuse the radio interface specifications for the Is and Cu interface. Only the Uu interface is adapted to the satellite environment. SW-CDMA operates in FDD mode with RF channel bandwidth of either 2,350 MHz or 4,700 MHz for each transmission direction.

The sub-part 3 specifications introduce the WCDMA satellite radio interface enhancement (G enhance-family). It considers G-family as radio interface basis, adding as option selected enhancing features from ITU-R A and/or C-family in order to optimize the radio interface over satellite. It is based on the results of the TR 102 278 [i.6] identifying a way to achieve harmonization between A, C and G-family satellite radio interfaces for IMT-2000 in ITU-R.

The G-family enhancements made of A, C and G features are described in annex C.

The sub-parts 1 and 2 will be withdrawn if the A and C family will be removed from the satellite radio interface list of IMT-2000 in ITU-R Recommendation M.1850 [i.7] and then, the sub-part 3 will be revised.