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**Satellite Earth Stations and Systems (SES);
Satellite Component of UMTS/IMT-2000;
Part 1: Physical channels and mapping of
transport channels into physical channels;
Sub-part 3: G-family enhancements
(S-UMTS-G enhanced 25.211)**

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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.4]. This modification has been approved at ITU-R SG8 meeting in November 2005.

The present document is part 1, 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";

Sub-part 1: "G-family (S-UMTS-G 25.211)";

Sub-part 2: "A-family (S-UMTS-A 25.211)";

Sub-part 3: "G-family enhancements (S-UMTS-G enhanced 25.211)";

Part 2: "Multiplexing and channel coding";

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 geostationary (GEO), or low (LEO) or medium (MEO) earth orbiting 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 a S-UMTS-G prefix in the title and a sub-part number of "1" (TS 101 851-x-1).
- Sub-part 2 specifications have a S-UMTS-A prefix in the title and a sub-part number of "2" (TS 101 851-x-2).
- Sub-part 3 specifications have a 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-family enhancements). 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.3] 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 A.

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.2] and then, the sub-part 3 will be revised.